

# Intuitionistic Fuzzy Neutrosophic Soft Topological Spaces

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**Abstract:** In this paper, we introduce a new notion of fuzzy neutrosophic soft set and to study some basic operation and results in fuzzy neutrosophic soft spaces. Further we construct a topology on an intuitionistic fuzzy neutrosophic soft set. The concepts of intuitionistic fuzzy neutrosophic soft closure, intuitionistic fuzzy neutrosophic soft interior, intuitionistic fuzzy neutrosophic soft exterior, intuitionistic fuzzy neutrosophic soft boundary are introduced and some of its properties are studied.

**Keywords:** soft set, fuzzy soft set, neutrosophic set, neutrosophic soft set, intuitionistic fuzzy neutrosophic soft set, fuzzy neutrosophic soft topological space.

## 1. INTRODUCTION

The fuzzy set was introduced by Zadeh [13] in 1965 where each element had a degree of membership. In 1999, Molodtsov [4], initiated the novel concept of soft set theory, which was a completely new approach for modeling uncertainty and had a rich potential for application in several directions. This so-called soft set theory is free from the difficulties affecting existing methods. The intuitionistic fuzzy set (IFS for short) on a universe  $X$  was introduced by K. Atanasiu [1] in 1983 as a generalization of fuzzy set, where besides the degree of membership and the degree of non-membership of each element. The concept of Neutrosophic set was introduced by F. Smarandache [10] which is a mathematical tool for handling problems involving imprecise, indeterminacy and inconsistent data. Pabitra Kumar Maji [7] had combined the Neutrosophic set with soft sets and introduced a new mathematical model 'Neutrosophic soft set'. Chang [4] introduced the notion of fuzzy topology and also studied some of its basic properties. Shabir and Naz [10] introduced the notion of the soft topology and studied some basic concepts such as soft interior, soft closure and soft sub base. Maji [7] defined the notion of neutrosophic soft set. Arockiarani et al [1] defined the notion of fuzzy neutrosophic set and fuzzy neutrosophic soft set.

## 2. PRELIMINARIES

### Definition 2.1

Let  $U$  be the initial universe set and  $E$  be a set of parameters. Let  $P(U)$  denote the power set of  $U$ . Consider a non-empty set  $A$ ,  $A \subseteq E$ . A pair  $(F, A)$  is called a **soft set** over  $U$ , where  $F$  is a mapping given by  $F: A \rightarrow P(U)$ .

### Definition 2.2

Let  $I^X$  denote the set of all fuzzy sets on  $X$  and  $A \subseteq E$ . A pair  $(f, A)$  is called a **fuzzy soft set** over  $X$ , where  $f$  is a mapping from  $A$  into  $I^X$ . That is, for each  $a \in A$ ,  $f(a) = f_a: X \rightarrow I$ , is a fuzzy set on  $X$ .

### Definition 2.3

A **neutrosophic set**  $A$  on the universe of discourse  $X$  is defined as

$$A = \{(x: T_A(x), I_A(x), F_A(x)), x \in X\}$$

where the functions

$$T_A, I_A, F_A: X \rightarrow [0, 1]$$

define respectively the **degree of membership, the degree of indeterminacy and the degree of non-membership of the elements** to the set  $A$  with the condition

$$0 \leq T_A(x) + I_A(x) + F_A(x) \leq 3$$

### Definition 2.4

Let  $U$  be the universe set and  $E$  be a set of parameters. Consider a non-empty set  $A$ ,  $A \subseteq E$ . Let  $P(U)$  denote the set of all neutrosophic set of  $U$ . The collection  $(F, A)$  is termed to be the **soft neutrosophic set** over  $U$ , where  $F$  is a mapping given by

$$F: A \rightarrow P(U).$$

### Definition 2.5

Let  $U$  be an initial universe set. Let  $E$  be a set of parameters and a non-empty set  $A \subseteq E$ . Let  $IFN(U)$  denotes the set of all intuitionistic fuzzy neutrosophic sets of  $U$ . The pair  $(F, A)$  is called **intuitionistic fuzzy neutrosophic soft set (in short IFNSS)** over  $U$ , where  $F$  is a mapping given by  $F: A \rightarrow IFN(U)$  and  $IFNSS(F, A)$  is denoted as  $\tilde{F}_A$ .

# Stochastic Functional Differential Equation and Lyapunov Measure with Stochastic Stability

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**Abstract:** In this paper we develop some basic theories of stochastic functional differential equation. Then, we extend the global existence-uniqueness and continuation theorem of Winter for ordinary differential equation. Furthermore, connection between Lyapunov function, a popular tool for stochastic stability verification, and Lyapunov measure is established. Also we develop a method to prove almost global stability of stochastic differential equations in the sense that almost every initial point is asymptotically attracted to the origin with unit probability.

**Keywords:** Stochastic stability, Stochastic functional differential equation, Existence, Uniqueness, Continuation, Lyapunov measure

## 1 INTRODUCTION

Stability analysis and control of stochastic systems are a problem of theoretical and applied interests. For stochastic system, there are various notions of stabilities. Among the most popular notions of stabilities are almost sure and moment [2], [3]. The Lyapunov function is also used for the design of the stabilizing controller for stochastic systems.

Stochastic differential equation (SDEs) play a very important role in formulation and analysis in mechanical, electrical, control engineering and physical sciences, economic and social sciences. Many important results on existence theory for SODEs and SFDEs focused on developing the global existence-uniqueness to avoid the continuation of the solutions.

### 1.1 Definition

An equation involving derivatives or differentials of one or more dependent variables with respect to one or more independent variables is called a **differential equation**.

$$\frac{d^3 y}{dx^3} - 3 \frac{d^2 y}{dx^2} + 2 \frac{dy}{dx} - y = \sin x.$$

### 1.2 Definition

A **functional differential equation** is a differential equation in which the derivative  $y'(t)$  of an unknown function  $y$  has value at  $t$  that is related to  $y$  as a functional of some other functional differential equation is therefore given by

$$y'(t) = f(t, y(t), y(y(t))).$$

### 1.3 Definition

An equilibrium point,  $x = x_e$ , is **Lyapunov stable** if for all  $\epsilon > 0$  there exist a  $\delta > 0$  such that for all  $x(0)$  with  $|x(0) - x_e| < \delta$ ,

$$|x(t) - x_e| < \epsilon \text{ for all } t > 0.$$

### 1.4 Definition

Let  $\{W_t\}_{t \geq 0}$  be a standard Brownian motion on a probability space  $(\Omega, F, P)$  with an admissible filtration  $F = \{F_t\}_{t \geq 0}$ .

A strong solution of the **stochastic differential equation** is with initial condition  $x \in R$  is an adapted process  $X_t = Xx$ .

### 1.5 Definition

Given two metric space  $(x, dx)$  and  $(y, dy)$  where  $dx$  denote the metric on the set  $x$  and  $dy$  is the metric in the set  $y$ .

A function  $f: x \rightarrow y$  is called **Lipschitz continuous**. If there exists a real constant  $k \geq 0$  such that for all  $X_1$  and  $X_2$  in  $X$ .

## 2 LYAPUNOV MEASURE AND STOCHASTIC STABILITY

### 2.1 Theorem

Let

$$\xi_0^n = \{\xi_0, \dots, \xi_n\} \in W \times \dots \times W =: W^n$$



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# Function Spaces for Axisymmetric Solenoidal Vector Fields

G. Pushpalatha, P. Suganya · Published 2016 · Mathematics · Imperial journal of interdisciplinary research

: In this paper, we study the three-dimensional axisymmetric Navier-Stokes system with nonzero swirl. By establishing a new key inequality for the pair  $(\omega^r/r, \omega^\theta/r)$ , we get several Prodi-Serrin type regularity criteria based on the angular velocity,  $u^\theta$ . Furthermore, we also get several Prodi-serrin type regularity criteria based on one component of the solutions, say  $\omega^3$  or  $u^3$ . We consider the vorticity-stream formulation of axisymmetric incompressible flows and its equivalence with the... Expand

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# Higher Derivative Estimates for the 3D Navier-Stokes Equation

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## Abstract:

In this paper, a non linear family of spaces, based on the energy dissipation is introduced. This family bridges an energy space (containing weak solutions to Navier-Stokes equation) to a critical space (invariant through the canonical scaling of the Navier-Stokes equation). This family is used to get uniform estimates on higher derivatives to solutions to the 3D Navier-Stokes equations. Those estimates are uniform, up to the possible blowing-up time. The proof uses blow-up techniques. Estimates can be obtained by this means thanks to Galilean invariance of the transport part of the equation.

Keywords: Navier-Stokes equation, fluid mechanics, blow-up techniques.

## 1. INTRODUCTION

Mechanics is an area of science concerned with the behaviour of physical bodies when subjected to forces or displacements, and the subsequent effects the bodies on their environment. Fluid mechanics is the branch of physics which involves the study of fluids (liquids, gases and plasmas) and the forces on them. Fluid mechanics can be divided into fluid statics and fluid dynamics. This paper uses a non linear spaces, based on the energy dissipation is introduced. This family bridges an energy space (containing weak solution to Navier-stokes equation) to a critical space (invariant through the canonical scaling of the Navier-Stokes equation). This family is used to get uniform estimates on higher derivatives to solution to the 3D Navier-Stokes equations. Those estimates are uniform, up to the possible blowing-up time. we established ' introduced the estimates can be obtained by this means thanks to Galilean invariance of the transport part of the equation'

## 2. PRELIMINARIES

### 2.1 Definition

A fluid is defined as either a gas or a liquid. **Fluid mechanics** is the study of behavior of liquids and gases. More properly defined fluid mechanics is the study of fluids and forces on them.

### 2.2 Definition

Let  $v(x, t)$  be a three dimensional vector field the velocity of

the fluid and let  $p(x, t)$  be the pressure of fluid the **Navier-stokes equation**

$$\frac{\partial v}{\partial t} + (v \cdot \nabla)v = -\nabla p + \nu \Delta v + f(x, t)$$

Where  $\nu > 0$  is kinematic viscosity  $f(x, t)$  the external force  $\nabla$  is gradient operator and  $\Delta$  is laplacian.

### 2.3 Definition

A fluid is **incompressible** if the density of a fluid particle is constant.

In other words

The rate of change of  $\rho(\vec{x}, t)$  following the particle path is zero

$$\frac{\partial \rho}{\partial t} = 0$$

The continuity equation

$$\frac{\partial v}{\partial t} + \nabla \cdot (\rho \vec{u}) = 0$$

Reducts the equation

$$\nabla \cdot \vec{u} = 0$$

### 2.4 Definition

Let the random variable  $X$  have a distribution of probability about which we assume only that there is a finite variance  $\sigma^2$ . Then for every  $K > 0$ ,

$$P(|X - \mu| \geq k\sigma) \leq \frac{1}{k^2}$$

Or equivalently

$$P(|X - \mu| < k\sigma) \geq 1 - \frac{1}{k^2}$$

This equation is known as **Tchebyshev's inequality**.

## 3. HIGHER DERIVATIVES ESTIMATE FOR THE 3D NAVIERS-STOKES EQUATION

### 3.1 Theorem

For any  $0 < \delta < 1$ , there exists  $\gamma > 0$  and a constant  $C > 0$  such that for any  $u$  solution to (1) (3), with  $u^0 \in L^2(\mathbb{R}^3)$ , we have

$$\int_0^\infty \int_{\mathbb{R}^3} (|M((-\Delta)^{-\delta/2} \nabla^2 P)|^{1+\gamma} + |\nabla^2 P| + |\nabla u|^2) dxdt \leq C(\|u^0\|_{L^2(\mathbb{R}^3)}^2 + \|u^0\|_{L^2(\mathbb{R}^3)}^{2(1+\gamma)})$$

Moreover,  $\gamma$  converges to 0 when  $\delta$  converges to 0.

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# Analysis between Topological Relation and a Simple Fuzzy Region in the General Topological Space

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### Abstract:

We study global properties of fuzzy topological spaces which depend only on open sets, fuzzy continuous functions and on the relations  $\supset, \cap, \cup$ . We show that many known theorems are in reality purely topological theorems.

### Introduction:

Only in twentieth century, mathematics defined the concepts of sets and function to represent problems. This way of representing problems is more rigid. In many circumstances the solution using this concepts are meaningless. This difficulty was overcome by the fuzzy concept. Almost all mathematical Engineering, Medicines, etc. concepts have been redefined using fuzzy sets. Hence it is a must to popularize these ideas for our future generation. During recent years, topological relations have been much investigated in the crisp topological space. White (1980) introduced the algebraic topological models for spatial objects. Allen (1983) identified 13 topological relations between two temporal intervals.

**Keywords:** Fuzzy topology, topological relation, a simple fuzzy region, crisp point, simple crisp region.

### Basic definition:

#### Definition 1:

A family  $\delta \subseteq I^X$  of fuzzy sets is called a *fuzzy topology* for  $X$  if it satisfies the following axioms.

- i.  $\forall \alpha \in I; \alpha \in \delta$
- ii.  $\forall A, B \in \delta \Rightarrow A \wedge B \in \delta$
- iii.  $\forall (A_j)_{j \in J} \in \delta \Rightarrow \bigvee_{j \in J} A_j \in \delta$ .

The pair  $(X, \delta)$  is called a fuzzy topology space. The element  $\delta$  are called fuzzy open sets. A fuzzy sets  $K$  is called fuzzy closed sets if  $K^c \in \delta$ .

#### Definition 2:

A fuzzy set in  $X$  is called a fuzzy point iff it takes the values 0 for all  $y \in X$  except one, say  $x \in X$ . If its value at  $x$  is  $\lambda$  ( $0 < \lambda \leq 1$ ).

We denote the fuzzy points  $P_x^\lambda$  simply by  $p$ , where  $x$  is called its support. The class of all fuzzy points in  $X$  is denoted by  $x$ .

$$P(x) = \begin{cases} \lambda, & x = y \\ 0, & x \neq y \end{cases}$$

#### Definition 3:

Let  $X$  be a non-empty set and  $I$  the unit interval  $[0,1]$ . A fuzzy set in  $X$  is a function with domain  $x$  and the values  $I$ , that is an element of  $I^X$ .

Let  $A, B \in I^X$ , we define the following sets,

- i.  $A \cup B \in I^X$  by (union),  
 $A \cup B(x) = \max \{A(x), B(x)\}$   
for every  $x \in X$ .
- ii.  $A \cap B \in I^X$  by (intersection),

- $A \cap B(x) = \min \{A(x), B(x)\}$  for every  $x \in X$ .
- iii.  $A^c \in I^X$  by (complement),  
 $A^c(x) = 1 - A(x)$  for all  $x \in X$ .
- iv. Let  $f: X \rightarrow Y, A \in I^X$  and  $B \in I^Y$ , then  $f(A)$  is a fuzzy set in  $Y$ .

#### Definition 4:

A fuzzy set with membership function  $P(x) = \begin{cases} 1, & x = y \\ 0, & x \neq y \end{cases}$  is called a crisp point, denoted by  $P_y^1$  for any fuzzy set  $A$  is in  $X$ , we define the crisp point

$$P_y^1 \subset A \Leftrightarrow A(y) = 1 \text{ and } P_y^1 \in A \Leftrightarrow A(y) = 1.$$

### Topological relations between two simple regions

#### Theorem 2.1:

If  $A$ 's core is disjoint with  $B$ 's core and  $A$ 's fringe intersects with  $B$ 's core then  $A$ 's fringe intersects with  $B$ 's fringe,

if  $A^\oplus \wedge B^\oplus = \phi$  and

$\ell A \wedge B^\oplus \neq \phi$  then,

$\ell A \wedge \ell B \neq \phi$ .

#### Proof:

Given that

$A$ 's core is disjoint with  $B$ 's core

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# Intuitionistic Fuzzy Soft Ordered Ternary Semigroups

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## Abstract:

In this paper, we introduced the notion of intuitionistic fuzzy soft ideals over an ordered ternary semigroup and their basic properties are investigated

**Keywords:** ordered ternary semigroups, intuitionistic fuzzy soft sets, intuitionistic fuzzy soft ideals.

## 1. INTRODUCTION

In 1965, Zadeh has introduced the fundamental concept of fuzzy sets. He defined a fuzzy set as a class of objects with continuum of grade of membership ranging between zero and one. This idea was then applied to various other fields of mathematics including topology resulting in the study of fuzzy by Chang and Lowen. Molodtsov, initiated the concept of soft set theory in 1999 and used this concept for modelling of uncertainty.

The purpose of this paper is to extend the concept of intuitionistic fuzzy soft to the theory of ordered ternary semigroup. We introduce the notion of intuitionistic fuzzy soft left (right, lateral) ideals over an ordered ternary semigroup. we introduced the concepts of intuitionistic fuzzy set, intuitionistic fuzzy soft set, intuitionistic fuzzy soft ternary subsemigroup, intuitionistic fuzzy soft ideal and some of its properties were studied.

## 2. PRELIMINARIES

### 2.1 Definition

A **ternary semigroup**  $T$  is a non-empty set whose elements are closed under the ternary operation of multiplication and satisfy the associative law defined as

$$[[abc] de] = [a[bcd] e] = [ab [cde]],$$

for all  $a, b, c, d, e \in T$

### 2.2 Definition

An **intuitionistic fuzzy set** (briefly, IFS),  $A$  in a non-empty set  $X$  is an object having the form,

$$A = \{(x, \mu_A(x), \gamma_A(x)) \mid x \in X\}$$

Where the functions  $\mu_A : X \rightarrow [0,1]$  and  $\gamma_A : X \rightarrow [0,1]$  denotes the degree of membership and the degree of non-membership respectively and for all  $x \in X$ ,

$$0 \leq \mu_A(x) + \gamma_A(x) \leq 1.$$

### 2.3 Definition

Let  $U$  be an initial universe set and  $E$  be the set of parameters. Let  $P(U)$  denotes the power set of  $U$ . Let  $A$  be a non-empty subset of  $E$  then the pair  $(F, A)$  is called the **soft set** over  $U$ , where  $F$  is a mapping given by  $F : A \rightarrow P(U)$ .

### 2.4 Definition

Let  $U$  be an initial universe set and  $E$  be the set of parameters. Let  $A$  be a non-empty subset of  $E$  and  $P(FS(U))$  be the collection of all fuzzy subsets of  $U$  then the pair  $(\hat{F}, A)$  is called a **fuzzy soft set** over  $U$ , where  $\hat{F}$  is a mapping given by,  $\hat{F} : E \rightarrow P(FS(U))$ .

### 2.5 Definition

Let  $U$  be an initial universe set and  $E$  be the set of parameters. Let  $A$  be a non-empty subset of  $E$  and  $P(IFS(U))$  be the collection of all fuzzy subsets of  $U$  then the pair  $(\hat{F}, A)$  is called an **intuitionistic fuzzy soft set** over  $U$ , where  $\hat{F}$  is a mapping given by,  $\hat{F} : E \rightarrow P(IFS(U))$ . In short, we will write  $IFSS(U)$  for intuitionistic fuzzy soft set over  $U$ .

## 3. IDEALS OF TERNARY SEMIGROUPS

### 3.1 Theorem

A minimal lateral ideal of a ternary semigroup  $S$  is a minimal ideal of  $S$ .

### Proof

Let  $M$  be a minimal lateral ideal of  $S$ .

We shall show that,  $M$  is a minimal ideal of  $S$ .

Let  $m \in M$ . Then  $SmS \cup SSmSS$  is a lateral ideal of  $S$  and

$$SmS \cup SSmSS \subseteq SmS \cup SSmSS$$

$$\subseteq M.$$

Since  $M$  is minimal,

$$\text{we have } M = SmS \cup SSmSS.$$

Now,

$$MSS = (SmS \cup SSmSS)SS$$

$$= (SmS)SS \cup (SSmSS)SS$$

$$\subseteq SmS \cup SSmSS$$

$$\subseteq M$$

and

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# Fuzzy Continuous Mappings and Completely Continuous Functions in Intuitionistic Fuzzy Topological Spaces

M. Sentamilselvi, P. Suguna • Published 2016 • Computer Science • Imperial journal of interdisciplinary research

In this paper, we introduce a we introduced the concepts of fuzzy completely continuous functions between intuitionistic fuzzy topological spaces and also introduced the fundamental concepts of intuitionistic fuzzy closure operator, and some stronger forms of fuzzy continuous mappings and some of its properties were studied.

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# Fuzzy Topological Spaces and Fuzzy Multifunctions

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## Abstract:

In this paper, we introduced several fuzzy topological concepts and examine their properties. Our basic tool in that process is the notion of the fuzzy neighbourhood of a point and also introduce the notion of fuzzy multifunctions, linear fuzzy multifunctions and study their properties.

**Keywords:** fuzzy topological space, fuzzy boundary, connected, fuzzy multifunction, fuzzy upper semicontinuous, fuzzy lower semicontinuous, linear fuzzy multifunctions, fuzzy balanced, fuzzy absorbing.

## 1. INTRODUCTION

The fundamental concept of a fuzzy set was first introduced by Zadeh. Since then work has been done by many authors, in several directions, which has resulted in the formation of a new mathematical field called "fuzzy mathematics". The theory of fuzzy topological spaces is a branch of such mathematics. Chang was the first to introduce the notion of fuzzy topology. Several others continued the work in this area. We remark that general point set topology can be regarded as a special case of fuzzy topology, where all membership functions are just characteristic functions. In this dissertation entitled, 'Fuzzy Topological Spaces and Fuzzy Multifunctions', we introduced several fuzzy topological concepts and examine their properties. Our basic tool in that process is the notion of the fuzzy neighbourhood of a point and also introduce the notion of fuzzy multifunctions, linear fuzzy multifunctions and study their properties.

## 2. PRELIMINARIES

In this chapter, we discussed some basic definitions which are needed for the further definition.

### 2.1 Definition

Let  $X$  be a set. A **fuzzy set** in  $X$  is an element in  $[0,1]^X$ , that is a function from  $X$  into  $[0,1]$ . Actually this is the membership function of a fuzzy set of  $X$ .

### 2.2 Definition

A fuzzy topology to be a subset  $\tau_X$  of  $[0,1]^X$  such that

- (1)  $0, 1 \in \tau_X$ ,
- (2) If  $\mu, \lambda \in \tau_X$  then  $\mu \wedge \lambda \in \tau_X$ ,
- (3) If  $\mu_\alpha \in \tau_X$  for all  $\alpha \in J$ , then  $\sup_{\alpha \in J} \mu_\alpha = \bigvee_{\alpha \in J} \mu_\alpha \in \tau_X$ .

Then the pair  $(X, \tau_X)$  is called a **fuzzy topological space**.

All elements of  $\tau_X$  are set to be **open fuzzy set** (or briefly  $F$ -open sets).

Then an element  $\rho \in [0,1]^X$  is said to be a **closed fuzzy set** (or briefly  $F$ -closed) if and only if  $1 - \rho$  is  $F$ -open.

### 2.3 Definition

A map  $\mu \rightarrow \bar{\mu}$  from  $[0,1]^X$  into  $[0,1]^X$  is said to be a **closure operator** if for all  $\mu, \lambda \in [0,1]^X$  it satisfies the four Kuratowski axioms:

- (i)  $\mu \leq \bar{\mu}$ ,
- (ii)  $\bar{\bar{\mu}} = \bar{\mu}$  (i.e., the closure operator is idempotent),
- (iii)  $\overline{\mu \vee \lambda} = \bar{\mu} \vee \bar{\lambda}$ ,
- (iv)  $\bar{0} = 0$ .

An equivalent way to define  $\bar{\mu}$  is the following:

$$\bar{\mu} = \bigwedge \{ \lambda : \lambda \text{ is } F\text{-closed and } \lambda \geq \mu \}.$$

Clearly then  $\bar{\mu}$  is always  $F$ -closed.

### 2.4 Definition

A fuzzy topology on  $X$ , this is the collection

$$\tau_X = \{ \mu \in [0,1]^X : \overline{1 - \mu} = 1 - \mu \}.$$

Now let  $\mu, \lambda \in [0,1]^X$  and let  $\mu \geq \lambda$ . Then  $\lambda$  is called an **interior fuzzy set** of  $\mu$  if and only if there is a  $\rho \in \tau_X$  such that  $\mu \geq \rho \geq \lambda$ .

The least upper bound of all interior fuzzy sets of  $\mu$  is called the interior of  $\mu$  and it is denoted by  $\mu^0$ . (clearly  $\mu^0 \in \tau_X$ , i.e.,  $\mu^0$  is  $F$ -open).

### 2.5 Definition

The **fuzzy boundary** of  $\mu \in [0,1]^X$ , denoted by  $\mu^b$ .

This is defined to be the infimum of all  $F$ -closed sets  $\rho$  with the property  $\rho(x) \geq \bar{\mu}(x)$  for all  $x \in X$  for which we have

$$[\bar{\mu} \wedge (1 - \bar{\mu})](x) > 0.$$

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## Application of support vector machine for evaluation of agricultural productivity in the state of tamilnadu

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**Abstract:** This research paper attempts to identify the agriculture productivity performance in the state of Tamilnadu as agriculture sector is facing so many challenges in the past decades. Most of the agricultural lands are converted into real estate business and also occupied by corporate sector people. Most of the farmers and allied department population migrated to other state and even to other countries to live their livelihood, they work as daily wages. In this connection, this research paper attempts to promote agriculture sector as it is the mainstay and backbone of the Indian and Tamilnadu economy. Agriculture plays a vital role in the development of a country as well the state of Tamilnadu. It contributes nearly fifteen percent of Gross Domestic Product (GDP) of India. Seventy percent of the population depends on agriculture for their livelihood. In the past decade agriculture production had faced an increasing trend in districts of Tamil Nadu in all the crops. But nowadays the yield rate has a decreasing trend in Tamilnadu. However, agriculture productivity differs from region to region, which needs a detailed investigation. The main objective of this research paper is to analyze the agriculture productivity of fifteen major Crops in Tamilnadu using Support Vector Machine for district wise classification of entire state of Tamilnadu and Mosaic graph to visualize the performance of agricultural database. The secondary sources of database were collected from Department of Economics and Statistics, Tamilnadu during the period of 2003 to 2012. In this study yield deviation, visualization and classification of fifteen major crops are considered. The results attained three different methods of classifications and are labelled as High, Moderate and Low based on their Enyedi's index method of various crops.

**Keywords:** Enyedi's Method, Agriculture Productivity, Productivity Districts, Crops Yield, Support Vector Machine and Mosaic Graph.

### 1.0 Introduction

Agriculture sector plays a very important role in Indian economy from prior to present time period. Indian economy has been considered as an agrarian economy with majority of its population in rural areas having agriculture and allied activities as their main occupation. Most of the scholars have stated, in India most of the population gives importance to agriculture because it not only provides food but also the livelihood to more than half of the population. And also the agriculture fields supplies lots of goods and raw materials required by the non-agriculture sectors [3]. In short, agriculture plays an important role in the economic development process of India. This research paper mainly concentrates in Tamilnadu Agriculture productivity and growth.

## Spatial pattern of agriculture productivity of crops in southern zone of tamilnadu

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**Abstract :** Agriculture continues to be the most predominant sector of Tamilnadu, as sixty percent of the population is engaged in Agriculture and allied activities for their livelihood. Agriculture productivity has been an important issue as the population continues to grow. Agriculture productivity has been measured by several scholars using different methods. In this research paper an attempt is made to identify the spatial pattern of Southern Agro Climatic Zone using Agriculture Productivity Index. This Zone consists of Madurai, Ramanathapuram, Sivagangai, Thoothukudi, Tirunelveli, Virudhunagar districts. The data was collected from secondary source of Department of Economics and Statistics, Tamilnadu during the year 2002-03 to 2011-12. The main objective of this research paper is to identify agriculture productivity index in the southern zone of Tamilnadu. Many familiar techniques are available to calculate the agriculture index, but the researcher used Enyedi's method. This method achieved more accuracy. The productivity index values were calculated and discriminated the productivity regions and are labeled as Elevated Productivity Region (EPR), Standard Productivity Region (SPR) and Short Productivity Region (STPR).

**Keywords:** Agriculture Productivity Index, Enyedi's method, Southern Zone, Geographical Information System and Major Crops in Tamilnadu.

### 1.0 Introduction

Agriculture forms the backbone of the Indian economy and despite concerted industrialization in the last few decades; agriculture occupies a place of pride. Being the largest industry in the country, agriculture provides employment to around 60% the total workforce in the country. (Y.D. Pujari, 2011) Agriculture was the predominant sector of Indian economy at the time of Independence from colonial rule in 1947. The share of agriculture in total gross domestic product at that time was above 55 per cent, and about 70 per cent of workforce was engaged in agriculture sector. Indian agriculture has witnessed wide variations in growth performance during last few decades after independence. The variability is particularly pronounced due to the subsistence nature of farming in India and the sector's heavy dependence on monsoon and other climatic parameters (Ramesh Chand and Shinoj Parappurathu, 2011). Agriculture is still a vital sector and plays an important role in the overall socio-economic development of the nation.

Tamil Nadu has all along been one of the States with a Creditable Performance in Agricultural Production. Agriculture keeps on to be the most prime sector of the State economy, as 70 percent of the population is engaged in Agriculture and allied activities for their livelihood. The State has an area of 1.3 Lakh sq.km with a gross cropped area of around 63 lakh hectare. (www.agritech.tnau.ac.in).

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## Agriculture productivity trends in tamilnadu based on Major crops

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### Abstract

This research paper attempts to enhance the agricultural productivity trends of major crop yields in Tamilnadu. The state is one of the most urbanized and industrialized states in India. About 60 percent of the total population is directly engaged in agriculture and depends on this sector for their livelihood. Hence growth in agriculture is important not only to ensure food security but also for high living standards of the population. The secondary sources of database were collected from the Department of Economics and Statistics, for a period of ten years from 2002-03 to 2011-12. The data has been analyzed using statistical techniques. The findings reveal that there is some significant difference among the crop yield. The compound growth rate of yield for the selected crops in Tamilnadu state were estimated for the study period using growth model.

**Keywords:** Agriculture Productivity, Compound Growth Rate, Growth Model, ANOVA, Major Crops and Descriptive Statistics.

### 3. Introduction

India is an agricultural country and our economy is based on agriculture. About 70% of our population depends on agriculture. One-third of our National income comes from agriculture. The development of agriculture has much to do with the economic welfare of our country. The agriculture sector continues to be the backbone of Indian economy contributing approximately 27.4% to the gross domestic product (GDP), and accounts for about 18% share, of total value of country's export. The agricultural production has kept pace with the popular growth rate of 21 % per annum. Today, India is the second largest producer of wheat, rice, fruits, vegetables, and fresh water aquaculture; and largest exporter of spices and cashew.

Agriculture is the most predominant sector of the economy of Tamil Nadu, a state in India. 60 - 65% of the state's population is engaged in agriculture and other activities for their livelihood. The State has an area of 1.3 lakh square Km with a gross cropped area of around 48.92 lakh hectares ([www.agritech.tnau.ac.in](http://www.agritech.tnau.ac.in)). In this Gross Irrigated Area are 33.09 lakh hectares which is 57% and the balance 43% of the area are under rain fed cultivation. The major cultivation of crops in Tamil Nadu is Food Crops (Paddy, Maize, Cumbu, Cholan, Tapioca, Bengal gram, Horse gram, Red gram, Green gram, and Black gram), Cash crops (Groundnut, Gingili and Sugarcane) and Plantation Crops (Coconut). Tamil Nadu government has taken major efforts in order to increase the production of the crops and granted agricultural loans to the farmer's through banks and also supplying fertilizers, pesticides and different varieties of seasonal seeds and applying pricing policy for several main crops.

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# Analysis of Fourier's Law and its Application to the Heat Equation

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### Abstract:

In this dissertation we have discussed about the positive solution, plays a fundamental role, since most of the positive solution of blow up in a finite time and global solution of grow up to infinity. Then relation between the Fourier's Law and heat equation. And also discussed about the real life application of heat equation, especially how to use heat transfer in swiping machine.

### Introduction:

In the four decades differential equation has established itself as a worthwhile mathematical discipline and there are many applications of differential equation. It can be found in many areas in our daily life, such as in engineering, in medicine, in economics and in physics. It is also used in human judgement, evaluation, reasoning and decision making.

Fourier's Joseph born on 21 march 1768 in France. He was mathematician, physicist and historian. And best known for initiating the investigation of Fourier series and their applications to problems of heat transfer and vibrations. The Fourier transform and Fourier's law are also named in his honour. Fourier is also generally credited with discovery of the greenhouse effect.

Heat equation is using mostly in mechanical department oriented for example energy.

In this dissertation entitled, 'Analysis of Fourier's law and its application to the heat equations' here discussed about the what is relation between the Fourier's law and heat equation, and give some real life applications.

## 2. ON THE GROWING UP PROBLEM FOR SEMILINEAR HEAT EQUATIONS

### 2.1: Definition

Fourier's law states that rate heat transfer through material is directly proportional to temperature gradient and area. Area is right angles to the direction of flow.

$$Q(x, t) = -k_0(x) \frac{\partial u}{\partial x}$$

Where

$k_0(x) > 0$  is the thermal conductivity of the material.

### 2.2. Definition

Fourier's law can be expressed as  
 $Q = -kA \nabla T$

Where

A is the cross-sectional area that the heat is flowing through the solid.

$\nabla T$  - the proportionality constant is the temperature gradient in the solid.

K - thermal conductivity.

### 2.3 Definition

The rate of conductive heat transfer is described by Fourier's law as:

$$q = K/L * A * \Delta T$$

Where

q = the amount of heat transferred

K = thermal conductivity of the material

L = thickness of the material that the heat is flowing through

A = the square area that is perpendicular to the direction of the heat flow

$\Delta T$  = temperature difference between the two ends of the material that the heat is flowing through.

### 2.4 Definition

For a function  $u(x,y,z,t)$  of three spatial variables  $(x,y,z)$  and the time variable  $t$  the heat equation is

$$\frac{\partial u}{\partial t} - \alpha \left( \frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} + \frac{\partial^2 u}{\partial z^2} \right) = 0$$
$$\Rightarrow \frac{\partial u}{\partial t} - \alpha \nabla^2 u = 0$$

Where

$\alpha$  is a positive constant

$\Delta$  or  $\nabla^2$  denotes the Laplace operator

$u(x,y,z,t)$  is the temperature and  $\alpha$  is the thermal diffusivity.

### 2.5 Definition

Quantities the heat equation is

$$c(x) \rho(x) \frac{\partial u}{\partial t} = -\frac{\partial \phi}{\partial x} + Q(x, t)$$

Where

$u(x,t)$  = temperature at any point  $x$  and any time  $t$

$c(x)$  = specific heat

$\rho(x)$  = mass density

$Q(x, t)$  = heat energy generated per unit

$\phi(x)$  = heat flux.

### 2.6 Theorem

Let  $\epsilon > 0$ . If any positive solution  $u(t, x)$  of

$$\frac{\partial u}{\partial t} = \Delta u + f(u) \quad t > 0, x \in R^n$$

Either blows up in a finite time or satisfies

$$\lim_{t \rightarrow \infty} \sup \|u(t, \cdot)\|_{\infty}$$

then the same holds for

$$\frac{\partial u}{\partial t} = \Delta u + \epsilon f(u) \quad \dots \dots \dots (2.5)$$

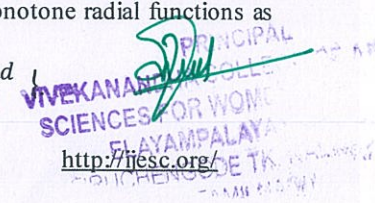
### Proof

Let  $\tilde{u}(x)$  be the initial value of a positive solution  $\tilde{u}(t, x)$  of (2.1) and set  $a_{\epsilon}(x) = \tilde{u}(\epsilon^{-1/2}x)$ .

we have  $\tilde{u}(t, x) = u(\epsilon t, \epsilon^{1/2}x; a_{\epsilon}, f)$  from which the assertion of lemma follows.

We introduce a class of monotone radial functions as follows:

$$\mathcal{A} = \{ a \in C(R^d) : a(x) \geq 0, \neq 0 \text{ and } a(x) \geq a(y) \text{ for } |x| \leq |y| \}$$





# Theorem on Fuzzy almost Contra - $\beta$ - Continuous Functions

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## Abstract:

The purpose of this paper, by introducing the Notion of  $(\theta, s)$ -continuous functions in order to investigate S-closed spaces. we are also discuss some forms of fuzzy functions related to S-closed spaces and to properties of such fuzzy functions were investigate.

**Keywords:** fuzzy connected, fuzzy topological spaces, fuzzy  $\beta$ -connected, fuzzy  $\beta$ -normal, strongly contra  $\beta$ -closed, fuzzy contra-continuity, fuzzy slightly precontinuous, fuzzy p-convergent

## 1. INTRODUCTION

Joseph and Kwack [6] introduced  $(\theta; s)$  continuous functions in order to investigate S-closed spaces due to. A function  $f$  is called  $(\theta; s)$  continuous if inverse image of each regular open set is closed. Moreover, Chang introduced fuzzy S-closed spaces in 1968. The purpose of this paper is to introduce forms of fuzzy almost contra-continuous functions and to investigate properties and relationships of fuzzy almost contra-continuous functions. Also, by using this paper, properties of fuzzy almost contra-continuous functions, fuzzy almost contra-precontinuous functions and fuzzy almost contra-semicontinuous functions can be obtained with similar way. The class of fuzzy sets on a universe  $X$  will be denoted by  $I^X$  and fuzzy sets on  $X$  will be denoted by Greek letters as  $\mu, \rho, \eta$ , etc. A family  $\tau$  of fuzzy sets in  $X$  is called a fuzzy topology for  $X$  if and only if (1)  $\emptyset, X \in \tau$ , (2)  $\mu \wedge \rho \in \tau$  whenever  $\mu, \rho \in \tau$ , (3) If  $\mu_i \in \tau$  for each  $i \in I$ , then  $\bigvee \mu_i \in \tau$ . Moreover, the pair  $(X, \tau)$  is called a fuzzy topological space. Every member of  $\tau$  is called a fuzzy open set.

The  $X$  and  $Y$  are fuzzy topological spaces. Let  $\mu$  be a fuzzy set in  $X$ , and the closure of a fuzzy set  $\mu$  by  $int(\mu)$  and  $cl(\mu)$ , respectively. A fuzzy set  $\mu$  in a space  $X$  is called fuzzy if  $\mu \leq int(cl(\mu))$ . The complement of a fuzzy preopen (resp. fuzzy semi-open) set is said to be fuzzy preclosed

A fuzzy set  $\mu$  in a space  $X$  is called fuzzy  $\beta$ -open or fuzzy semipreopen if  $\mu \leq int(cl(\mu))$ . The complement of a fuzzy  $\beta$ -open set is said to be fuzzy  $\beta$ -closed. Let  $\mu$  be a fuzzy set in a fuzzy topological space  $X$ . The fuzzy  $\beta$ -closure and  $\beta$ -interior of  $\mu$  are defined as  $\wedge \{ \eta : \mu \leq \rho, \rho \text{ is } \beta\text{-closed} \}$ ,  $\bigvee \{ \eta : \mu \leq \rho, \rho \text{ is } \beta\text{-open} \}$ , and denoted by  $\beta-cl(\mu)$  and  $\beta-int(\mu)$ , respectively.

A fuzzy set in  $X$  is called a fuzzy singleton if and only if it takes the value 0 for all  $y \in X$  except one,  $x \in X$ . If its value at  $x$  is  $\epsilon$  ( $0 < \epsilon \leq 1$ ) we denote this fuzzy singleton by  $x_\epsilon$ .

The some types of continuous fuzzy functions which generalize fuzzy precontinuity and the unification in [5] including fuzzy continuity, fuzzy weakly continuity [1], fuzzy  $\theta$ -continuity, fuzzy strongly  $\theta$ -continuity, fuzzy almost strongly  $\theta$ -continuity, fuzzy weakly  $\theta$  continuity, fuzzy almost continuity [1], fuzzy super continuity and fuzzy  $\theta$  continuity is introduced. characterizations and basic properties of fuzzy slightly precontinuous functions are obtained. Secondly, relationships between fuzzy slightly precontinuity and separation axioms are investigated.

The notion of fuzzy pre-co-closed graphs is introduced and the relationships between fuzzy slightly precontinuity and

fuzzy preclosed graphs are investigated. In the last section, relationships between fuzzy slightly precontinuity and compactness and between fuzzy slightly precontinuity and connectedness are investigated.

## on fuzzy continuity fuzzy almost continuity and fuzzy weakly continuity.

### 2.1 Definition

Let  $X$  and  $Y$  be fuzzy topological spaces. A fuzzy function  $f: X \rightarrow Y$  is said to be fuzzy almost contra  $\beta$ -continuous if inverse image of each fuzzy regular open set in  $Y$  is fuzzy  $\beta$ -closed in  $X$ .

### 2.2 Definition

A space  $X$  is called fuzzy  $\beta$ -connected. if  $X$  is not the union of two disjoint nonempty fuzzy  $\beta$ -open sets.

### 2.3 Definition

A space  $X$  is called fuzzy connected. if  $X$  is not the union of two disjoint nonempty fuzzy open sets.

### 2.4 Definition

A fuzzy space  $X$  is said to be fuzzy  $\beta$ -normal if every pair of nonempty disjoint fuzzy closed sets can be separated by disjoint fuzzy  $\beta$ -open sets.

### 2.5 Definition:

A fuzzy space  $X$  is said to be fuzzy strongly normal if for every pair of nonempty disjoint fuzzy closed sets  $\mu$  and  $\eta$  there exist disjoint fuzzy open sets  $\rho$  and  $\xi$  such that  $\mu \leq \rho, \eta \leq \xi$  and  $cl(\rho) \wedge cl(\xi) = \emptyset$

### 2.6 Theorem

If  $\lambda$  is a fuzzy set of  $X$  and  $\mu$  is a fuzzy set of  $Y$  then  $1 - \lambda \times \mu = \lambda' \times 1 \cup 1 \times \mu'$ .

### Proof

Given that,  $\lambda$  is a fuzzy set of  $X$  and  $\mu$  is a fuzzy set of  $Y$ .

### To prove:

$$\begin{aligned}
 1 - \lambda \times \mu &= \lambda' \times 1 \cup 1 \times \mu' \\
 (1 - \lambda \times \mu)(x, y) &= \max(1 - \lambda(x), 1 - \mu(y)) \\
 &= \max(\lambda' \times 1(x, y), 1 \times \mu'(x, y)) \\
 &= (\lambda' \times 1 \cup 1 \times \mu')(x, y),
 \end{aligned}$$

for each  $(x, y) \in X \times Y$ .

Hence the proof.



# Theorems on Intuitionistic Fuzzy Normed Spaces

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### Abstract:

In this paper we introduced Theorems on intuitionistic normed spaces, we established precompact set in intuitionistic fuzzy metric spaces and proved that any subset of an intuitionistic fuzzy metric space is compact if and only if it is precompact and complete.

**Keywords:** Fuzzy Topology, continuous  $t$  – norm, continuous  $t$  – conorm, intuitionistic fuzzy metric space.

## I. INTRODUCTION

The theory of fuzzy sets was introduced by L.Zadeh in 1965 [7]. After the pioneering work of Zadeh, there has been a great effort to obtain fuzzy analogues of classical theories. Among other fields, a progressive developments is made in the field of fuzzy topology. The concept of fuzzy topology may have very important applications in quantum particle physics particularly in connections with both string and  $q(\infty)$  theory which were given and studied by Elnaschie [3]. One of the most important problems in fuzzy topology is to obtain an appropriate concept of intuitionistic fuzzy metric space.

## II. PRELIMINARIES

### 2.1 Definition:

Let  $(X, M, *)$  be a fuzzy metric space. Then

(i) A sequence  $\{x_n\}$  in  $X$  converges to  $x$  if and only if for any  $0 < \epsilon < 1$  and  $t > 0$ , there exists  $n_0 \in N$  such that for all  $n \geq n_0$ ,

(i)  $M(x_n, x, t) > 1 - \epsilon;$

i.e.,  $M(x_n, x, t) \rightarrow 1$  as  $n \rightarrow \infty$  for all  $t > 0$ .

(ii) A sequence  $\{x_n\}$  in  $X$  is called a **Cauchy sequence** if and only if for any  $0 < \epsilon < 1$  and  $t > 0$ , there exists  $n_0 \in N$  such

for all  $n, m \geq n_0, M(x_n, x_m, t) > 1 - \epsilon;$

i.e.,  $M(x_n, x_m, t) \rightarrow 1$  as  $n, m \rightarrow \infty$  for all  $t > 0$ .

(iii) A fuzzy metric space  $(X, M, t)$  in which every Cauchy sequence is convergent is said to be **complete**.

### 2.2 Definition:

A binary operation  $*: [0, 1] \times [0, 1] \rightarrow [0, 1]$  is a **continuous  $t$  – norm** if it satisfies the following conditions

- (i)  $*$  is commutative and associative,
- (ii)  $*$  is continuous,
- (iii)  $a * 1 = a \quad \forall a \in [0, 1]$
- (iv)  $a * b \leq c * d$  whenever  $a \leq c$  and  $b \leq d$  for each  $a, b, c, d \in [0, 1]$ .

### 2.3 Definition

A binary operation  $\diamond: [0, 1] \times [0, 1] \rightarrow [0, 1]$  is a **continuous  $t$  – conorm** if it satisfies the following conditions

- (i)  $\diamond$  is commutative and associative,
- (ii)  $\diamond$  is continuous,

- (iii)  $a * 1 = a \quad \forall a \in [0, 1]$
- (iv)  $a \diamond b \leq c \diamond d$  whenever  $a \leq c$  and  $b \leq d$  for each  $a, b, c, d \in [0, 1]$ .

### 2.4 Definition

The five – tuple  $(X, M, N, *, \diamond)$  is said to be an **intuitionistic fuzzy metric space** (for short, IFMS) if  $X$  is an arbitrary (non-empty) set,  $*$  is a continuous  $t$  – norm,  $\diamond$  is a continuous  $t$  – conorm, and  $M, N$  fuzzy set on  $X \times X \times (0, \infty)$  satisfying the following conditions. For every  $x, y, z \in X$  and  $t, s > 0$ .

- (i)  $M(x, y, t) + N(x, y, t) \leq 1,$
- (ii)  $M(x, y, t) > 0,$
- (iii)  $M(x, y, t) = 1$  iff  $x = y,$
- (iv)  $M(x, y, t) = M(y, x, t).$
- (v)  $M(x, y, t) * M(y, z, s) \leq M(x, z, t + s).$
- (vi)  $M(x, y, \cdot) : (0, \infty) \rightarrow [0, 1]$  is continuous,
- (vii)  $N(x, y, t) < 1.$
- (viii)  $N(x, y, t) = 0$  iff  $x = y,$
- (ix)  $N(x, y, t) = N(y, x, t).$
- (x)  $N(x, y, t) \diamond N(y, z, s) \geq N(x, z, t + s),$
- (xi)  $N(x, y, \cdot) : (0, \infty) \rightarrow [0, 1]$  is continuous,

Then,  $(M, N)$  is called an intuitionistic fuzzy metric on  $X$ .

### 2.4 Theorem:

Let  $(X, M, N, *, \diamond)$  be a intuitionistic fuzzy metric space and  $A \subset X$ .  $A$  is precompact set iff for every  $0 < r < 1$  and  $t > 0$ , there exists a finite subset  $S$  of  $X$  such that

$$A \subseteq \bigcup_{x \in S} B(x, r, t) \tag{1}$$

### Proof:

Given that,  $(X, M, N, *, \diamond)$  be a intuitionistic fuzzy metric space and  $A \subset X$ , and  $A$  is precompact set iff for every  $0 < r < 1$  and  $t > 0$ , there exists a finite subset  $S$  of  $X$ .

To prove:

$$A \subseteq \bigcup_{x \in S} B(x, r, t)$$

Let  $0 < r < 1$  and  $t > 0$ . and

condition (1) holds.

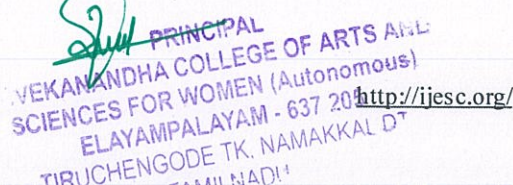
By continuity of  $*, \diamond$  there exists  $s \in (0, 1)$ .

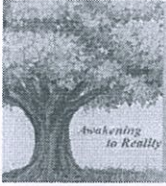
such that,

$$(1 - s) * (1 - s) > 1 - r \quad \text{and}$$

$$s \diamond s < r.$$

Now we applying condition (1) for  $S$  and  $\frac{t}{2}$ , there exist a subset





## Experimental and Numerical Realization of Hyperchaos in a Four-Dimensional Autonomous Van Der Pol–Duffing Oscillator

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### ABSTRACT

In this paper, we present the hyperchaotic dynamics of a four-dimensional autonomous Van der Pol–Duffing oscillator circuit. This circuit, which is capable of realizing the behavior of every member of Van der Pol–Duffing family, consists of just four linear elements (inductors and capacitors), a negative conductor and a cubic non-linear element. The route followed is a transition from regular behavior to Chaos and then to hyperchaos through period three-doubling bifurcation, as the system parameter is varied. The hyperchaotic dynamics, characterized by more than one positive Lyapunov exponents, is described by a set of four coupled first-order ordinary differential equations. This has been investigated extensively using laboratory experiments and numerical analysis.

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### 1. Introduction

Chua's circuit is one of the best known and studied physical systems displaying chaotic behavior [1]. Its importance resides in allowing the investigation of a wide variety of non-linear phenomena using a simple experimental set-up. One of its main features is that the circuit non-linearity is continuous and piecewise-linear, with the breakpoints precisely established. This quality not only makes easier the theoretical analysis of the circuit properties but also makes more feasible the reproducibility of the experiments Chua's circuit has also technological importance, being an obvious choice in applications where electronic chaos generation is needed. One such application is secure communication systems. In this case it would be interesting if Chua's circuit could generate not only simple chaos (which is characterized by a single positive Lyapunov exponent) but also hyperchaos (characterized by at least two positive Lyapunov exponents). In fact, hyperchaos makes message masking more effective by giving rise to more complex time series [2-3].

At this point it is worth nothing that to produce hyperchaos has been the object of increasing interest. Its investigation is related to that of turbulence [4-5]. Theoretically discovered by Rossler, the first experimental detection of hyperchaos was achieved by Matsumoto et al., using an electrical circuit [6]. Since then, other similar experiments have been performed involving, e.g. electrical circuits, chemical reactions, semiconductors and lasers [7-10].

In this work we introduce a four-dimensional autonomous Van der Pol–Duffing oscillator circuit in order to make it hyperchaotic. By just including a one inductor is parallel to this canonical model and designing a simple cubic non-linear element, we are able to realize a very simple fourth-order non-linear dynamical system.

Without the parallel combination of one inductor, this circuit exhibits the familiar period-doubling route to chaos of the canonical model, as the control parameter (linear resistor (or) linear capacitor) as varied. However, an important noticeable feature is that when the parallel combination of one inductor ( $L_2$ ) is included, the circuit exhibits period doubling route to chaos, periodic window and then hyperchaos through period three-doubling bifurcation, followed by boundary crisis.

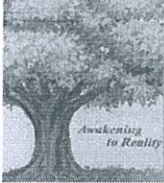
The organization of the paper is as follows. In sec.2, we present details of the experimental realization of the four-dimensional autonomous Van der Pol–Duffing oscillator circuit and the occurrence of bifurcations leading to chaos and hyperchaos, while in sec.3, the numerical simulation results of the circuit model is presented. In sec.4, we briefly summarize the results and suggest further improvements.

### 2. Experimental realization of the four-dimensional autonomous Van der Pol–Duffing oscillator

The original canonical Chua's circuit is one of the most simple third-order autonomous electronic generators of chaotic signals. It was synthesized using four linear element (two capacitors,  $C_1$ ,  $C_2$ , one inductor,  $L_1$ , and resistor  $R$ ) and two active elements (one linear negative conductor  $-G_1$ , and one cubic non-linear element namely parallel combination of two diodes) which can be built using off-the-shelf op-amps. The chaotic behavior of the circuit was studied numerically, conformed mathematically and realized experimentally [11-12].

Varying the inductance  $L_1$ , while keeping the other circuit parameters at constant values, one finds that the circuit admits period-doubling bifurcations, intermittency and chaos [12], for a small range of inductance  $L_1$ , it also exhibits crisis induced intermittency [13].

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## Hyperchaotic Behaviour of a Fourth-Order Autonomous Electric Circuit with a Diode Pair

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Fourth-order autonomous electric circuit, smooth cubic nonlinearity, chaos, hyperchaos.

### ABSTRACT

In this paper, in order to show some interesting phenomena of fourth-order hyperchaotic autonomous electric circuit with a smooth cubic nonlinearity, different kinds of attractors, time waveforms and corresponding power spectra of systems are presented, respectively. The perturbation transforms an unpredictable hyperchaotic behavior into a predictable hyperchaotic or periodic motion via stabilization of unstable, aperiodic, or periodic orbits of the strange hyperchaotic attractor. One advantage of the method is its robustness against noise. A theoretical analysis of the circuit equations is presented, along with experimental simulation and numerical results.

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### 1. Introduction

In original Chua's circuit, a nonlinear resistor is called Chua's diode is the unique nonlinear electric element. It plays an important role in the circuit. Due to the existence of this nonlinear element Chua's circuit exhibits a variety of nonlinear phenomena, such as chaos, bifurcation and so on [1-5]. The characteristic of Chua's diode is described by a continuous piecewise - linear function with three segments and two no differential break points [6-9]. However, the characteristics of nonlinear devices in practical circuits are always smooth and the implementation of piecewise-linear function requires a large amount of circuitry compared with smooth cubic function. Therefore, it is significant to investigate Chua's circuit with a smooth cubic nonlinearity from practical view point [17]. Hartley (1989) proposed to replace the piecewise-linear nonlinearity in Chua's circuit with a smooth cubic nonlinearity.

In the present report the behavior of a hyperchaotic fourth-order autonomous electric circuit has been studied. This circuit consists of two active elements, one linear negative conductance and one smooth cubic nonlinearity exhibiting a symmetrical piecewise-linear  $v$ - $i$  characteristic. Two inductances ( $L_1$ ,  $L_2$ ), two capacitances ( $C_1$ ,  $C_2$ ) and the capacitance  $C_2$  serve as the control parameter.

Hyperchaos is defined as a chaotic attractor with more than one positive Lyapunov exponents, i.e., its dynamics expand in more than one direction [5]. In other words, the dynamics expand not only small line segments, but also small area elements, there giving rise to a 'thick' chaotic attractor. Most hyperchaotic and bifurcation effects cited in the literature have been observed in electric circuits. They include the period-doubling route to chaos, the intermittency route to chaos, and the quasiperiodicity route to chaos and of course the crisis [7-12]. This popularity is attributed to the advantages which electric circuits offer to experimental hyperchaos

studies, such complicated hyperchaotic wave forms are expected to be utilized for realization of several hyperchaotic applications such a chaos communication system with robustness against various interferences including multi-user access [9-17]. The plan of the paper is as follows. In section 2, we present the details of realization of the proposed autonomous circuit. The results of the observations from the laboratory experimental simulation and the conformation through analytical calculation and numerical simulation on the dynamics of the circuit are presented in section 3. Finally, in section 4, we summarize and conclude the results and indicate further direction.

### 2. Circuit description and Simulation results

The fourth-order hyperchaotic autonomous electric circuit we have studied is presented in Fig. 1. It consists of two active elements, one linear negative conductance ( $G_1$ ) and smooth cubic nonlinearity with an odd symmetric piecewise-linear  $v$ - $i$  characteristic [17]. This fourth-order circuit is based on a third-order autonomous piecewise-linear circuit introduced by Chua and Lin, capable to realize every member of the Chua's circuit family [9]. Applying Kirchoff's laws, the set of four first-order coupled autonomous differential equations as given below:

$$C_1 \frac{dV_1}{dt} = -i_N - i_{L_1} \quad (1)$$

$$C_2 \frac{dV_2}{dt} = i_N - i_{L_2}$$

$$L_1 \frac{di_{L_1}}{dt} = \frac{i_{L_1}}{G_1} - V_1$$

$$L_2 \frac{di_{L_2}}{dt} = V_2$$

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# Synthesis, Characterization and DPPH Scavenging Assay of Isatin Related Spiroheterocyclic Compounds

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Nagoor and Hussain: DPPH Scavenging Assay of Isatin-based Spiro Compounds

Isatin is synthetically a versatile substrate that can be used for the synthesis of large variety of heterocyclic compounds. 5-substituted isatins were treated with 2-amino-5-chlorobenzophenone to form Schiff's bases. Spirothiozolidin-4-ones and 5'-methyl-spiro-4-thiazolidiones were synthesized Schiff's bases of isatins by treating with thioglycolic acid and thiolactic acid, respectively in the presence of 1,4-dioxane and anhydrous zinc chloride. The structures of the synthesized compounds were characterized by elemental and spectral analysis. These compounds were screened for their antioxidant activity by 2,2-diphenyl-1-picrylhydrazyl method. Compound A02 found to possess potent antioxidant activity compared to the standards ascorbic acid and butylated hydroxytoluene.

**Key words:** 5-substituted isatins, 2-amino-5-chlorobenzophenone, antioxidant activity

Heterocyclic chemistry is of great importance to the medicinal chemists because of their utility in medicine. Large numbers of heterocyclic compounds are being used as therapeutic agents. Isatin (1-H-indole-2,3-dione) and its derivatives possess diverse biological and pharmacological activities and are widely used as a starting material for the synthesis of a broad range of heterocyclic compound substrates for drug synthesis<sup>[1]</sup>. Isatin is a heterocyclic compound and derivatives of isatin possess biological activities such as antimicrobial<sup>[2]</sup>, antibacterial, antifungal<sup>[3]</sup>, antiviral<sup>[4]</sup>, antiHIV<sup>[5]</sup>, anticancer<sup>[6,7]</sup>, antiproliferative<sup>[8]</sup>, antioxidant activity<sup>[9]</sup>. Spirocyclic systems containing one common carbon atom to two rings are structurally interesting<sup>[10]</sup> and naturally occurring substances being known for their wide range of biological activities<sup>[11,12]</sup>. 4-thiazolidinone also possesses various important biological activities such as anticancer, antiviral, anticonvulsant, cardiovascular, antiinflammatory, analgesic activity, antidiabetic, antimicrobial, antihyperlipidemic, antituberculosis, antiparasitic, antiarthritic, anti diarrhoeal and antioxidant activities<sup>[13]</sup>. Free radicals can oxidize biomolecules *viz.* nucleic acids, proteins, lipids, DNA, lead to tissue damage and can initiate degenerative diseases. Oxidative damage plays a significantly pathological role in human diseases such as cancer, emphysema, cirrhosis,

atherosclerosis and arthritis<sup>[14,15]</sup>. Almost all organisms are protected to some extent against free radicals such as peroxide, hydroperoxide and lipid peroxyl damage by enzymes such as superoxide dismutase and catalase or compounds such as ascorbic acid (AA), tocopherols, phenolic acids, polyphenols, flavonoids and glutathione<sup>[16]</sup>. However, antioxidant supplements or dietary antioxidants may be sources of protection that the body needs to protect against the damaging effects of free radicals<sup>[17]</sup>. Presently synthetic antioxidants are widely used because they are effective and cheaper than natural antioxidants. By observing the importance of the above said problem, the isatin-based Schiff base and spiro isatin derivatives of spirothiozolidin-4-ones and 5'-methyl-spiro-4-thiazolidiones from 5-substituted isatin and 2-benzoyl-4-chloroaniline were synthesized following the steps given in figs. 1 and 2. The purity of the compounds was monitored by thin layer chromatography (TLC) and the structures of the products were confirmed by elemental and spectral analysis. All the newly synthesized compounds were

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# A benign alternative process for efficient separation of pure commercially important flavonoid nutraceuticals from edible plants

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**Abstract** The present study signifies the development of a unique, optimized procedure for both selective determination and separation of different flavonoid nutraceuticals from edible plants. Totally ten different flavonoids were determined (HPLC–DAD) and isolated from five different plants using the developed process with a remarkable purity of 91–98% and recovery of 88–95%. Box–Behnken experimental design model yielded an optimized amount of 40.36 mg/g of AI extract (Pinostrobin) and 28.95 mg/g of AI extract (Baicalein) with a high correlation coefficient (0.98–0.99), indicating a good fit between the second order regression model and the experimental observations. The final purity of compounds through optimized process is 97.1% (Pinostrobin) and 93.5% (Baicalein) respectively. The optimized yields depicted a total recovery of 92% for pinostrobin, and 89% for Baicalein respectively. Thus, the developed process worked as a potential alternative which when statistically optimized results in a remarkable recovery of flavonoids from various plants. Being an environmentally friendly protocol the process could be useful in industrial separation of commercially important flavonoids widely applied in food industry.

**Keywords** Nutraceuticals · Flavonoids · pH gradient · Box–Behnken · Phyto-molecule separation · Alternative process

## Introduction

Today's world is witnessing rapid discoveries in the domain of novel plant molecules and their applications. These molecules are launched into the pharmaceutical arcade either as therapeutics or as functional foods. Functional foods comprising food supplements, nutraceuticals etc. are becoming progressively popular under the new consumer perspective 'Natural is good'. Since, natural products possess high specificity to interact with biological targets, they have been relentlessly researched upon to act as or as part of food to exploit their wide advantage with regards to sensory delight (colour and taste), nutrition, therapeutic efficiency without compromising safety. A significant portion of these plant based nutraceuticals is comprised by flavonoids—a class of colourful bioactive plant molecules. One of such bioactive molecules is Baicalein—a flavonoid usually rich in *Scutellaria baicalensis*, which is commercially projected supplement for liver health with commercial products like 'Deep liver support' and 'liver health' from Gaia<sup>®</sup> herbs being marketed. Also, its potency as health supplement to treat Alzheimer's disease is also being developed (Choi et al. 2013). Similarly, Pinostrobin is a bioactive flavonoid which is being marketed as health foods and as nutraceuticals. Health food products like Organika<sup>®</sup> Bee Propolis liquid, Himalaya<sup>®</sup> Soliga Forest Honey, Amazon Herbs<sup>®</sup> etc. contain significant amount of this flavonoid (Sayre and Davies 2013). Nevertheless, most of the flavonoids discovered and isolated from plants till date are being commercialized for their

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## Synthesis, characterization and antimicrobial activity of spiro-4-thiazolidione derivatives from 5-substituted indole-2,3-dione

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### ABSTRACT

In the present study, a series of 5-fluoro and 5-Iodo indole-2,3-dione based spiro-4-thiazolidiones was synthesized, characterization and evaluated for their antimicrobial activity. Condensation of 5-fluoro and 5-Iodo indole-2,3-dione with substituted primary aryl amine to give a Schiff bases (A05, A06) which on reaction with thioglycolic acid and thiolactic acid in 1,4-dioxane afforded the formation of the corresponding 4-thiazolidinones (D05, D06, E05 and E06). All the synthesized compounds were characterized on the basis of their IR, <sup>1</sup>H and <sup>13</sup>C NMR and elemental analysis. The antimicrobial activity of all the compounds (A05, A06, D05, D06, E05 and E06) showed significant activity against all the bacteria and fungus.

**Key words:** 5-fluoro & 5-Iodo indole-2,3-dione, spiro-4-thiazolidiones, antimicrobial.

### INTRODUCTION

1-H-indole-2,3-dione, (Isatin) and derivatives possess a broad range of biological and pharmacological properties and are widely used as starting materials for the synthesis of a broad range of heterocyclic compounds and substrates for drug synthesis [1]. It was first prepared by Erdmann and Laurent through the oxidation of indigo by nitric acid and chromic acids [2,3]. Some of its derivatives specifically Haloisatin and Nitroisatins show a wide range of biological and pharmacological activity, such as antimicrobial [4-9], anticonvulsant [10,11], analgesic [12,13], anticancer [14,15], anti-tubercular [16], antiviral [17-19], anti-HIV [20] activities. The literatures survey revealed that introduction of electron withdrawing groups at positions 5, 6 and 7 greatly increased activities from that of isatin, with substitution at the 5th position being most favorable. 4-thiazolidinones have been shown to have various important biological activities such as antibacterial, antifungal, antiviral, diuretic, antituberculostatic, anti-HIV, antihistaminic, anticancer, anticonvulsant, antiinflammatory and analgesic properties [21-23]. Spirocyclic systems containing one carbon atom common to two rings are structurally interesting [24]. Spiro compounds represent an important class of naturally occurring substances and their characteristic is the highly biological properties [25,26]. Spiro heterocyclic compounds including thiazolidine moiety have antimicrobial activity<sup>27</sup>. Spiro-indole heterocyclic, in which the indole ring is linked to the other heterocyclic system through the spirocarbon atom at C-3, shows an increased spectrum of biological activities. In view of these data have been undertaken the synthesis, characterization and antimicrobial evaluation of 5-fluoro and 5-Iodo indole-2,3-dione based spiro-4-thiazolidiones. All the synthesized compounds were characterized on the basis of their physical properties



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## Synthesis, Characterization and Antimicrobial activity of Substituted Pyrazole based Heterocyclic compounds

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### ABSTRACT

In the present study, a series of substituted pyrazole were synthesized from chalcones. The substituted pyrazole prepared from chalcones with substituted phenylhydrazine in acetic acid. The synthesized compounds were characterized by IR, <sup>1</sup>H and <sup>13</sup>C NMR and elemental analysis studies. The antimicrobial activity of all the compounds (CP01-CP04) showed significant activity against the selected bacteria and fungus used.

**Key words:** Chalcones, Furfural, Substituted Phenylhydrazine, Antimicrobial activity.

### INTRODUCTION

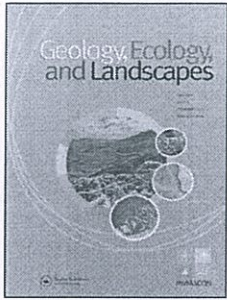
Heterocyclic compounds are important to human life because their structural subunits exist in many natural products such as vitamins, hormones, antibiotics and pigments [1,2]. Pyrazoles are five member ring heterocyclic compounds having some structural features with two nitrogen atoms in adjacent position [3]. The best described property of almost all pyrazoles is in the treatment of inflammation and inflammation associated disorder, such as arthritis [4]. Pyrazole derivatives are the subject of many research studies due to their widespread potential biological activities such as antimicrobial [5, 6], antiviral [7], antioxidant [8], antitumor [9,10], antihistaminic [11], antidepressant [12] and fungicides [13]. Several pyrazole derivatives have been found to possess significant activities such as ACE-inhibitor [14], antiproliferative [15], anti-inflammatory [16] and antiprotozoal [17, 18] which render them valuable active ingredients of medicine and plant protecting agents. Further current literature indicates 1,2 -pyrazole derivatives to possess diverse biological activities [19]. These compounds are useful in the field of medicine and are used as a starting material for the synthesis of new drugs [20-29].

In view of these data we have undertaken the synthesis, characterization and antimicrobial evaluation of substituted pyrazoles. All the synthesized compounds were characterized on the basis of IR, <sup>1</sup>H & <sup>13</sup>C NMR spectral data and elemental analysis. The physical data of titled compounds are summarized and presented in the result and discussion part.

### MATERIALS AND METHODS

The melting points were carried out in the open capillary tube and were uncorrected. Thin layer chromatography was performed using silica gel coated on a glass plate and spots were visualized by exposure to iodine vapour. IR spectra of compounds were scanned on Shimadzu IR spectrophotometer using KBr disc and expressed in cm<sup>-1</sup>. <sup>1</sup>H

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# Water quality concern in the Amaravathi River Basin of Karur district: a view at heavy metal concentration and their interrelationships using geostatistical and multivariate analysis

A. Jafar Ahamed & K. Loganathan

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## AMYLASE ACTIVITY OF *BACILLUS AMYLOLIQUEFACIENS* AND *ASPERGILLUS NIGER* FROM AGRO INDUSTRIAL WASTES BY SOLID STATE FERMENTATION

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### ABSTRACT

The solid state fermentation (SSF) has been reputable as a superior technique for the enzyme production. The present study targeted on the amylase production from *Bacillus amyloliquefaciens* and *Aspergillus niger* by using different agro industrial waste like sago waste, rice bran and wheat bran as substrate with the use of SSF techniques and tested for its activity. The effect of different parameters such as time, pH and temperature were also tested. *B. amyloliquefaciens* and *A. niger* was identified as the best producers of amylase at pH 7 and maximum production was in rice bran and wheat bran. Substrates tested for amylase production could be effectively exploited in the future production of various commercial products.

**Keywords:** Solid state fermentation, Amylase, Wheat bran, Sago waste, Rice bran.

### INTRODUCTION

A large number of manufacturing processes in the industrial, food technological and environmental areas take advantage of enzymes in mammoth quantities for production of product from the microorganisms. Microbes is produced a variety of enzymes which act as biocatalyst for various biochemical reactions and also formation of fermentation products. Enzymes are biocatalysts protein in nature and react in the living cell without any overall change (Jain and Sanjay Jain, 2006). Enzymatic degradation of starch yields glucose, maltose and other low molecular weight sugars and these products serve as important substances for food and pharmaceuticals industries (Khire and Pant, 1992). Nowadays using microorganism as industrially relevant enzymes has stimulated interest in exploration of extra cellular enzymatic activities (Bilinski and Stewart, 1995).

Amylases are a group of enzymes and it has been found in microorganisms like bacteria (Murakami *et al.*, 2008; Mukherjee *et al.*, 2009) and fungi (Kathiresan and Manivannan, 2006; Gouda and Elbahloul, 2008). It is a

starch degrading enzyme and commercially produced for industrial processes such as starch-glucose industry, textile industry and brewing industry (Goyal *et al.*, 2005). Sources of amylases in yeast, bacteria and molds have been reported and their properties have been described (Buzzini and Martini, 2002). On commercial basis, amylase of fungal origin is found to be more stable than the bacterial origin. However, many attempts have been made to optimize culture conditions and suitable strains of fungi (Abu *et al.*, 2005). Amylase enzymes are employed in starch processing industries for hydrolysis of polysaccharides such as starch into simple sugar constituents (Suganthi *et al.*, 2011). They are great deal of attention because of their perceived technological significance and economic benefit. Amylases are hydrolytic enzymes, which are extensive in nature, being found in animals, microorganisms and plants (Octavia *et al.*, 2000). Hence the present study is to attempt the amylase production from the *Bacillus amyloliquefaciens* and *Aspergillus niger* under solid state fermentation by using agro industrial wastes (sago waste, rice bran and wheat cake) collected from the Namakkal, Tamil Nadu, India.

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## Retrival Status of Paper and Pulp Mill Effluent Treated Fish Fed with *Arthospira (Spirulina Platensis)*

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**Abstract:** *Spirulina* is an aquatic algae in fresh water; it promotes the growth and biochemical compositions of the animals. Paper and pulp mill effluent affect the aquatic life of flora and fauna *Oreochromis mossambicus* test animals in between the length of 5-10 cm were selected for the study. Test animal exposed to lethal concentration of effluent to the fish in 96 hours and various sub lethal concentrations were prepared as follows 0.5%, 1.0%, 1.5%, 2.0% and 2.5% in 30 days of duration. In the duration, the test animal was tested in the morphometric parameters such as weight, total length, standard length, head length, snout length and length of caudal peduncle and biochemical parameters such as amino acids, protein, carbohydrate, glucose and lipids; in between the interval of 10 days up to 30 days. Next the 30 days, the fishes are reared in the same sub lethal concentration with standard food and *Spirulina* feed. During these experimental days, the same biochemical constitutions were tested. In the experimental days, in first 30 days the biochemical values are reduced, and in the recovery period the reduced values were regained.

**Keywords:** *Oreochromis mossambicus*, *Spirulina plantensis*, Paper and pulp mill effluent, Biochemical compositions, Sublethal concentrations.

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### 1. INTRODUCTION

*Oreochromis mossambicus* is one of the most successful largely cultured finfish species in the world, because of their fast growth rate and ability to feed low on the aquatic food chain. Moreover, tilapias are easy to reproduce and handling is having good resistance to disease and tolerance to wide range of environmental conditions. These are being found in over 100 countries (Balarin and Hatton, 1979). Fish meal, a major ingredient of fish feed, has to be imported, especially that with a protein content over 60%. The high protein content of *Spirulina* is one of the main reasons for it being considered as a conventional source of protein. In addition, the amino acid pattern of the algae compares favorably with that of other food protein, its cells being capable of synthesizing all amino acids, thus providing all the essential ones to humans and animals (Spolaore, P. *et al.*, 2006). *Spirulina* are multi cellular and filamentous blue-green algae that has gained considerable popularity in the health food industry and increasingly as a protein and vitamin supplement to aquaculture diets. It grows in water, can be harvested and processed easily and has very high macro and micro-nutrient contents (Habibet *al.*, 2008). The paper and pulp industries discharged their insufficiently treated waste into the water resources, which makes serious problem to aquatic life of flora and fauna. Thus, it is necessary to develop an economical solution on the effluent discharged. Heavy metal accumulation in the aquatic environment could result in toxicity to both aquatic life and human. Edible fish present in aquatic bodies form an important group of organism as heavy metal once accumulated in fish tissues could act as a potential carrier of metal ion along the food chain. At the end, directly or indirectly the metal ion in the aquatic medium reaches to the man. Hence several studies involving bioaccumulation of heavy metals have been conducted in fishes found in river streams generally receiving industrial effluents containing toxic heavy metals and organic pollutants (Linton, *et al.*, 2005).

### 2. MATERIALS AND METHODS

The common fresh water fish *Oreochromis mossambicus* (Mozambique Tilapia) was selected as animals. *Oreochromis mossambicus* fingerlings (5-10 cm) acquired from local pond, Namakkal

Research Article (Open access)

# A study on Hydrocarbon Degradation by Biosurfactant Producing *Bacillus cereus* in Oil Contaminated Soil Samples

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**ABSTRACT-** Microorganisms are the important factors in the degradation of the toxic substances in our environment. Petrol and diesel oil is one of the complex mixtures which cannot be easily degraded. The *Bacillus cereus* was involved in the degradation of oil during which the complex toxic substances were detoxified by the production of biosurfactants. In our study we have identified that the biosurfactant producing *Bacillus cereus* have a high potential for hydrocarbon degradation. The *Bacillus cereus* was isolated from hydrocarbon contaminated soil and identified based on morphology and biochemical test according to the Bergey's manual of systematic bacteriology. The maximum hydrocarbon degrading biosurfactant producing *Bacillus cereus* was obtained by qualitative and quantitative methods. In optimization studies, the best results observed for *Bacillus cereus* were, Olive oil as the suitable carbon source, Sodium nitrate as the best Nitrogen source and Optimum pH is 7 and Optimum temperature is 37°C. The ability of these isolates to degrade hydrocarbons and survive in the oil contaminated soil is attributed to the development of resistance by mutation on the plasmid. It is also clearly evident that the specific gene was responsible for the production of biosurfactant and the degradation process. According to the results from the present study the *Bacillus cereus* has high potential for hydrocarbon degradation and can be used especially for Microbial Enhanced Oil Recovery and bioremediation of hydrocarbons in near future.

**Key-words-** *Bacillus cereus*, Biosurfactant, Hydrocarbon, Biodegradation, Plasmid DNA

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## INTRODUCTION

India is suffering with ever increasing consequential environmental threats. Rapid industrialization can only move hand in hand with the efficient and optimum feasibility of transport, which results in increased use of automobiles [1]. Diesel oil contains 2,000 to 4,000 hydrocarbons, a complex mixture of linear, branched and cyclic alkanes and aromatic compounds obtained from the middle distillate fraction during petroleum separation [2]. The availability of nutrients, especially nitrogen and phosphorus significantly control microbial activities [3], and these nutrients are necessary to enhance the biodegradation of oil pollutants [4].

Fuel and lubricating oil spills have become a major environmental hazard to date. The contamination of the environment with petroleum hydrocarbons provides serious problems for many countries [5].

Biodegradation is a biologically catalyzed reduction process of complex chemicals. This process is being performed by a variety of bacteria, fungi and yeast, transforms potentially toxic compounds into non-toxic compounds to obtain energy and nutrients [6]. These microorganisms are directly involved in biogeochemical cycling of many carbon sources, including petroleum hydrocarbons [7].

Biosurfactant are extracellular or membrane associated, heterogeneous group of low molecular weight surface active compounds produce by different microorganism such as bacteria, fungi and yeast. On the basis of chemical composition they are categorized into glycolipids, lipopeptides, phospholipids, neutral peptides, fatty acids [8-9]. They are mainly composed of hydrophilic and hydrophobic moiety. The Hydrophilic moiety consists of acids, peptides, mono, di, or polysaccharides while the hydrophobic moiety consists of saturated or unsaturated

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## PHYTOTHERAPEUTIC CONTROL OF FOODBORNE PATHOGENS BY *JASMINUM SAMBAC* L. FLOWERS

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### ABSTRACT

**Objective:** This study is aimed to determine the antibacterial effect of *Jasminum sambac* against foodborne pathogens.

**Methods:** Antibacterial activity of methanol and chloroform extract of *J. sambac* flowers against foodborne pathogens (*Bacillus cereus*, *Listeria monocytogenes*, *Shigella flexneri*, *Salmonella serovar enterica* Typhi, *Staphylococcus aureus* and *Escherichia coli*) were performed using disc diffusion method and their minimal inhibitory concentration (MIC) was also determined. The preliminary phytochemical screening and gas chromatography-mass spectroscopic (GC-MS) analysis of methanol and chloroform extract of *J. sambac* was analyzed using GC Clarus 500 Perkin Elmer System and gas chromatograph interfaced with a mass spectrometer.

**Results:** Phytochemical and GC-MS studies revealed the presence of bioactive compounds and found to possess antibacterial activity against foodborne pathogens.

**Conclusion:** The present study supports the possible use of these phytotherapeutic agents in the clinical management of foodborne diseases.

**Keywords:** GC-MS analysis, Foodborne pathogens, *Jasminum sambac* L., Antibacterial activity

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### INTRODUCTION

Foodborne illness is caused by food or drinking beverages contaminated with pathogenic microorganisms. Foodborne illness can cause symptoms that range from a stomach upset to more serious symptoms, including diarrhea, fever, vomiting, abdominal cramps, and dehydration. The most common foodborne illness causing bacteria are *Escherichia coli* and *Salmonella serovar enterica* Typhi, and other species of *Salmonella* also have been implicated in a significant number of cases. The continuing research has been focused on new and novel antimicrobials and anti-pathogenic agents. The plants surviving in an environment with high bacterial density have been identified to possess protective means against infections [1]. The rapid spread of multi-drug resistance and the development of new antimicrobial or anti pathogenic agents that act upon new microbial targets has become a very pressing priority [2].

*Jasminum sambac* belonging to the family *Oleac* are an important group of flowers, and they are widely cultivated for their attractive, fragrant flowers. Traditionally, different parts of the plant such as the leaf, stem, bark, and roots are very useful medicine in India for a number of skin diseases [3]. The extracts of their flowers also contain Seco iridoids, [4-6] triterpenoid saponins and some other glycosides [7]. They have antilucer and antioxidant properties [8] and contain enzyme inhibitors to convert angiotensin [9]. Their antimicrobial assay revealed that the extracts showed comparatively better activity and can be used as antibiotics [10]. Plants provide abundant resources of antimicrobial compounds and have been used for centuries to inhibit microbial growth. The present study focuses on antimicrobial compounds from *J. sambac* and its antibacterial efficacy on foodborne illness causing bacterial strains.

### MATERIALS AND METHODS

#### Collection of plant materials

The fresh flowers of *J. sambac* were collected from Hosur, Krishnagiri District, Tamil Nadu, India. The collected plant was

identified and authenticated by Dr. G. Prabakaran, Assistant Professor, Research Department of Botany, Government Arts College, Dharmapuri, Tamil Nadu, India. Fresh flowers were washed, shade-dried and then powdered using the blender and stored in airtight bottles.

#### Preparation of flower extracts

The flowers powder was loaded into the clean, dry Soxhlet apparatus tightly using the soft metal rod. Then the apparatus was run to get flower extract with methanol and chloroform. The time was noted to get clear solvent in the side tube. Then, the methanol and chloroform extracts of this plant were evaporated using a rotary vacuum evaporator to remove the solvents. The appearance and amount of the extract of this plant were observed and measured using electronic balance. A loop full of this plant extract was streaked on sterile nutrient agar plates to check the sterility of the extract.

#### Preliminary phytochemical screening

The extracts were tested for the presence of active phytochemicals constituent viz. alkaloids, proteins, amino acids, anthraquinone, glycosides, flavonoids, tannin and phenolic compounds, carbohydrates, saponins and steroids [11].

#### Phytochemicals analysis by gas chromatography-mass spectrometry (GC-MS)

GC-MS analysis of methanol and chloroform extracts of *J. sambac* was performed using GC Clarus 500 Perkin Elmer system and gas chromatograph interfaced with a mass spectrometer equipped with Elite-5 MS (5% diphenyl/95% Dimethylpolysiloxane), 30 x 0.25 mm x 0.25 µm df. For GC/MS detection, an electron ionization system with ionization energy of 70 eV was used. Helium gas (99.99%) was used as the carrier gas at a constant flow rate of 1 ml/min and an injection volume of 2 µl was employed (Spilt ratio 10:1). The injector temperature was programmed at 250 °C; the ion source temperature was maintained at 200 °C. The oven temperature was

## Identification of Toxic Shock Syndrome Toxin-1 (TSST-1) gene in *Staphylococcus aureus* isolated from potable water, Namakkal

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### Abstract

Concern over exposure to drinking water contaminants and the resultant adverse effect on human health has prompted several studies evaluating the quality of potable water sources. The present study is aimed at assessing the quality of potable water sources in and around Namakkal area and identified the TSST-1 gene producing *Staphylococcus aureus*. A totally 33 water samples comprising of 6 River water, 7 Pond water, 10 Municipality water and 10 Well water samples were collected aseptically. The physiochemical and the microbiological studies are most important regions by which we were able to test the potability of water. The collected samples were processed for bacterial isolation using the Mannitol Salt Agar (MSA agar) (Hi-media, Mumbai). The suspected pure colonies of isolates were identified and characterized using standard biochemical tests. In AST test, totally 18 isolates were subjected in that most of the *S.aureus* showed sensitive to Kanamycin, Co-trimazaxole and Amphicillin. In MAR index, MSa 14, WSa15 showed 83.3% of resistance to all drugs and 66.6% to RSa1, WSa18. Based on the virulence characters 18(100%) isolates of *S.aureus* produced serum resistance, 8(44.44%) for coagulase positive and 6(33.33%) for haemolysis. In PCR assay, only two water sources such as River (RSa3) and Pond (PSa9) isolates of *S.aureus* expressed the virulence gene of TSST-1. From this study it was concluded that the water is commonly contaminated with pathogenic *S.aureus* and this contamination may be played a role in the transmission of potentially harmful infection to human beings.

**Keywords:** Water sources, Water borne diseases, *S.aureus*, Antibiotic resistance, Virulence, TSST-1 gene

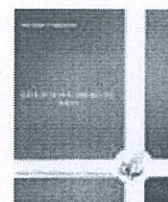
### Introduction

Water is a basic element to life and health; over 1 billion people worldwide have no access to safe drinking water and insurance of its quality and have been a very important issue from the beginning. Water is a good that must serve for the development of the whole person and of every living thing. Water may be contaminated in many ways. The different forms of contamination come from different sources and are dealt with in different ways. The water contamination mainly occurred in three forms such as physical, biological and chemical. Water has played a significant role in the transmission of human diseases and the indicator organisms have been used to suggest the presence of pathogens [1]. Water-borne diseases constitute one of the major public health hazards in developing countries. Worldwide, in 1995 contaminated water and food caused more than three million deaths; of which more than eighty percentages were among children under age five. Besides the conventional pathogens, which are transmitted by water, several emerging water-borne pathogens have become increasingly important during the last decade. In India, more than seventy percentage of the epidemic emergencies are either water-borne or water related materials. A substantial amount of work has been carried out on common water-borne pathogens in India [2].

A common hazard of household water is contamination by potentially harmful bacteria and other microorganisms. Short term gastrointestinal disorders and illnesses such as gastroenteritis, giardiasis, typhoid, dysentery, and cholera; have been linked to water contaminated by microorganisms such as,

*Staphylococcus aureus*, *Campylobacter jejuni*, *Escherichia coli*, *Salmonella spp.*, *Vibrio cholerae*, *Yersinia enterocolitica*, *Shigella species* etc. Such bacteria have also been isolated from even chlorinated water [3]. Most of the water borne organisms cause diarrhea disease; it is an important cause of morbidity and mortality in developing countries, particularly in infants and elders. Bacterial infections are responsible for twenty to forty percent of diarrhea illness, and several bacterial species have been frequently ascribed to diarrhea [4].

*Staphylococcus*, a genus of Gram-positive bacteria derived its name from Greek 'staphyle' meaning 'bunch of grapes' and 'kokkos' meaning 'granule'. When viewed under microscope the organisms exhibit grape-like appearance. *Staphylococcus aureus* is an aerobic or anaerobic, non-motile, non-spore-forming, catalase and coagulase-positive, Gram-positive coccus, usually arranged in grape like irregular clusters. The catalase test used to identify *S.aureus* also differentiates enterococci and streptococci. When exposed, *S.aureus* converts hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>) to water and oxygen resulting in a positive catalase test. A small percentage of *S.aureus* can be differentiated from most other *Staphylococci* by the coagulase test. *S.aureus* produces the enzyme "coagulase" that forms clot formation differentiating with most other *Staphylococcus* species that are coagulase-negative. Most *Staphylococcus aureus* strains isolated from patients with toxic shock syndrome (TSS), a severe acute illness that rapidly leads to multi-organ system failure, produce a toxin known as toxic shock syndrome toxin-1 (TSST-1). Higher temperature offers an ideal environment for the multiplication of *S. aureus* and the



Research Article

ISOLATION, MASS CULTIVATION AND DNA SEQUENCING  
OF *Arthrospira platensis*

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Abstract

*Spirulina* is a photosynthetic, filamentous, multicellular and blue green microalgae. It is commonly used as a natural colorant in food and cosmetic industries as a natural blue dye. *Arthrospira platensis* (presently known as *Spirulina platensis*) is species of Cyanobacteria used as health foods, animal feed, food additives and fine chemicals. People associate certain colors and can influence the perceived flavor in any food which it also causes disease due to artificial additives. Coloring of fermented milk products, ice creams, soft drinks, alcoholic drinks, sweet cake decoration, milk shakes, etc. Some naturally occurring pigment such as, blue pigment phycocyanin is found in Cyanobacteria species (*Spirulina platensis*) are used for food coloring which does not cause disease to human. Among different phycobiliproteins, phycocyanin (blue pigment) is greater importance because of its various biological and pharmacological properties. It has antioxidant property antimutagenic, antiviral, anticancer, anti-allergic, immune enhancing, hepato-protective, blood vessel relaxing, neuroprotective, antitumor, radical scavenging and anti inflammatory properties. Alzheimer's and Parkinson's can also be treated with phycocyanin. In this present study, the *Spirulina* cultivation was carried out in a Zarrouk's medium. Then, we developed and tested a set of primers for the specific amplification of 16S gene segments from Cyanobacteria by PCR. The PCR amplification profile was checked on Agarose gel and the product size was compared with a size ladder of 100 bp. The PCR products were purified and sequenced. The 16S gene has 1100 bp in length and has conserve primer PCR. NCBI to obtain the closest hit of the query sequence. Phylogenetic analysis the sequences were aligned using Clustal W and the genetic distances were computed according to the Kimura 2-Parameter (K2P) model. DNA barcoding the genus of the sample is *Arthrospira* (*Spirulina*). The primer used for the analysis showed similarity to *platensis* species. Thus, we can conclude that the studied organism might be *Spirulina platensis*. The sequence was deposited in the Gene bank database under the Accession No KX423618 and KX423619.

Article History

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Key words: *Spirulina platensis*, Phycocynin, 16S gene, PCR and Nucleotide Blast.

1. Introduction

*Spirulina* are unicellular and filamentous blue-green microalgae that has gained considerable popularity in the health food industry and

increasingly as a vitamin and protein supplement to aquaculture diets. It has long been used as a dietary supplement by people with living close to the alkaline lakes and bonds where it is naturally found. *Arthrospira* (*Spirulina*) is an economically most important filamentous Cyanobacterium.

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## MOLECULAR CHARACTERIZATION OF *AMARANTHUS* *RETROFLEXUS* *RBCL* GENE

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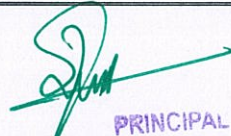
\* Corresponding Author



### ABSTRACT:

People perception is usually influenced by the appearance of the food by colouring. Different foods are associated with different colours by people. Artificial food colouring agent cause human health problems, Carcinogen, Intestinal bleeding, Diarrhoea & excessive menstruation, mainly cause [ADHD] Attention deficit hyperactivity disorder in children. Natural colouring cannot cause these problems. In the present study *Amaranthus* leaf pigment (betacyanin) was used as food colouring agent. *Amaranthus* is defined as "never-fading flower" in Greek. Several species of *Amaranthus* are often considered as weeds, people around the world worth *Amaranthus* as leaf vegetables, cereals and ornamentals. DNA was extracted from leaf tissue using a modification of the cetyl trimethyl ammonium bromide (cTAB) method. We developed and tested a set of primer for the specific amplification of *rbcl* gene segments from *Amaranthus* by PCR. The *rbcl* gene encodes ribulose-1.5-biphosphate carboxylase/oxygenase large subunit .The PCR amplification profile was checked on agarose gel and the product size was compared with a size ladder of 100bp. The PCR product was sequenced by Sanger sequencing method. Phylogenetic analysis the sequences were aligned using Clustal W, and the genetic distances were computed according to the Kimura 2-Parameter (K2P) model. The *rbcl* gene has 700 bp in length and has conserve primer in PCR. DNA bar coding the genus of the sample is *Amaranthus*. The primer used for the analysis showed similarity to *retroflexus* species. Thus we can conclude that the given sample might be *Amaranthus retroflexus*.

**Keywords:** *Amaranthus retroflexus*, *rbcl* gene, PCR.

  
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## Phytochemical Analysis And GC MS Analysis Of *Clausena dentate* Plant Extract And Its Antibacterial Activity

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### ABSTRACT

The phytochemical studies of the medicinal plants which has been used has the traditional medicines in raw has been attracted to the researchers in finding the novel compounds from plant origin. *Clausena dentate* is one such plant which posses large number of biologically active metabolites that has potential to kill bacterial pathogens. The maximum phytochemicals were actively present in ethyl acetate extract and methanol extract of *Clausena dentate*. Methanol extract of the *Clausena dentate* showed highest zone of inhibition in *Klebsiella pneumoniae* and *Bacillus subtilis*. Ethyl acetate extract of the *Clausena dentate* showed highest zone of inhibition in *Staphylococcus aureus*. Petroleum ether extract of the *Clausena dentate* showed highest zone of inhibition in *Bacillus subtilis*. The GC-MS analysis of the ethanol leaf extracts of the *Clausena dentate* shows the presence of 15 phytochemicals.

Keywords: *Clausena dentate*, phytochemicals, GC-MS and antibacterial activity.

### INTRODUCTION

The identification of secondary metabolites from plant origin is one of the most effective ways in which the study in medicinal plants had progressed clearly. The phytochemical studies of the medicinal plants which has been used has the traditional medicines in raw has been attracted to the researchers in finding the particular compound present in the plants which may be the secondary metabolite or primary metabolite of the plants. The phytochemicals of the plants were identified according to their origin, structure and functional analysis. The plants which naturally synthesis and accumulate some secondary metabolites, like alkaloids, glycosides, tannins, volatiles oils and contain minerals and vitamins, which posses different medicinal properties (Wang *et al.*, 2005).

The drug discovery using higher plants can be distinguished: random selection followed by chemical screening; random selection followed by one or more biological assays; biological activity reports and ethno medical use of plants. The latter approach includes plants used in traditional medical systems; herbalism, folklore, and shamanism; and the use of databases or medicinal plants.

The different parts of the plant parts such as root, stem, leaf, stem bark, flowers, fruits, seed are used in different medicinal properties. The plant part may vary according to the presence of the secondary metabolites. *Clausena* genus belongs to the *Rutaceae* family, in India there are 20 species traditionally used to cure different diseases (Huang *et al.*, 1997; He *et al.*, 2000; Ito *et al.*, 2000). The plants of the genus *Clausena* are shrubs, widely distributed in South and Southeast Asia and many species are originate used in Chinese and Thai folk medicine for various indications such as for treatment of gastro-intestinal diseases, asthma (Adebajo *et al.*, 2009), malarial, pulmonary tuberculosis (Sunthitikawinsakul *et al.*, 2003), viral hepatitis (Xin *et al.*, 2008) and also used as a detoxification agent (Wu *et al.*, 1999) and antipyretic (Wangboonskul *et al.*, 1984). Hence the present study focused on to evaluate

## Assessment of Cytotoxicity on Moringa *Olifera* Against Ehrlich Ascites Carcinoma in Swiss Albino Mice

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### Abstract

The present study determines the potent cytotoxic and antitumor properties of methanolic extract of Moringa oleifera leaves. The leaves were collected from in and around Tiruchengode of Namakkal district of Tamilnadu. The collected leaves were shade dried and powdered and the Methanolic extract was extracted using the soxhlet apparatus. In-vitro cytotoxicity study was done by Trypan Blue Dye Exclusion method and MTT (3-(4,5-dimethylthiazolyl)-2,5-diphenyltetrazolium bromide) assay. In short term cytotoxicity study by Trypan Blue Dye Exclusion method the IC<sub>50</sub> value against EAC cell lines was found to be 163.91 µg/ml. In Long term cytotoxicity study by MTT assay the IC<sub>50</sub> value against Normal Mouse Embryonic Fibroblast (NIH 3T3) was found to be 260.85 µg/ml for Human Cervical Cancer cells (HeLa) was 182.41 µg/ml for Human Laryngeal Epithelial Carcinoma (HeP-2) was 195.93 µg/ml and for Human Liver Cancer cells (HepG2) was 168.61 µg/ml. The MST of control group was 17.33 ± 1.53 days, whereas it was 43.67 ± 1.15, 23.67 ± 1.53 and 33.33 ± 1.53 days for the groups treated with MMO (200 and 400mg/kg) and 5-FU respectively (0.001 & 0.001). The increase in life span of Tumour bearing mice treated with MMO and 5-FU was found to be 36.75, 92.78 and 152.84 respectively. Haematological parameters of tumour bearing mice on the day 14 were showed significant changes when compared to normal mice. The total WBC count, protein and PCV were found to increase with a reduction in the hemoglobin content of RBC. At the same time interval, MMO (200 and 400mg/kg) treatment could change these parameters near to normal. Maximum alternation occurred in the MMO treatment at the dose of (400mg/kg). There was significant reduction in the Tumour volume of mice treated with MMO (200 and 400 mg/kg/p.o.). The Tumour volume of control animals was 2.92 ± 0.12 ml where it was 2.55 ± 0.11 ml and 1.82 ± 0.04 ml for the groups treated with MMO (200 and 400mg/kg/p.o) respectively (P < 0.01 & 0.005). Thus the present study provides clear evidence, that the extract of Moringa olifera shows effective cytotoxicity against Ehrlich ascites carcinoma (EAC) cells in swiss albino mice. A further study about the active principles and mechanism of action of the Methanolic extract of Moringa oleifera at molecular level was needed.

**Keywords:** Ehrlich ascites carcinoma (EAC), Human Liver Cancer cells (HepG2), Human Cervical Cancer cells (HeLa), MTT

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### Introduction

Development of science and technology lead to systematic understanding of functional attributes of living organisms at macro and micro levels. This evolving knowledge on molecular biochemical changes lead to evolution of variety of medicines and travelled far off from natural cure and used unnatural products by neglecting the traditional healing mechanisms. But in recent years

increasing realization is observed that though traditional healing mechanisms do not have systematic molecular mechanisms they were able to cure dreadful diseases like cancer. However, Indian traditional medicine is based on various systems include Ayurveda, Unani, Siddha, Yoga and Naturopathy.

It also been observed that more than 80% (3.5 to 4 billion) of the people in the developing world rely on traditional medicine for their primary health care

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PRINCIPAL

**Distribution of Millipedes along an Altitudinal gradient in the Kalakkad Mundanthurai Tiger reserve forest, Western Ghats, Tirunelveli district, Tamil nadu**<sup>1</sup>Chezhian Y\*, <sup>1</sup>Prabakaran S and <sup>2</sup>Gopinath LR<sup>1</sup>Southern Regional Centre, Zoological Survey of India, Chennai - 600 028<sup>2</sup>Department of Bio-technology, Vivekanandha Educational Institutions, Tiruchengode, Tamilnadu -637 205.**Abstract**

Biodiversity is essential for the maintenance of all living organisms. It provides the base for the livelihoods, cultures and economies for several hundred millions of peoples. Kalakad-Mundanthurai Tiger Reserve (KMTR), one of the largest reserve forest, and became a Tiger Reserve in 1988. Totally 19 species of millipede were identified and species abundance is high in higher elevation.

**Keywords** *Millipede, KMTR, Altitudinal gradient.***INTRODUCTION**

Studies on Indian millipedes (Diplopoda) started with Linnaeus (1758) [1], afterwards some of them furnished the few list of Indian millipedes; cornerstone monograph was published by Attems 1936 [2] has a "Diplopoda of India", even though knowledge of the Indian Millipedes is fragmentary and scattered. Millipedes are largest macro arthropods in forest ecosystems and plays vital role of detritivores invertebrates; enriching decomposition of dead plant material and stimulate microbial activity [3]; apparently affecting nutrient cycling through the redistribution of organic material and consequently, the release of chemical elements such as nitrogen in the soil. Each and every single animal have their own unique character and adaptation habit on its environment. The aim of the present study is quantitative analysis of millipede species along with altitudinal gradient in the Kalakkad Mundanthurai Tiger Reserve Forest, Western Ghats, Tirunelveli District and Tamil Nadu.

**MATERIALS AND METHODS**

**Study Area:** Kalakad Mundanthurai Tiger Reserve (KMTR) is the 17<sup>th</sup> Tiger Reserve in India and Southern most part of South-Western Ghats. It also forms part of the inter-state Agasthiarmalai biosphere. KMTR is the only place of virgin forests, forming part of the Western Ghats. The total area of the reserve is 895.39 sq km and it lies between latitudes 8°21'27" North to 8°53'02" North and between longitudes 77°10'10" East to 77°34'28" East. The sample collection were made in selected range in KMTR such as Papanasam, Kadayam, Mundanthurai, Ambasamuthram, Kalakadu and Thirukunkudi with different location (Table.1). grasslands and reed covered

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Forests in KMTR are of different types. There are evergreen and semi evergreen forests, moist and dry deciduous forests, grasslands and reed covered slopes

**Sample Collection:** The sampling was done randomly laid four region of each location, 10 x 10 sq/m at each elevation. All four sites were considered different elevation gradients.

Samples were collected by turn away the objects, like stones, wooden logs and removing the decayed leave with the help of rake and shovel to find the millipedes and use the hand or soft forceps to pick up the samples and put in to the plastic bags along with few soil; in order to make enough space and air for millipede to keep them alive along with temporary label. In laboratory, to filled 20% of alcohol in sample bag and keep those up to 3 hours for anesthetized. Washed millipede samples are placed in to glass bottle and almost filled with 70% alcohol, along with permanent label. Millipedes were identified by standard taxonomical literatures and monographs.

**RESULTS AND DISCUSSION**

Millipedes diversity of in KMTR is totally 19 species were identified which belongs to 12 genus and 4 Orders. Genus *Arthrosphaera* is dominant comparatively other genus. The following millipede species are almost diversified in all the region (ranges) of KMTR *Arthrosphaera brandtii* [4], *Arthrosphaera dalyi*, *Arthrosphaera disticta* [5], *Cercostreptus mundus*, *Gnomognathus m. minusculus* [2], *Aulacobolus gravelyi* [6], *Xenobolus acuticonus* [2], *Xenobolus carnifex* [7] and *Delarthrum rugulosum* [8]; followed by *Arthrosphaera magna* and *Arthrosphaera scholastica* and in *Phyllogonostreptus descriptus* [2] distributed in Papanasam alone (Table.2).



## Study on Agrobiodiversity And Biodiversity of Planthoppers And Its Bio Control In Rice Fields of Kolli Hills-Tamilnadu, India

## KEYWORDS

Plant hoppers, pesticides, Kolli hills

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**ABSTRACT** Evolution of science and technology brought variety of changes that increased the birth rate and decreased the death rate lead to rapid increase in population and increased demand in agriculture produce and product. Such increase leads to green revolution with the help of modern breeding technique. However, this triggered variety of issues like pest attack, narrow food basked, increased use of fertilizer and pesticide etc. Among the pest attack plant hoppers forms one of the dominant pests that create devastating effect especially in rice fields. In the present investigation in Kolli hills showed that decreasing agro biodiversity with increasing transformation of landscape along with cultivation pattern. Plant hoppers are found to be increasing trend with increasing transformation especially in rice fields. Plant hopper identification showed 22 species in 16 genera in Kolli Hills in the present study. Estimation plant hoppers at different altitudes of Kolli Hills showed Nilaparvata lugens dominant in all altitudes with highest number in 250 amsl followed by Sogatella furcifera with highest number in 500 amsl. It was also identified that with increase in altitude planthoppers also in paddy fields also decreased. Among numerous traditional methods available in the study area 17 methods were found to be within top ten preferred in the area. However, Adhathoda vasica leaf along with cow dung slurry preferred by most of the people followed by Vitex negundo leaf extract with butter milk as effective pesticide against planthoppers.

### Introduction

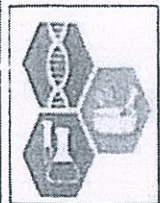
Development of agriculture travelled a long distance from shifting agriculture to intensive mono cropping with genetically modified crops. A different stage of agricultural development still exists in different agro ecological zones depending upon their socio economic development. Socio economic development of different societies of the world varies with their access to science and technology along with their feasibility in their local environmental conditions. It has been seen that development in agriculture moved away from harvesting the benefits of ecological functions of agro ecological conditions. This lead to change in agriculture practices like use of modified seeds, cropping pattern, readymade nutrient inputs which in turn also increased variety of pest attack due to loss of ecological linkages in the agricultural systems which balanced their prey predator relationships with minimal loss and maintained their resilience capacity. However, there are traditional communities in the remote margins of the world where such changes are meager and continue to practice their traditional agricultural management. Kolli Hills is one such hilly tract region in the southern Indian subcontinent fall in the Eastern Ghats of Tamilnadu state where the present research is conducted to identify effective traditional management practices in managing the Plant hoppers in agricultural fields.

Green revolution in Asian sub subcontinent played a vital role in the outbreak of these plant hoppers through various means. During this period introduction of short dura-

tion dwarf varieties increased the need of fertilizers especially the nitrogenous fertilizers since natural organic inputs are not able to synchronize with the release and demand of the crop nutrients but synchronized with the life cycle of plant hoppers for their food lead to their prosperity (Preap et al., 2001). Further increased use of insecticides in the agricultural fields also killed the natural enemies of plant hoppers that lead to their population outbreaks (Kenmore et al., 1984; Shepard et al., 1995; Heinrichs and Mochida, 1984).

However, in the recent past traditional communities living in the margin of modern agricultural systems evolved variety of natural mechanism to control the plant hoppers in their agricultural fields which not only supports their economy but also ensured safe agricultural products. The agricultural community of Kolli Hills, continue this kind of traditional management strategies to control these pests. The present research was carried out, to evaluate, and to compile these practices that will lead to a scientific documentation. Kolli Hills is a tall hill range located in central Tamil Nadu in the Namakkal district. The mountains are about 1370 amsl in height and cover an area of approximately 280 km<sup>2</sup>. These hills are in the Southern part of the Eastern Ghats, which is a mountain range that runs mostly parallel to the east coast of peninsular India. The Kolli Hills mountains are covered with evergreen forests, agriculture include coffee, tea, jackfruit, pineapple, black pepper and other spices apart from the staple food Rice and other minor millets of the tribal people who inhabit these mountains.





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## Dynamics of plant hoppers diversity in Kolli Hills, Tamilnadu, India

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### Abstract

In India planthoppers population is fluctuating due to mosaic model of agriculture practices. Traditional communities with their small scale farm practice which also involves integrated pest management and traditional resource management techniques generally such pest are not devastating in nature. However, the present study was able to identify 22 planthopper species in 16 genera *Cemus levicula*, *Euidella horvathi*, *Harmalia anacharsis*, *Latistria testacea*, *Nilaparvata lugens*, *Opiconsiva balteata*, *Peregrinus maidis*, *Perkinsiella saccharicida*, *Perkinsiella sinensis*, *Purohita Cervina*, *Sardia rostrata*, *Sogatella furcifera*, *Sogatella vibix*, *Sogatella kolophon*, *Stenocranus distinct*, *Tagosodes pusanus*, *Terthronal bovitatum*, *Toya attenuate*, *Toya bridwelli*, *Toya propinqua*, *Tropidocephala flaviceps* and *Tropidocephala serendiba*. The planthopper density was high at 750 meter amsl altitude, among the density of different planthoppers *Nilaparvata lugens* was significantly high in all paddy fields in all the altitude ranges with p value less than 0.001 followed by *Sogatella vibix* with p value less than 0.001.

**Keywords:** Kolli Hills, Planthoppers, Altitude, Traditional, Agriculture, Morphology, *Nilaparvata lugens*

### Introduction

Development of agriculture travelled a long distance from shifting agriculture to intensive mono cropping with genetically modified crops (Gopinath *et al.*, 2004) [1]. Ever increasing population creates numerous challenges to agriculture which lead to transformation from mixed farming practices to mixed cropping to crop rotation to mono cropping. Kolli Hills is one of the hilly tracts of southern peninsular India which falls in the Eastern Ghats region with an average altitude of 1300 meter amsl altitude. Slope lands were used to cultivate upland rice, millets, pulses, etc. by the traditional tribal communities but, the people living in the villages near the roads largely cultivate tapioca and people from intermitted villages cultivate mainly pulses in these regions (Archaya *et al.*, 2014) [1]. Even in these regions plant hoppers have become important pest to be manage to maintain their agriculture production and productivity (Kumcrasan *et al.*, 2016) [12].

Planthoppers are large group of insects exceeding 12,000 species that feed on green plants referred as phytophagous insects belong to the order Hemiptera, suborders Homoptera, Auchenorrhyncha, Flugoroida, infraorder Fulgoromorpha and super family Fulgoroidea distributed throughout the world (Watson and Dallwitz, 2003) [18]. The Order Hemiptera comprises of 77 families (Martin and Webb, 2010) [13], in which planthoppers belong to the family Delphacidae and dominate with more than 2000 species. Most of the species of planthoppers are plant feeders among which 55 species are considered as pests, for more than 25 plant species and also acts as insect vectors for virus in rice, sugarcane, coconut palms, maize and several other cereals (Wilson and O'Brien, 1987) [19]. Planthoppers feed on plant sap and damage the plant tissue by ovipositing that lead to wilting of plant commonly known as "hopper burn". Apart from feeding on the plant sap hoppers they also transmit virus during their feeding behavior which causes disease such as grassy stunt and ragged stunt in rice plant (Reissig *et al.*, 1986) [16] and cause extensive damage to the crop (Dyck and Thomas, 1979) [3]. However, in Asia two planthoppers were found to be causing extensive damage to the agriculture are brown plant hopper (BPH), *Nilaparvata lugens* and White backed plant hopper (WBPH), *Sogatella furcifera*.

Among these two hoppers White backed planthoppers occur in large numbers and kill the plants by hopper burn (Reissig *et al.*, 1986) [16]. Brown planthoppers were found to be a major threat for a long time in Asia (IRRI, 1979) particularly in rice plant (Dyck and Thomas, 1979) [3].



## Corporate social responsibility practices in Tamil Nadu newsprint and papers limited (TNPL), Karur district, Tamil Nadu

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### Abstract

In recent decades, environmental and social protection is the urgent need of each enterprise, each level, each sector, and each country. For any economic sector, the development is always linked to the sustainability of environment and society. In the long term, the responsibilities of the enterprises to the environmental and social issues shall be an important factor to increase the profit of these enterprises. Thus, the enterprises are required to balance between the economic benefits and social and environmental contributions, implementing the responsibilities of the enterprises to the environment through particular actions such as: environmental impact assessment, minimizing the costs on materials, fuel and reducing the costs for waste. Corporate social responsibility (CSR) is now seen as an integral part of corporate strategy. The main purpose of the study is to analyze the corporate social responsibility (CSR) activities carried out by TNPL.

**Keywords:** CSR, TNPL, Environment

### Introduction

India is witnessing rapid development compiled with increasing production activities. As an essential part of the manufacturing sector of India, the paper industry is associated with the economic wellbeing of the country. Strong economic growth of the nation has been accompanied by a healthy demand for paper. Corporate Social Responsibility is the mechanism through which the corporate organizations have executed their philanthropic visions for social welfare. It is a powerful way of making sustainable competitive profit and achieving lasting values for stakeholder as well as shareholder. The emerging perspective on corporate social responsibility focuses on responsibility towards all stakeholders: shareholders, employees, creditors, suppliers, government, and community rather than only on maximization of profit for shareholders. CSR is the continuing commitment by businesses to perform ethically and contribute to economic development while improving the quality of life of the workforce, families as well as the local community and society at large. CSR is a company's sense of responsibility towards the community and environment, both ecological and social, within which it operates. Companies express this in many ways such as waste and pollution reduction processes, conducting educational and social programs and providing ecologically sustainable goods.

### Review of literature

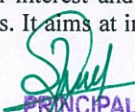
Leena James (2012) <sup>[1]</sup> The Corporate Social Responsibility practice of the organization has long been a topic of great interest for research. Most firms understand the need to be economically successful and the importance of complying with laws and responsible to the society. Till the late twentieth century, the mission of business firms was exclusively economic. With the business environment being characterized by various developments including the shift of power from

capital to knowledge, increased levels of literacy and the shrinking of geographical boundaries, due to faster means of travel and communication. People are, by and large, becoming conscious of their rights, which have led to a rise in the expectations of society from business.

Bibhu Parshed (2012) <sup>[2]</sup>, article presented that CSR is the face of industry face of doing trade. Bibhu said that today, corporate houses took CSR as a medium fulfillment of profit greed of corporate houses. Further the article explored that companies today invests in a lot of areas like child labour, ground water, food, education, employment etc. but nobody is aware about the essential need of world's poor. The article suggested that profit earning is a natural fact of companies but CSR is beyond the natural and statutory obligation of the companies. At last it was concluded in the article that sustainable development is the development of society as well as the company in a balanced way.

Bansal, Parida, Kumar (2012) <sup>[3]</sup>, paper entitled "Emerging trends of Corporate Social Responsibility in India" in KAIM Journal of Management and Research analyzed 30 companies of 11 sectors listed in the Bombay Stock Exchange with the help of their annual reports. Some of these sectors were Transport Equipment sector, Finance and Metal Mining sector, IT & Power, Capital goods, Telecom, Housing, FMCG, Oil & Gas and Cipla. The paper considered the nature and areas of society in which the companies are investing. By considering all those areas it was concluded in the paper that today companies are not working only to earn profit but also have realized the importance of being social friendly. So, on the basis of the paper it can be said that social responsibility has now started taking a turn in the new direction.

Dr T Rajasekar, Dr S Rameshkumar (2015) <sup>[4]</sup> The CSR is a philosophy that looks at the social interest and the long-run enlightened self-interest of business. It aims at integrating the

  
PRINCIPAL



Original Research Article

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## Determination of Acquaintance between Biofilm and Extended Spectrum of $\beta$ -Lactamases Producers from Diarrheal Stool Isolates of *Escherichia coli*

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### Abstract

The study was to assess the prevalence of extended spectrum beta-lactamases (ESBL) positive isolates from diarrheal stool samples in Namakkal District, Tamil Nadu (India). Totally 68 isolates were recovered from 125 samples and the isolates were identified as *Escherichia coli* by biochemical test and selective media. All isolates were subjected to determination of biofilm formation with tube method, among them 36 (53%) isolates were biofilm producers. The ESBL production was detected using a double disc synergy test and the presence of ESBL genes was evaluated by the Multiplex PCR method. In this study, 32.3% of isolates has been at least one type of ESBL genes, among them CTXm was most predominate gene. This result was acquainted with biofilm producers, and it was found that biofilm producing isolates mostly harbored the ESBL genes in comparison with non-biofilm producers.

### Article Info

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### Keywords

Biofilm  
CTXm  
ESBL genes  
*Escherichia coli*

### Introduction

Diarrheal diseases are the leading cause of morbidity and mortality in developing countries. This accounts for nearly 1.3 million deaths in every year and mainly affected in less than 5 years of age. Over half of the deaths occur in developing countries such as India, Nigeria, Afghanistan, Pakistan and Ethiopia (<http://www.unicef.org/>). Several pathogens such as bacteria, viruses and parasites are the causes of diarrhea in human. Among them, *Escherichia coli* is the most important etiologic agents for diarrheal diseases (Ferro et al., 2012). Many reports have demonstrated that association of enteroaggregative *E. coli* with diarrhea in children in developing countries. Some authors report persistent diarrhea mainly caused by enteroaggregative *E. coli* and which produced biofilm

formation. Biofilm producing isolates are very difficult to treat because isolates are express several virulence factors and an increased resistance against phagocytosis (Costerton et al., 1999; Murugan et al., 2011).

Now a day Enterobacteriaceae is highly resistant to extended spectrum beta-lactamase (ESBL) has been reported all over the world, especially in Asian countries. Most of the biofilm producing isolates were ESBL producers and mainly harbored the blaCTX-M (Pourakbari et al., 2012; Singhai et al., 2014). ESBL-producing organisms frequently show cross-resistance to many other classes of antibiotics; including amino glycosides and fluoroquinolones, thus treatment of these infections are often a therapeutic challenge (Ponnusamy, 2013). According to earlier studies, very few reports only

GREEN SYNTHESIS EVER GREEN MEDICINAL PLANT *NERIUM INDICUM* AND ITS  
PHYTOCHEMICAL SCREENING AND ANTIMICROBIAL ACTIVITYM. Suganya\*<sup>1</sup>, C. Deepika Thenmozhi<sup>1</sup>, M. Krishnaveni<sup>2</sup>, A. Revathi<sup>2</sup> and C. Muruga<sup>2</sup><sup>1</sup> Assistant Professor in Biochemistry at Vivekanandha College of arts and Sciences for Women (Autonomous),  
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## ABSTRACT

**Background and Aim:** Epidural anaesthesia is widely practiced for laparotomy. Adjuvant to local anaesthetics improves the quality and duration of this route and dexmedetomidine can be a useful adjuvant. We undertook a double blind study comparing 12 ml of 0.5% bupivacaine with a combination of same dose bupivacaine and 1 mcg per kilogram of dexmedetomidine as adjuvant, administered epidurally, in laparotomy. **Material and Methods:** The participants of the study were randomly allocated in to two groups of 30 each; group B with epidural bupivacaine (0.5%) and group D, with 0.5% bupivacaine and 1mcg per Kg of dexmedetomidine. We compared between the magnitude of variations in heart rate and mean arterial pressure, onset and duration of analgesia and surgical condition provided. **Result:** Variation in the heart rate of group B and group D ( $22.25 \pm 13.46$  bpm,  $18.64 \pm 9.91$  bpm;  $p = 0.248$ ) and MAP are ( $25.56 \pm 10.15$  mm of Hg,  $26.46 \pm 10.48$  mm of Hg;  $p = 0.737$ ). The Chi Square value comparing surgical condition provided by the groups is 1.741. Onset of blockade of gp B and gp D are  $10.56 \pm 2.61$  mins and  $5.11 \pm 1.25$ ,  $p$  value  $< 0.05$ . Duration of analgesia in gp B and gp D are  $172.81 \pm 83.99$  mins and  $367.14 \pm 251.08$  mins,  $p < 0.05$ . **Conclusion;** Addition of dexmedetomidine to bupivacaine in epidural anaesthesia has comparable hemodynamics with earlier onset and prolonged postoperative analgesia.

**KEYWORDS:** Epidural dexmedetomidine, adjuvant, laparotomy.

## ABSTRACT

Herbal medicine also known as botanical medicine or phytomedicine refers to using plant seeds, flowers, roots for medicinal purpose. The medicinal action of plants is unique to a particular plant species, consistent with the concept the combination of secondary metabolites in a particular plant is taxonomically distinct for their medicinal plants and their description and uses respectively. *Nerium indicum* (mill) belonging to the family *Apocynaceae*. The objective of the present study is the antimicrobial and bioactive activities of plant *Nerium Indicum*. The methanolic extract of *nerium indicum* showed better inhibition towards gram negative and gram positive bacteria with the maximum effect shown by the flower extract *nerium indicum*. That the finding of present study suggests that methanolic extract possessed most antimicrobial activity. The methanolic extract can be used as an effective and antimicrobial agent to combat various ailments caused by the free radicals and bacterial species.

**KEYWORDS:** Nerium Indicum, phytochemical, Antimicrobial Activity.

## INTRODUCTION

Nature has been a source of medicinal agents for thousands of years and generally produces many secondary metabolites which constitute important leads for the development of new environmentally friendly microbicides, pesticides, herbicides and many pharmaceutical drugs (Bobbarala *et al.*, 2009). Herbal medicine also known as botanical medicine or phytomedicine – refers to using plants seeds, flowers, roots for medicinal purpose. Herbalism has a long tradition of use of outside of conventional medicine. It is becoming more main stream as improvements in analysis and quality control along with advances in clinical research show the value of herbal medicine in the treating and preventing disease. I research show the value of herbal medicine in the treating and preventing disease. (Bandara A *et al* 2010) Molecules derived from natural products, particularly those products of plants and microbes have an excellent record of providing novel chemical compounds for the development of new pharmaceutical products. (Balagurunathan. Ret al. 2007) metabolites produced by plants. The presence of these secondary metabolites in plants probably explains the varies. *Nerium indicum* (Family: *Apocynaceae*) is a



## Consumer attitude towards packaged drinking water

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### Abstract

The people realized the need for clean drinking water convenient for travel and safe for health. The competition in the packaged drinking water market has gone up with new brands coming up and stiff competition among the existing brands. The demand for packaged drinking water is always on an increase due to its consumption on all types of occasions. The main objectives of the present study are to study the level of awareness among the consumer towards packaged drinking water and to identify the factors influencing the consumer to purchase the packaged drinking water. This study concluded that Consumers determine the growth, prospects and even the existence of a business. Hence manufactures should feel the pulse of consumers. They should plan their production and distribution activities as per the needs and convenience of the consumers.

**Keywords:** drinking water, manufactures, consumers, whole sellers

### Introduction

Water is the nature's free gift to the human being. Next to air, the other important requirement for human life to exist is water. It is available in various forms such as rivers, lakes, streams etc. Seventy percent (70%) of the earth is covered with water. But nearly all is unavailable for human consumption without being processed. The oceans make up for 97%, the polar ice shields hold another 2% and only about 1% is the soft water from underground sources but even from that tiny amount an increasing part is unsafe for human consumption. At the same time, along with the increase in population the need for pure and safe water is increasing. To meet the drinking water requirements of people, many business concerns have started purifying and mineralizing the water and distributing the same. In 1967 itself, 'Bisleri' water was introduced in India. It is an Italian based company in India. It is the first bottled water company in India. At that time 'Bisleri' was a very famous and familiar brand in India. The consumers of packaged drinking water are attracted by the benefits of easy availability, purity and hygiene and only a small segment of consumer have evolved to the level of being loyalists of good brands. But the fact remains that even to this day about 70% of the packaged drinking water consumption in the country is by traveller. The packaged drinking water is now served on trains, airlines and in parties. Besides the companies have introduced bigger pack sizes to cater to variety of needs. The packaged drinking water is available in 200ml, 500 ml, 1 litre and 2 litre bottles and in 20 litre cans. The bottle packaged drinking water market in the country is poised for a quantum leap, not with standing the stricter quality standards to be imposed by the Bureau of Indian standards of manufacturing units. The packaged drinking water market has been growing at the rate of 70% per annum. Now many packaged drinking water brands are available in the country including that of multinational companies like Coca cola, Pepsi, Bisleri and kinley.

### Consumer Awareness

Consumer awareness may be defined as a clearly understanding about the need and priority of causes for purchasing and conditions and warranties of purchase. The consumer must be aware regarding his rights and the available legal measures against exploitation. In order to create consumer awareness and safeguarded their interests, the government of India has enacted MRTP act 1968, Essential commodities Act 1955, sale of goods Act 1955 and protection of consumer Act, 1986 [1]. Creation of consumer awareness is a big task in our vast country. Due to some impediments such as illiteracy, lengthy legal procedures etc, the degree of consumer awareness is very low in India. The success of any product is determined primarily by the worth of that product in relation to the competing products. Branding provides the consumer with some guarantee of uniform quality and services as a guide at the time of shopping. Customers can easily identify the branded products and protect themselves from getting inferior quality products. So making choice is easier. Hence in this chapter an attempt has been made to analyze the level of awareness of consumers about packaged drinking water.

### Statement of the problem

The Indian packaged drinking water market is very wide and active, though the market share of the packaged drinking water markets varies from location to location. Packaged water has become an essential consumer product in the recent era. The impurities in the natural water caused by pollution leads to variety of health problems. Also, there is a marked increase in the demand of pure drinking water during tours and travels undertaken by the people. The people realized the need for clean drinking water convenient for travel and safe for health. The competition in the packaged drinking water market has gone up with new brands coming up and stiff competition among the existing brands. The demand for

[1]Ibid, P.27.



## Impact of information technology in phone banking sector

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### Abstract

Indian banking industry, today is in the midst of an information technology revolution. Combinations of regulatory and competitive reasons have led to increasing importance of total banking automation in the Indian banking industry. Information Technology has basically been used under two different avenues in Banking, one is communication and connectivity and other is business process reengineering. The main objectives of the present study are to evaluate the level of awareness on phone banking services among the customers of commercial banks, to identify the various factors influencing the usage of phone banking services and to measure the level of satisfaction of phone banking services among the customers of commercial banks. This study concluded that commercial banks' customers are moderately aware about the foremost E-Banking channels of ATM, mobile banking, internet banking and phone banking channels and satisfied in all the services that are related to the four channels.

**Keywords:** phone banking, commercial banking, customers, online banking

### Introduction

In the five decades since independence, banking in India has evolved through four distinct phases. During fourth phase, also called as reform phase, recommendations of the Narasimham Committee (1991) paved the way for the reform phase in banking. Important initiatives with regard to the reform of the banking system were taken in this phase. Important among these have been introduction of new accounting and prudential norms relating to income recognition, provisioning and capital adequacy, deregulation of interest rates and easing of norms for entry in the field of banking. Entry of new banks resulted in a paradigm shift in the ways of banking in India. The growing competition, growing expectations led to increased awareness amongst banks on the role and importance of technology in banking. The arrival of foreign and private banks with their superior state-of-the-art technology-based services pushed Indian banks also to follow suit by going in for the latest technologies so as to meet the threat of competition and retain their customer base.

Indian banking industry, today is in the midst of an information technology revolution. Combinations of regulatory and competitive reasons have led to increasing importance of total banking automation in the Indian banking industry. Information Technology has basically been used under two different avenues in Banking, one is communication and connectivity and other is business process reengineering. Information technology enables sophisticated product development, better market infrastructure, implementation of reliable techniques for control of risks and helps the financial intermediaries to reach geographically distant and diversified markets. In view of this, technology has changed the contours of three major functions performed by banks, i.e., access to liquidity, transformation of assets and monitoring of risks. Further, Information technology and the communication networking systems have a crucial bearing on the efficiency of money, capital and foreign exchange markets. The software

packages for banking applications in India had their beginnings in the middle of 80s, when the banks started computerising the branches in a limited manner. The early 90s saw the plummeting hardware prices and advent of cheap and inexpensive but high-powered personal computers and servers and banks went in for what was called total branch automation packages. The middle and late 90s witnessed the tornado of financial reforms, deregulation, globalisation etc. coupled with rapid revolution in communication technologies and evolution of novel concept of 'convergence' of computer and communication technologies, like Internet, mobile etc., [6].

### Banking Facilities offered by Phone Banking

Tele banking delivers every major banking service apart from cash withdrawals. Tele banking makes available the following typical range of facilities and services to the customers.

- Balance Enquiry
- Statement of Transactions
- Cheque book enquiry and facility
- Fund transfer between one account another account
- Funds Transfer home branch to another branch
- General account queries and advice, usually, done by a human operator even if the system uses automated voice response technology
- Ordering traveller's cheques from the bank
- Status of Loan applications
- Obtaining product information
- Placing stop payment order on cheque
- Checking account balance
- Reporting loss of ATM/ debit and credit card
- Make enquiry on the transactions.
- Know about the status of loan payments
- Know the latest interest rates on savings/scheduling accounts, term deposits and loan services
- Check the term deposit balances
- To place stop payments on cheques

## EMPOWERMENT OF RURAL WOMEN THROUGH ENTREPRENEURSHIP AND ITS ECONOMIC DEVELOPMENT

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### Introduction

Empowerment is a multidimensional process which should enable the individual or a group to realize their full ability and powers in all spheres of life. It consists of greater access to knowledge and resources, greater autonomy in decision making to enable them to have greater ability to plan their lives. The term 'women empowerment' has come to occupy an important position globally over the years. Educational attainment and economic participation are the key constituents in ensuring empowerment of women. The economic empowerment of women is a vital element of strong economic growth in any country.

Entrepreneurship happens to be one of the best ways towards self sufficiency and poverty alleviation for women in a country where employment is not guaranteed. Involvement of women in entrepreneurial activities would ensure effective utilization of labour, generation of income and hence improvement in quality of life. Women empowerment through entrepreneurship is a must for a modern developed economy. Entrepreneurship plays an eminent role in creating an employment opportunity for rural communities, providing self-employment for those who have started-up a business of their own and enhancing the economic status of the rural sector as well.

Now women are also interested to establish their own business as professionally both in the urban and rural areas due to overcome poverty, general family income and increasing Standard of living. Women have been regarded as the pillar of nation and builder and molder of its destiny. It is fact that, when there is development of women, family develops, the society develops and the country develops. They are the catalyst of development and with them we prosper, but without them we are poor. Time went out when Indian women are confined to four walls of their homes with their immense strength and potential.

### Need and Importance of Women Entrepreneurs

It is imperative to note the participation of women in economic activities as self employed individuals. Many of

the traditional occupations open to women are mainly based on caste, creed and the nature of self-employment is based on the standard of living.

At present, women are generating employment for themselves in unorganized sectors and other category of women provides employment for others. The country needs to mobilize and utilize fully all its resources including human resources. The participation of women in economic activities is necessary not only from a human resource point of view but also is essential even from the objective of raising the status of women in the society.

The economic status of the women is now accepted as an indicator of a society's stage of development and therefore it becomes imperative for the government to frame policies for development of entrepreneurship among women. The long-term objectives of the development and social status in order to bring them into the mainstream of national life and development. For this, due recognition has to be accorded to the role and contribution of women in the various social economic and political and cultural activities.

### Statement of the Problem

Non-9-days, women have come out of the cocoon, breaking the nutshell and are exposing themselves to various fields. They are participating in all spheres of activities. They have proved themselves to be at par with men if not better, in the job market. Their earnings definitely reduce the financial burden of their families and hence employed women are accepted in the society now. However, the decision making of women to participate in work force depend on personal and various other family related factors.

The study's intention is to provide information that could be used as baseline data in the overall evaluation of the Women industry. Information of this type could also be used by the service managers to evaluate future developments and changes in the service. In India, early phases of women entrepreneurship was regarded as extension of their kitchen activities mainly to 3 Ps, viz.

Pickles, Powder and Pappad. But with growing awareness women have started shifting from 3 Ps to 3 modern Es, viz. Engineering, Electronics and Energy. The study's intention is to provide information that could be used as baseline data in the overall evaluation of the industry. Information of this type could also be used by the service managers to evaluate future developments and changes in the service.

### Review of Literature

Pharm, and Satharan, (2013) Problems Being Faced by Women Entrepreneurs in Rural Areas, was being studied and found that majority of the women entrepreneurs were ranked as lack of strong leadership. Their leadership quality was not as good as required for being a successful entrepreneur. There were many women entrepreneurs who faces problem related to finance. Second rank was financial deficit. The third rank was lack of systematic planning and working and followed by health problem, Non-awareness of Government scheme, Non-repayment of loan by the members, Leaders misusing the group's money, other problems, Lack of Education. Rajesh K.Pillai, Madhurna Lai, and Shikha Sahal (2010) Entrepreneurship has again gained currency across the globe and female entrepreneurship has become an important component. India is one of the fastest emerging economies and the importance of entrepreneurship is realized across the spectrum. This research is a preliminary investigation in which the researchers identified 43 motives for starting business amongst women entrepreneurs.

Principal component matrix was used for rotation, which yielded eight factors. The eight factors were labeled as Independence, Flexibility, Achievement, Money, Opportunity, Escape, Family Support and Recognition from other. The motives were further classified into push and pull elements on which Wilcoxon signed rank test was performed, the statistical test revealed that relatively pull motives attract women entrepreneurs more than the push motives for starting business.

### Scope of the Study

The study highlights the satisfaction level among the Entrepreneurs in Namakkal district of Tamil Nadu. The working conditions of the women Entrepreneurs in Namakkal district may be taken as representative character, reflecting the conditions of service of the Women community of the whole state and a study of their condition would reasonably reflect the general conditions of the services of the their own professions as a whole.

Studies of this nature are instrumental in helping other Women community to better meet the needs, which may depends on industrial growth has been phenomenal. The study, therefore, has made an attempt to assess the socio-economic conditions and satisfaction of women Entrepreneurs in Namakkal district of Tamil Nadu.

### Objectives of the Study

1. To examine the relationship between demographic factor and financial return in the selected sample.
2. To analyze the motivational factors and other factors that influence women to become entrepreneurs.
3. To assess the attitude of family and society towards women entrepreneurs.
4. To evaluate the factors responsible for encouraging women to become entrepreneurs
5. To know the impact of entrepreneurship development in women empowerment.
6. To analyze the major strength and weakness of women entrepreneurs and the environmental opportunities and threats which promote the entrepreneurship
7. To identify the government schemes provided to empower women through skill formation, financial assistance, education etc.

### Research Methodology

Methodology is the key aspect which governs the outcome of the research. It encompasses and directs the researcher to conduct the research in a systematic process, which ensures and facilitates the accuracy of the outcome. The validity of any research is based on the systematic method of data collection and analysis. Both primary and secondary data are used for the present study. Now a days' women entrepreneurship become an important tool for women empowerment.

Women entrepreneurs also enhance living standard of their family which in turn help in development of the country. Entrepreneurs are regarded as backbone of any economy. The samples under this study are taken of the women entrepreneurs of the Namakkal District, Tamilnadu. The study is primarily based on the primary data collected from the respondents. An interview and questionnaire was prepared to collect information regarding family background, income, trade and knowledge about enterprises. The secondary data has been collected mainly from various publications of Government of India, Journals and periodicals, bulletins and articles in connection with the study.

## A STUDY ON USERS PERCEPTION ON E-SERVICES IN TODAY'S BUSINESS ENVIRONMENT

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### Abstract

*E-Banking has over-performed all the E-Banking available on the internet. Electronic banking practices and the threat of security banking, also known as electronic funds transfer measures has also been growing with it. Researchers (ETF), is simply the use of electronic means to transfer are trying to find out the ways to cover up this risk in funds directly from one account to another, rather the E-Banking and make it more sophisticated for than by cheque or cash.*

*Keywords: Service quality, Brand perception, Perceived value, Satisfaction, E-Banking*

### Introduction

The electronic banking in today's world brings the whole country in their hands with easy use. Various applications have been introduced by the commercial operators to make use of their services provided. They provide built in help modes to rectify the doubts and the errors. Hence, the commercial activators are highly seeking for their freedom on trade activities through the help of electronic banking services. NEFT, RTGS, Cheque Truncation System, clearing operations, Core Banking Services etc., are made easy for applicability. Easy to Use, Cost Effectiveness, Fulfillment, Efficiency, Security/Assurance, Responsiveness, Convenience, Problem Handling and Compensation are predictors of perceived value in e-banking.

### Internet Banking

Internet banking has become very much popular now a day's throughout the globe. It has made the banking activities easier, faster and more accessible. Now people are trying to learn more about the E-banking. The primary objective of the conference is to get the full acquaintance of the internet banking and its benefits. E-Banking has revolutionized to days banking by making it very fast, easy and far reaching. The expectations are growing at very



## CUSTOMERS' PERCEPTION ON MOBILE BANKING SERVICES

*(A Study with Special Reference to Commercial Banks in Tamil Nadu)*

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## Abstract

Banking sector is providing various services to their customers to fulfill the needs and requirements of them. Particularly, mobile banking services play a vital role in the present scenario of banking. E-Banking services are technology oriented and customers' needs, educations and technical knowledge to operate the E-banking channels. Even though there are plenty of E-banking services are available the researcher concentrates on only mobile banking. The awareness and usage of mobile banking services are mostly found among the urban customers. *Key words: Mobile Banking, Electronic banking, Customers, Satisfaction*

## Introduction

The constant innovations in electronic banking have contributed to a new development called mobile banking. The development of mobile banking may be attributed to increasing demand from the mobile work force. The increasingly growing number of mobile work force has given impetus to the progress of mobile banking. Mobile banking refers to the conduct of banking operations on mobile phones. In other words, mobile banking means banking operations that are done through mobile phone while a person is on the move. Mobile banking is only a relatively new electronic banking product. However, a number of transactions from the convenience of their own home and office; in fact from anywhere they have access to a mobile. Customers can check balances and statement of information, transfer funds from one account to another, pay certain bill and order statements or cheque books.

## Essential Requirements of Mobile Banking

To register and use the mobile banking services, it is necessary that the following requirements are met:

1. Service is available only to an existing customer of the bank availing internet

## banking services

2. Registration is essential for internet banking and mobile banking services
  3. Mobile banking is available for the individual customers
  4. There is the need for owning a mobile phone by the user of mobile banking.
- If wireless application protocol banking is to be availed, the mobile phone should be WAP enabled whose browser is capable of sending referers URL.

## Services Available Under Mobile Banking

The various services available under mobile banking are making enquiry about the bank balance, making enquiry of the last five transactions, viewing the details of the bank account, order a demand draft, request for a cheque book, alerts on account activity, Asking MOBILE BANKING location, access to card statements, online share trading customers with alerts, access to loan statements, request for a Cheque payments status, stop cheque payments; Inquire about cheque status, change pin, blocking of debit/credit cards, insurance policy management and monitoring of term deposits.

## Statement of the Problem

Banking sector plays an inevitable role in mobilizing the savings from public capital formation and in the economic development of country in the past several decades. The main objectives of banks are to accept deposits from public and to lend the same to their customers. Later on, due to the industrial and economical development, its transaction increased day by day. In order to frame uniformity among various banks, Reserve Bank of India act was formulated in the year 1935. After this, a number of public and private sector banks were started. The year 1969 was a landmark in the history of commercial banking in India. In July of that year, the government nationalized the major 14 commercial banks of the country. Mobile banking service is one of the prominent and attractive services offered by both private and public sector banks. Mobile banking is completely technology oriented which needs proper awareness, experience and expertise in operating computer and electronic devices. In India, the customers of the banks are highly heterogeneous natured which includes illiterate, semi-literate and highly literate. In this circumstance it is essential to know the awareness and satisfaction level of customers of E-Banking.

## Objectives of the Study

1. To identify the various factors influencing the usage of Mobile banking services.
2. To measure the level of satisfaction of Mobile banking services among the customers of commercial banks.

## Pilot Study

The aim of the pilot study is to check the feasibility and reliability of the inter-view

PRINCIPAL



ROLE OF E-COMMERCE: CHALLENGES & OPPORTUNITIES ARE FACED IN AN INDIAN ECONOMY

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Abstract

E-Commerce (electronic business) derived from terms as "email" and "ecommerce" is the conduct of business on the Internet, not only buying and selling also servicing customer and collaborate with the business partners. E-Commerce includes e-commerce but also covers internal processes such as production, inventory management, product development, risk management, finance, knowledge management and human resources. E-Commerce strategy is more complex, more focused on internal processes, and aimed at cost savings and improvements in efficiency, productivity and cost savings. This paper assesses the impact of innovation on economic productivity, focusing on the macroeconomics benefits in business management of E-Commerce. The impact of the E-Commerce on business management have resulted in a reduce economic volatility, strengthen productivity growth and

improve standards of living. Major corporations are rethinking their business in terms of the Internet and its new culture and capabilities. Electronic business plays a central role in the economy, facilitating the exchange of information, goods, services, and payments. It propels productivity and competitiveness and is accessible to all enterprises, and as such, represents an opportunity also for SME competitiveness. The main issues, challenges, opportunities, and solutions related to electronic business adoption, with a special focus on SME. Addressing technological, organizational, and legal perspective in a very comprehensive way, to disseminate current developments and practical solutions and applications for SMEs.

Keywords: E-business, E-tailing, E-commerce, ERP, ASP.

Introduction

"E-Commerce" refers to the process of using the Internet and associated technologies to transform every business process and E-enable all parts of the organization's value chain from acquiring, serving, and retaining customers to interacting with employees, partners, and the world at large. "E-commerce" can safely be considered one vital but small part in the overall E-Commerce architecture. There are two basic categories of businesses conducted over the Internet. E-Commerce (electronic business) is using technology to improve your business processes. This includes managing internal processes such as human resources, financial and administration systems, as well as external processes such as sales and marketing, supply of goods and services, and customer relationships. The way in which you manage your business relationships has not changed, but the way they are referred to when using e Business tools has. They are becoming more often known as:

- Business to business (B2B)
- Business to consumer (B2C) (also known as e Commerce)
- Government to consumer (G2C) \
- Government to business (G2B).

The first category is the Business-to-Consumer (B2C) segment, which includes the popular, Wall Street friendly businesses like Amazon, E Trade, etc. The second is the Business-to-Business (B2B) segment, which is increasingly overshadowing the B2C segment and includes such names as Chemtex and Auto Exchange. An E-Commerce strategy is also more difficult to execute, with four directions of integration: vertically, between Web front- and back-end systems; laterally, between a company and its

*[Handwritten signature]*



## A Study on Customer Satisfaction Towards Johnson & Johnson Baby Care Products in Namakkal District

### KEYWORDS

Johnson & Johnson, Baby Care Products, Namakkal, Bathtime products, Bedtime products, Body Massage products

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### ABSTRACT

This research is mainly focused on consumer satisfaction towards Johnson & Johnson products in Namakkal district of Tamilnadu. For this purpose of the study, the researcher select Namakkal town for examining the customer satisfaction in utilizing Baby care products in particularly Johnson & Johnson baby care products. To meet this objective of this research, the researcher took 130 sample respondents who have been utilizing the Johnson & Johnson Baby care products at least 2 years. Those only has taken in this research and collect their opinion about the products have been collected through a structured questionnaire. The collected details are summarized into a tabular column with using simple percentage analysis, mean score analysis and chi-square analysis. From the result of this survey, the researcher found majority of the respondents have perceived the highest level of satisfaction in utilizing the Johnson & Johnson bathtime products in Namakkal district.

### INTRODUCTION

Marketing is the adaptation of the commercial activities and use of institutions by the organizations with a purpose to induce behavioral change on a short-term or permanent basis. The technique used in marketing include choosing target markets through market analysis and market segmentation, as well as understanding methods of influence on the consumer behavior. A market survey is a research technique used to gather consumer preference and purchase intent of a company's products and serves within a geographic area. Market surveys are extremely important because companies learn what their customers like and dislike about their products and services. As a marketer, they have to give valid reason as to why a customer should choose their brand as against that of computing brands available in market. Customer is the one who uses the products and services and judges the quality of those products and services. Customers are always passionate about brands, for which they look forward with an added value. Each customer has his or her own method of evaluating brand choice available at the market place. It is for marketer to identify these evaluating methods and design their marketing communication datary to convenience the customer that their products meet customer's expectation on each parameter under consideration. As a market, they have to give valid reason as to why a customer should choose their brand as against that of computing brands available in market.

### STATEMENT OF THE PROBLEM

The market is now filled with range of baby products with different brand names offering the customers the latest products. So consumers' attitude is very important in today's market situation. In the purchase decision, consumers are influenced by their attitude towards the product and therefore the marketers to needs to implement their strategy and tactics, frequently in order to achieve more. Customer expectation is mainly based on the following attributes are the product or service, the price, the place, promotion. It helps to study customer attitude towards

Johnson & Johnson products. It helps to known about the choice of customers while purchasing both Johnson & Johnson. It helps to known about the post purchase behavior of existing customer.

### OBJECTIVES OF THE STUDY

To find out the socio-economic profile of the selected sample respondents in Namakkal district.

To study the consumer satisfaction towards baby products of Johnson & Johnson in Namakkal district.

### RESEARCH METHODOLOGY

The present study is descriptive in nature as it attempts to understand the consumer satisfaction towards Johnson & Johnson baby care products in Namakkal district. For this purpose, a questionnaire tool has prepared and collects the opinion of the consumers who have been utilizing the Johnson & Johnson baby care products. The sample size of 130 consumers was chosen for this research. Convenience sampling technique has been used in this research. For proofing the objectives of the study, the following statistical tools have been used like simple percentage analysis, mean score analysis and Chi-Square analysis.

### HYPOTHESES OF THE STUDY

$H_{01-08}$  : There is no significant relationship between residential area, gender, age, educational qualification, family monthly income, number of children in their family, nature of child and type of Johnsons' products using of the respondents and their level of satisfaction towards Johnson's baby care products.

### RESULTS AND DISCUSSION

From the questionnaire, the researcher has collected their opinion about the consumers towards Johnson & Johnson baby care products in Namakkal district. The collected details are subuded tables and it is pressed in the followings. The framed hypotheses also tested by using percentage analysis, mean score analysis and chi-square analysis.

# A REVIEW OF WIRELESS SENSOR NETWORKS IN CLOUD COMPUTING

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**Abstract:** Cloud computing is growing popular as day by day in distributed computing environment. Cloud computing provides applications, platforms and infrastructure over the internet. It is a new era of referring to access shared computing resources. Wireless sensor networks have been seen as one of the most essential technologies where they distributed spatially connected sensor node automatically forms a network for data transmission and receive among themselves is popularly known as Sensor Network. For security and easy access of data, cloud computing is widely used in distributed or mobile computing environment. Wireless sensor network (WSN) is widely applied in many fields and it has limited resources of a sensor, especially limited battery life, limited bandwidth and limited processing power, are the main challenges for deploying and operating WSNs.

**Keywords:** - wireless sensor network, Data Centric Network, Cloud Computing, Sensor Node, Routing Protocols

## I. INTRODUCTION

Cloud computing can be defined by the NIST as a model for enabling convenient, on – demand network access to a shared pool of configurable computing resources that can be rapidly provisioned and released with minimal management effort or service provider interaction [1]. Cloud computing can be considered as a new computing paradigm with implications for greater flexibility and availability at lower cost. The term itself is often used today with a range of meanings and interpretations [1]. The cloud model is composed of five essential characteristics, three service models and four types of deployment models. Cloud computing appears as a computational paradigm as well as a distribution architecture and its main objective is to provide secure, quick, convenient data storage and computing services, with all computing resources visualized as services and delivered over the internet [2]. The cloud enhances the collaboration, agility, scalability, availability, ability to adapt to fluctuations according to the demand, accelerate development works and provides potential for cost reduction through optimized and efficient computing. Recently, a number of commercial and academic organizations have built large systems from commodity computers, disks, and networks, and have created software to make this hardware easier to program and manage. These organizations have taken a variety of novel approaches to address the challenges outlined above. In some cases these

organizations have used their hardware and software to provide storage, computational, and data management services to their own internal users, or to provide these services to external customers for a fee. Cloud computing strategy can help business organizations to conduct their core business activities with less hassle and greater efficiency. Companies can maximize the use of their existing hardware to plan for and serve specific peaks in usage. Thousands of virtual machines and applications can be managed more easily using a cloud-like environment. Businesses can also save on power costs as they reduce the number of servers required.

Since Cloud computing provides plenty of application, platforms and infrastructure over the Internet; it may combined with Sensor network in the application areas such as environmental monitoring, weather forecasting, transportation business, healthcare, military application etc. Bringing various WSNs deployed for different applications under one roof and looking it as a single virtual WSN entity through cloud computing infrastructure is novel.

## II. CLOUD COMPUTING OVERVIEW

The primary business service models employed are the Software as a Service, Platform as a Service and Infrastructure as a service, and common deployment models employed by service providers and users to use and maintain

## A REVIEW OF MANET PROTOCOLS AND APPLICATIONS

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**Abstract:** Mobile Ad hoc Network (MANET) is a collection of wireless mobile nodes that dynamically form a network temporarily without any support of central administration. Extensive use of wireless networks in different fields increases the need to improve their performance, as well as minimize the amplitude of loss messages. Device mobility, where there is no standard topology that can be applied or fixed routing that can be designed, is a topic that received recent attention in wireless networks. Every node in MANET moves arbitrarily making the multi-hop network topology to change randomly at unpredictable time. Mobile ad-hoc network (MANET) is one of the most promising fields for research and development of wireless network. This paper, we analyze a MANET's performance for protocols, Manet applications and their attacks.

**Keywords:** MANET, AODV, OLSR, ZPR

### I. INTRODUCTION.

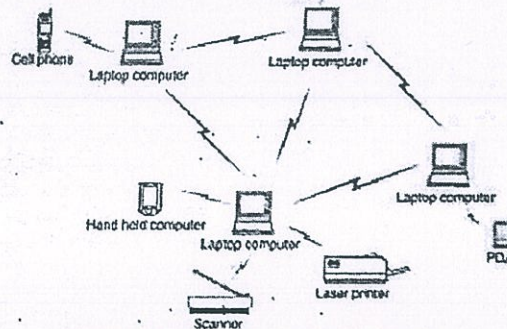
Moreover, the network can be extended to any place or building without the need for a wired connection. A mobile ad hoc network is a collection of wireless mobile nodes that dynamically establishes the network in the absence of fixed infrastructure [1]. One of the distinctive features of MANET is, each node must be able to act as a router to find out the optimal path to forward a packet. As nodes may be mobile, entering and leaving the network, the topology of the network will change continuously.

MANETs provide an emerging technology for civilian and military applications. Since the medium of the communication is wireless, only limited bandwidth is available. Another important constraint is energy due to the mobility of the nodes in nature. In order to facilitate communication within the network, a routing protocol is used to discover routes between nodes. The set of applications for MANETs is diverse, ranging from large-scale, mobile, highly dynamic networks, to small, static networks that are constrained by power sources. Besides the legacy applications that move from traditional infrastructure environment into the ad hoc context, a great deal of new services can and will be generated for the new environment.

### II. MOBILE AH-HOC NETWORKS

Ad hoc networks form spontaneously without a need of an infrastructure or centralized controller. The type of peer-to-peer system infers that the each node, or user, in the network can act as a data endpoint or intermediate repeater. Thus, all users work together to improve the reliability of network communications. These types of networks are also popularly

known to as "mesh networks" because the topology of network communications resembles a mesh [2]. Figure 1 shows the mobile ad hoc network process.



**Figure 1: Mobile ad hoc network structure**

The redundant communication paths provided by ad hoc mesh networks drastically improve fault tolerance for the network. Additionally, the ability for data packets to "hop" from one user to another effectively extends the network coverage area and provides a solution to overcome non-line of sight (LOS) issues.

Mobile application present additional challenges for mesh networks as changes to the network to topology are swift and widespread. Such scenarios require the use of MA hoc Networking (MANET) technology to ensure communication routes are updated quickly and accurately. MANETs self-forming, self-maintained, and self healing, allowing for extreme networks flexibility. While MANETs can be



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## Survey on Security Attack and challenges in WSN

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**ABSTRACT:** Wireless sensor networks are a new type of networked systems, characterized by severely constrained computational and energy resources, and an ad hoc operational environment. Wireless sensor networks require the need for effective security mechanisms. Because sensor networks may interact with sensitive data, it is imperative that these security concerns be addressed from the beginning of the system design. WSN have a large number of constrained attached to them such as less processing capability, low memory, limited energy resources and security issues. WSN generally deployed in natural environment hence a large number of security issues are there. The sensing technology combined with processing power and wireless communication makes it lucrative for being exploited in abundance in future. In this paper we have explored general security related issues and challenges with extensive study.

**KEYWORDS:** Wireless Sensor Networks, Security Attack, Issue and Challenges.

### I. INTRODUCTION

A Wireless Sensor Network can be defined as a group of independent nodes, which are communicate wirelessly. Wireless Sensor Networks are emerging as both an important new tier in the IT ecosystem and a rich domain of active research involving hardware and system design, networking, distributed algorithms, programming models, data management, security and social factors [1][2][3]. Wireless sensors have become an excellent tool for military applications involving intrusion detection, perimeter monitoring, and information gathering and smart logistics support in an unknown deployed area. Some other applications: sensor-based personal health monitor, location detection with sensor networks and movement detection.

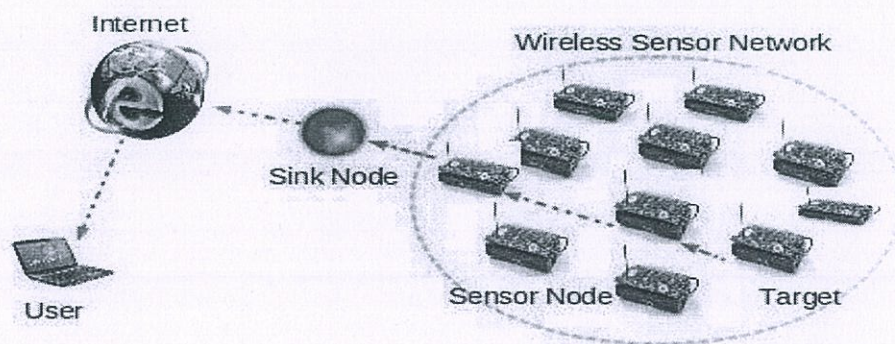


Figure 1: Wireless Sensor Network

*[Handwritten Signature]*

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# International Journal of Innovative Research in Computer and Communication Engineering

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## Analytical Study on Security Issues in Mobile Ad-Hoc Network

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**ABSTRACT:** A Mobile Ad hoc Network (MANET) consists of movable platforms which are free to move arbitrarily. The flexibility of mobile ad hoc network introduces new security threats. Many conventional security solutions used for wired networks are ineffective and inefficient for the highly dynamic and resource-constrained environments where use of MANET may be predictable. We first analyze the main vulnerabilities in the mobile ad hoc networks, which have made it much easier to suffer from attacks than the traditional wired network. In this paper, we generally focus on the security issues and challenges in the mobile ad hoc networks.

**KEY WORDS:** Security Issue, Attacks, MANET, Proactive protocol, Reactive Protocol.

### I. INTRODUCTION

A Mobile Ad hoc network (MANET) is a system of wireless mobile nodes that dynamically self-organize in arbitrary and temporary network topologies. People and vehicles can thus be internetworked in areas without a preexisting communication infrastructure or when the use of such infrastructure requires wireless extension [3]. In the mobile ad hoc network, nodes can directly communicate with all the other nodes within their radio ranges; whereas nodes that not in the direct communication range use intermediate node(s) to communicate with each other. In these two situations, all the nodes that have participated in the communication automatically form a wireless network, therefore this kind of wireless network can be viewed as mobile ad hoc network.

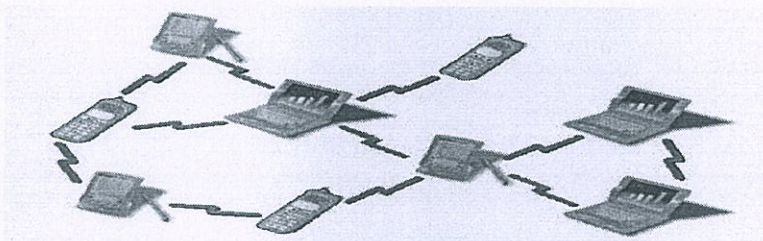


Fig.1. Nodes in the MANET

### II. SUSCEPTIBILITIES OF THE MOBILE AD HOC NETWORKS

Because mobile ad hoc networks have far more vulnerabilities than the traditional wired networks, security is much more difficult to maintain in the mobile ad hoc network than in the wired network.

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# International Journal of Innovative Research in Computer and Communication Engineering

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## An Analytical Study on Hybrid Routing Algorithm in Mobile Ad Hoc Network

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**ABSTRACT:** MANET is combination of wireless mobile nodes that communicate with each other without any kind of centralized control or any device or established infrastructure. Therefore MANET routing is a critical task to perform in dynamic network. Without any fixed infrastructure, wireless mobile nodes dynamically establish the network. Routing Protocols helps to communicate a mobile node with the other nodes in the network by sending or receiving the packets. In MANET different types of routing protocols have been recommended. These protocols can be classified into three main categories reactive (on-demand), proactive (table-driven) and hybrid routing protocols. This paper focus on hybrid routing protocols like LAHRP, ZRP.

**KEYWORDS:** MANET, LAHR, ZRP.

### I. INTRODUCTION ON MANET

A MANET is a type of ad-hoc network that can change locations and configure itself on the fly. MANET can be a model Wi-Fi connection, or another standard, like a cellular or satellite transmission. MANET has many applications like military, communication, conference meeting, automated battlefield, creating virtual classrooms and in sensor network. The main feature of MANET restoring and self organizing and transmission through multiple hops. Topology because nodes are self managed without any pre existing structure. MANET has different characteristics bandwidth constraint and limited physical security. MANET used routing protocols for sending data source to destination [1] [2] [3]. MANET diagram as shown in fig.1.

Computer networks were originally developed to connect number of devices through wires so that the devices can share some information and data with each other. With the increase in network sizes, the requirement of inter network communication was observed which leads to the development of internet and suit of protocols. It was necessary to provide network access to the entities which are not physically attached to any wired network. To enable this, the wireless networks were developed. Wireless network is a computer network that utilizes wireless network connection. There are two categories of wireless networks [5]:

1. Infrastructured Network
2. Infrastructure-less Network

Infrastructured network contains fixed and wired gateways whereas infrastructure-less network contains multi hop wireless nodes and it has no fixed infrastructure. MANET comes under the second category. MANET [1] [2] is a temporary wireless network in which no fixed infrastructure is used. So in MANET, topology changes frequently as mobile nodes moves independently and changes their links to the other nodes very quickly. Each mobile node acts a router and forwards the traffic to the other nodes in the network. If two mobile nodes are within each other's transmission range, they can communicate directly, otherwise the nodes in between have to forward the packets for them [4].



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# ROUTING PROTOCOLS IN MOBILE AD HOC NETWORK

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**Abstract:** Mobile ad hoc networks (MANETs) are autonomously self-organized networks without infrastructure support. In a mobile ad hoc network, nodes move arbitrarily; therefore the network may experience rapid and unpredictable topology changes. Because nodes in a MANET normally have limited transmission ranges, some nodes cannot communicate directly with each other. Hence, routing paths in mobile ad hoc networks potentially contain multiple hops, and every node in mobile ad hoc networks has the responsibility to act as a router. In this paper, we survey of routing protocols for MANET.

**Keywords:** MANETs, Proactive, Reactive and Hybrid Routing Protocols.

## I. INTRODUCTION

A mobile ad hoc network (MANET) is a continuously self-configuring, infrastructure-less network of mobile devices connected without wires in fig. 1. Ad hoc is Latin and means "for this purpose". Each device in a MANET is free to move independently in any direction, and will therefore change its links to other devices frequently. Each device must forward traffic unrelated to its own use, and therefore be a router. Mobile ad hoc networks (MANETs) consist of a collection of wireless mobile nodes which dynamically exchange data among themselves without the reliance on a fixed base station or a wired backbone network. In such networks, nodes are typically distinguished by their limited power, processing, and memory resources as well as high degree of mobility. Due to the limited transmission range of wireless network nodes, multiple hops are usually needed for a node to exchange information with any other node in the network. Thus, routing protocols play an important role in ad hoc network communications. Since all nodes in an ad hoc network can be connected dynamically in an arbitrary manner it is usually possible to establish more than one path between a source and a destination. This property of ad-hoc network routing is called multipath routing. A

Typical Structure of MANET diagram as shown in figure 1.

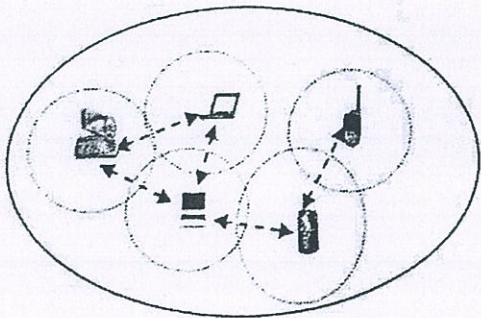


Figure 1: A Typical Structure of MANET

In most cases, the ability of creating multiple routes from a source to a destination is used to provide a backup route. When the primary route fails to deliver the packets in some way, the backup is used. This provides a better fault tolerance in the sense of faster and efficient recovery from route failures. Multiple paths can also provide load balancing and route failure protection by distributing traffic among a set of disjoint paths.

The main design criteria for the routing protocols in MANETs are as follows:

- Scalability and Reliability
- Simplicity and ease of implementation
- Fault Tolerance.
- Dynamic topology maintenance
- Distributed and lightweight

## II. ROUTING PROTOCOLS IN MANET

MANET routing protocols could be broadly classified into three major categories:

- A. Proactive Routing Protocols
- B. Reactive Routing Protocols
- C. Hybrid Routing Protocols

### A. Proactive Routing Protocols

Proactive protocols rely upon maintaining routing tables of known destinations, this reduces the amount of control traffic overhead that proactive routing generates because packets are forwarded immediately using known routes, however routing tables must be kept up-to-date; this uses memory and nodes periodically send update messages to neighbours, even when no traffic is present, wasting bandwidth [1]. Proactive routing is unsuitable for highly dynamic networks because routing tables must be updated with each topology change, this leads to increased control message overheads which can degrade network performance at high loads [2].

### B. Reactive Routing Protocols

Reactive Protocols use a route discovery process to flood the network with route query requests when a packet needs to be routed using source routing or distance vector routing



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## Proficient Inventory Repair Outsourcing for Data Integrity

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**ABSTRACT:** Cloud-based outsourced storage relieves the client's burden for storage management and maintenance by providing a comparably low-cost, scalable, location-independent platform. However, the fact that clients no longer have physical possession of data indicates that they are facing a potentially formidable risk for missing or corrupted data. To avoid the security risks, audit services are critical to ensure the integrity and availability of outsourced data and to achieve digital forensics and credibility on cloud computing. Provable data possession (PDP), which is a cryptographic technique for verifying the integrity of data without retrieving it at an untrusted server, can be used to realize audit services. In this paper, profiting from the interactive zero-knowledge proof system, we address the construction of an interactive PDP protocol to prevent the fraudulence of prove (soundness property) and the leakage of verified data (zero-knowledge property). We prove that our construction holds these properties based on the computation Diffie-Hellman assumption and the rewind able black-box knowledge extractor. We also propose an efficient mechanism with respect to probabilistic queries and periodic verification to reduce the audit costs per verification and implement abnormal detection timely. In addition, we present an efficient method for selecting an optimal parameter value to minimize computational overheads of cloud audit services. Our experimental results demonstrate the effectiveness of our approach.

**KEYWORDS:** Security Cloud storage, Interactive proof system, Provable data possession, Audit service.

### I. INTRODUCTION

Data outsourcing to cloud storage servers is raising trend among many firms and users owing to its economic advantages. This essentially means that the owner (client) of the data moves its data to a third party cloud storage server which is supposed to - presumably for a fee - faithfully store the data with it and provide it back to the owner whenever required. As data generation is far outpacing data storage it proves costly for small firms to frequently update their hardware whenever additional data is created. Also maintaining the storages can be a difficult task. Storage outsourcing of data to cloud storage helps such firms by reducing the costs of storage, maintenance and personnel. It can also assure a reliable storage of important data by keeping multiple copies of the data thereby reducing the chance of losing data by hardware failures. Storing of user data in the cloud despite its advantages has many interesting security concerns which need to be extensively investigated for making it a reliable solution to the problem of avoiding local storage of data. In this paper we deal with the problem of implementing a protocol for obtaining a proof of data possession in the cloud sometimes referred to as Proof of retrievability (POR). This problem tries to obtain and verify a proof that the data that is stored by a user at a remote data storage in the cloud (called cloud storage archives or simply archives) is Not modified by the archive and thereby the integrity of the data is assured.

Such verification systems prevent the cloud storage archives from misrepresenting or modifying the data stored at it without the consent of the data owner by using frequent checks on the storage archives. Such checks must allow the data owner to efficiently, frequently, quickly and securely verify that the cloud archive is not cheating the owner. Cheating, in this context, means that the storage archive might delete some of the data or may modify some of the data.

# AN ANALYTICAL COMPARISON OF VARIOUS ROUTING PROTOCOLS IN VANET

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**Abstract:** A number of ad hoc routing protocols of vehicular ad hoc network (VANET) have been proposed and evaluated based on mobile ad hoc network (MANET) routing protocols. Although a large number of routing protocols have been developed in MANET, the VANET has different environments such as highly dynamic topology, frequently disconnected network, hard delay constraints for safety-related application, and various communications environments (e.g., highway or urban traffic scenarios). Therefore, development of a suitable routing protocol that considers these characteristics of VANET should be needed. In this paper we describe and comparing the Stable Routing, Connectivity-Sensed Routing and A Lightweight Neighbor-Info-Based Routing in VANET.

**Keyword:** Routing, Protocol, VANET, V2V, V2I.

## I. INTRODUCTION

Vehicular ad hoc networks (VANETs) are an instantiation of mobile ad hoc networks (MANETs). Numerous routing protocols (e.g., [1-7]) for VANET have been proposed based on MANET routing protocols. Generally, MANET routing protocols have the main requirement to improve network performance to achieve minimal communication time with minimum consumption of network resources. Although a large number of routing protocols have been developed in MANET, a VANET routing protocol has different requirements [8] compared with the MANET routing protocols because the VANET has particular network environment as follows. A topology of the VANET usually changes due to high speed of movement between vehicles. A network could also be frequently disconnected by the same reason. The VANET is usually operated in two typical communication environments such as highway and urban traffic scenarios.

Due to the special environment in VANET, it cannot have a widely applicable routing algorithm. The typical algorithm in VANET, such as GSR routing protocol, involves each node storing the neighbor lists, topology table, next hop table, and distance table. All of them maintain the state information of adjacent nodes and choose the appropriate router according to the location and topological information. In small network with high mobility and limited bandwidth, the performance of transmission is good. However, it requires the node to maintain the network topology. And with the increase of network size, the routing information that needs to be exchanged will increase exponentially. Another type of algorithm, such as the GPSR [5, 11], is based on position. It depends on the overall geographical location information search system. It cannot work without GPS.

Along with the fast development of VANET application, for example, the safety application and infotainment

application, more and more promising applications and the cost effectiveness of VANETs constitute major motivations behind increasing interest in such networks. Except for driving the development of VANETs, those applications are calling for more reliable network connectivity as well.

The issue of intermittent connectivity becomes rather vital. Therefore, designing specific routing protocols for urban scenario is more and more significant. Many works have been researching on that problem. When intermittent connectivity happens, one of the most adopted repair strategies is carry and forward [7] strategy: a moving vehicle stores the packet when it cannot find its next hop until a valid vehicle appears in its transmission range. Besides, [1] studied the multipath routing scheme, which can also improve the packet delivery to some extent. To further improve the reliability of packets delivering, opportunistic routing [3] strategy was put forward and studied.

## II. DISTANCE-BASED STABLE ROUTING DECISION SCHEME

We present the broadcasting scheme and the stable route decision scheme for urban inter vehicle communication. In this paper, our proposed scheme is focused on using vehicle to vehicle (V2V) communication in urban areas, without any support by using vehicle to infrastructure (V2I) communication. We assume that the communication protocol between the vehicles is IEEE 802.11p [13], and the transmission range is 200 m. The IEEE 802.11p based communication device is equipped with the global positioning system (GPS) or another global navigation satellite system (GNSS) for each vehicle. These devices have geographic information such as map and periodically send HELLO messages (i.e., beacons) announcing their information to their neighbors. Therefore, every vehicle can acquire the neighbor vehicle information, (e.g., position,



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## Panda: Public Auditing for Shared Data with Efficient User Revocation in the Cloud

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**ABSTRACT:** With data storage and sharing services in the cloud, users can easily modify and share data as a group. To ensure shared data integrity can be verified publicly, users in the group need to compute signatures on all the blocks in shared data. Different blocks in shared data are generally signed by different users due to data modifications performed by different users. For security reasons, once a user is revoked from the group, the blocks which were previously signed by this revoked user must be re-signed by an existing user. The straightforward method, which allows an existing user to download the corresponding part of shared data and re-sign it during user revocation, is inefficient due to the large size of shared data in the cloud. In this paper, we propose a novel public auditing mechanism for the integrity of shared data with efficient user revocation in mind. By utilizing the idea of proxy re-signatures, we allow the cloud to re-sign blocks on behalf of existing users during user revocation, so that existing users do not need to download and re-sign blocks by themselves. In addition, a public verifier is always able to audit the integrity of shared data without retrieving the entire data from the cloud, even if some part of shared data has been re-signed by the cloud. Moreover, our mechanism is able to support batch auditing by verifying multiple auditing tasks simultaneously. Experimental results show that our mechanism can significantly improve the efficiency of user revocation.

**KEYWORDS:** Public auditing, shared data, user revocation, cloud computing.

### I. INTRODUCTION

With data storage and sharing services (such as Drop box and Google Drive) provided by the cloud, people can easily work together as a group by sharing data with each other. More specifically, once a user creates shared data in the cloud, every user in the group is able to not only access and modify shared data, but also share the latest version of the shared data with the rest of the group. Although cloud providers promise a more secure and reliable environment to the users, the integrity of data in the cloud may still be compromised, due to the existence of hardware/software failures and human errors [2], [3]. To protect the integrity of data in the cloud, a number of mechanisms [3]–[15] have been proposed. In these mechanisms, a signature is attached to each block in data, and the integrity of data relies on the correctness of all the signatures. One of the most significant and common features of these mechanisms is to allow a public verifier to efficiently check data integrity in the cloud without downloading the entire data, referred to as public auditing (or denoted as Provable Data Possession[3]).

This public verifier could be a client who would like to utilize cloud data for particular purposes (e.g., search, computation, data mining, etc.) or a third party auditor (TPA) who is able to provide verification services on data integrity to users. Most of the previous works [3]–[13] focus on auditing the integrity of personal data. Different from these works, several recent works [14], [15] focus on how to preserve identity privacy from public verifiers when auditing the integrity of shared data. Unfortunately, none of the above mechanisms, considers the efficiency of user revocation when auditing the correctness of shared data in the cloud. With shared data, once a user modifies a block, she also needs to compute a new signature for the modified block. Due to the modifications from different users, different blocks are signed by different users. For security reasons, when a user leaves the group or misbehaves, this

# STUDY ON TRUST BASED AD-HOC ON-DEMAND DISTANCE VECTOR ROUTING PROTOCOL IN MANET

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**Abstract:** Mobile Ad-hoc Networks are type of wireless network which are infrastructure less, self organizing, highly mobile and quickly deployable. There is no central authority, the communication occur hop by hop based on cooperation among the nodes. It is vulnerable to attacks from malicious nodes since there is no centralized administration and security and hence the qualities of overall networks are also easily affected. As the network is wireless, security becomes the major issue in Mobile Ad hoc Networks. Some of the attacks such as modification, fabrication, impersonation and denial of service attacks are due to misbehavior of malicious nodes, which disrupts the transmission. Thus, secure routing protocols are needed which are robust and ensure that the nodes in the network behave in trustworthy manner otherwise detect and eliminate the untrustworthy nodes which degrade the overall performance. In this paper, we have given a survey of trust based AODV, in which, trust is used to ensure secure routing and improved network performance.

**Keywords:** Mobile ad hoc network (MANET), AODV Routing protocol, Secure AODV, Trust based AODV.

## I. INTRODUCTION

Mobile Ad-Hoc network (MANET) is infrastructure-less, self-configuring network, comprised of several wireless nodes. There are no base stations or routers like wired network for routing the packets. In this network, the nodes behave as a router and discover the routes and maintain the routing of packets. The main features and character is tics of MANET [1] are: Cooperation, Dynamic topology, Resource Constraints. They are characterized by limited bandwidth, power, highly mobile and quickly deployable.

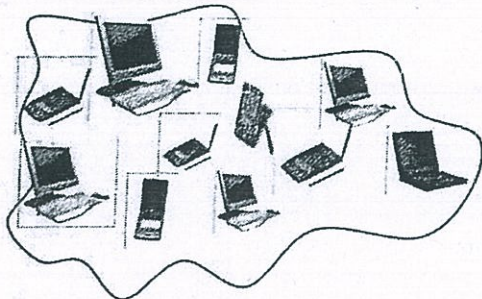


Figure1: Mobile Ad-hoc Network

Due to high mobility frequent disconnections occur that lead to various security threats. As nodes can join or leave the network any-time without any prior information, it leads to frequent changes in topology of the network and making MANETs vulnerable to security attacks.

Routing Protocols can be divided in to 3 types: Reactive Protocols, Proactive protocols, Hybrid protocols. Reactive protocols are those which find routes on demand whenever needed whereas Proactive protocols find the routes for transmission beforehand and Hybrid protocols is the combination of reactive and proactive routing. AODV is a reactive protocol and TRUST mechanism is implemented in it for ensuring secure routing. Different TRUST based AODV routing protocols have been analyzed and compared along with strengths and limitations. The security mechanism for MANET must have low computational complexity, less overheads, and efficient to detect malicious nodes. Also there should not be any centralized authority or trusted third parties to issue trust values and observe the behavior of nodes in the



## An Integrated Cost Management Framework for Commercial Clouds

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**Abstract**--Cloud service providers facilitate services to the users based on the request with pay by use model. Hardware resources are provided by the infrastructure vendors for the cloud service providers. Income and cost factors are considered in the pricing process for the commercial cloud environment. Service charges are categorized as income and expenses are indicated as cost. Service provider profit is estimated with the service charge and cost factors. Different cost functions are applied in the service cost estimation process. Energy, margin, Demand and supply factors are also considered in the service cost estimation process. Services are provided with different speed levels based on the request strategies.

The service cost management scheme is enhanced to handle immediate, reservation, peak supply and peak demand request levels. Service pricing policies are upgraded with data usage and data transfer properties. The service provider is also capable to select services dynamically. The cost management system is also improved to estimate and increase the profit for the service providers.

### I. Introduction

Cloud Computing is a computing paradigm in which different computing resources such as infrastructure, platforms and software applications are made accessible over the Internet to remote user as services. Infrastructure-as-a- Service (IaaS) cloud providers, such as Amazon EC2 and IBM Cloud, deliver, on-demand, operating system (OS) instances provisioning computational resources in the form of virtual machines deployed in the cloud providers data center. A cloud service differs from traditional hosting in three principal aspects. First, it is provided on demand; second, it is elastic since users that use the service have as much or as little as they want at any given time; and third, the service is fully managed by the provider. Due to dynamic nature of cloud environments, diversity of user requests and time dependency of load, providing agreed quality of service (QoS) while avoiding over-provisioning is a difficult task.

Service availability and response time are two important quality measures in cloud's users perspective. Quantifying and characterizing such performance measures requires appropriate modeling; the model ought to cover vast parameter space while being tractable. A monolithic model may suffer from intractability and poor scalability due to large number of parameters. Instead, we develop and evaluate tractable functional sub-models and their interaction model and solve them iteratively. We construct separate sub-models for different servicing steps in a complex cloud center and then the overall solution is obtained by iteration over individual sub-model solutions. We assume that the cloud center consists of a number of Physical Machines (PM) that are allocated to users in the order of task arrivals. More specifically, user may share a PM using virtualization technique. A cloud user may ask for more



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## Addressing Cloud Computing Security Issues

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**ABSTRACT:** The recent emergence of cloud computing has drastically altered everyone's perception of infrastructure architectures, software delivery and development models. Projecting as an evolutionary step, following the transition from mainframe computers to client/server deployment models, cloud computing encompasses elements from grid computing, utility computing and autonomic computing, into an innovative deployment architecture. This rapid transition towards the clouds, has fuelled concerns on a critical issue for the success of information systems, communication and information security. For a security perspective, a number of uncharted risks and challenges have been introduced from this relocation to the clouds, deteriorating much of the effectiveness of traditional protection mechanisms. As a result the aim of this paper is twofold; firstly to evaluate cloud security by identifying unique security requirements and secondly to attempt to present a viable solution that eliminates these potential threats.

**KEYWORDS:** Software as a Service (SaaS), Platform as a Service (PaaS), Infrastructure as a Service (IaaS), Interoperability, Denial of Service (DoS), Distributed Denial of Service (DDoS), Mobile Cloud Computing (MCC)ned.

### I. INTRODUCTION

Internet has been a driving force towards the various technologies that have been developed. Arguably, one of the most discussed among all these is Cloud Computing. Cloud computing is seen as a trend in the present day scenario with almost all the organizations trying to make an entry into it. The advantages of using cloud computing are: i) reduced hardware and maintenance cost, ii) accessibility around the globe, and iii) flexibility and the highly automated process wherein the customer need not worry about software up-gradation which tends to be a daily matter. A plethora of definitions have been given explaining the cloud computing. Cloud Computing has been defined as the new state of the art technique that is capable of providing a flexible IT infrastructure, such that users need not own the infrastructure supporting these services. This integrates features supporting high scalability and multi-tenancy. Moreover, cloud computing minimizes the capital expenditure. This approach service and user-location independent. According to the different types of services offered, cloud computing can be considered to consist of three layers. IaaS or Infrastructure as a Service (IaaS) is the lowest layer that provides basic infrastructure support service. PaaS – the Platform as a Service (PaaS) layer is the middle layer, which offers platform oriented services, besides providing the environment for hosting user's applications. SaaS - Software as a Service (SaaS) is the topmost layer which features a complete application offered as service on demand [5]. SaaS ensures that the complete applications are hosted on the internet and users use them.

### II. CLOUD COMPUTING SECURITY

#### 2.1 Trust

Trust is not a new research topic in computer science, spanning areas as diverse as security and access control in computer networks, reliability in distributed systems, game theory and age systems, and policies for decision making under uncertainty Perhaps the most notable example was the development of the Trusted Computer System Evaluation Criteria (TCSEC) [9] in the late 70s and early 80s. Here, trust was used in the process of convincing observers that a system (model, design or implementation) was correct and secure [10]. The concept of trust, adjusted to the case of two parties involved in a transaction, can be described as follows: "An entity A is considered to trust another entity B when entity A believes that entity B will behave exactly as expected and required" [11]. Thereinafter, an entity can be

# An Analytical Study on Key Management in Mobile Ad-Hoc Network

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**Abstract:** Mobile Ad hoc Network (MANET) is a collection of wireless infrastructure less network. The topology of the network changes continuously. Due to the dynamic structure of MANETs, they are prone to various types of attacks. The traditional security solutions for MANETs are inadequate, hence security should be maintained at all the levels. Many key management schemes for MANETs are presented to solve various security problems. Usually the cryptography techniques are used for secure communications in wired and wireless networks. Identities (ID)-based cryptography with threshold secret sharing, ECC and Bilinear Pairing computation are popular approaches for the key management design. The task of key management includes keys for generation, distribution and maintenance. Key maintenance includes the procedures for key storage, key update, key revocation. Thus the security is enhanced at various levels which prevent strong malicious attacks. In this paper, we adopt these approaches to construct tree structure and cluster structure ad hoc network and then give out a three-level security communication ad hoc network.

**Keywords:** MANET, wireless security, Elliptic Curve Cryptography, ID-based key management

## I. INTRODUCTION

A mobile ad-hoc network (MANET) is formed on-the-fly and it is also a convenient infrastructure less communication network. So we can construct MANET on demand without support from central servers. MANETs are especially suitable for communications in critical situations such as battlefield, emergency and rescue missions. The asymmetric cryptography is widely used because of its versatility (authentication, integrity, and confidentiality) and simplicity for key distribution. The symmetric approach has computation efficiency, yet it suffers from potential attacks on key agreement or key distribution. Many encryption and key sharing techniques are implemented in MANETs. Key management is a basic part of any secure communication. Most cryptosystems rely on some underlying secure, robust, and efficient key management system. Key management deals with key generation, storage, distribution, updating, revocation, and certificate service, in accordance with security policies.

## II. CHARACTERISTICS OF MOBILE AD HOC NETWORKS

MANETs with variants of the given characteristics. For example, MANET will take on a self-organized nature, and hence the end-users will set up and manage the network themselves. This means that an offline authority may not be available. Another example of varying characteristics emerges from MANETs formed by sensor nodes or laptop computers. Clearly schemes designed for MANETs formed by laptop computers will not have the same limitation on memory, energy (battery), and computational resources as those formed by sensor nodes.

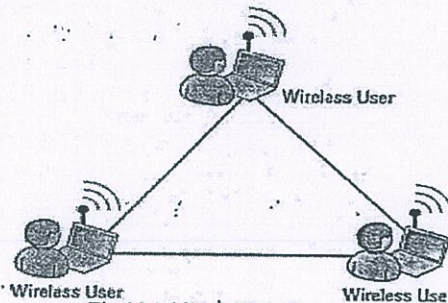


Fig.1 Mobile Ad Hoc Networks

The application may dictate the characteristics of the MANET and the degree to which some characteristics will influence the design of a suitable scheme.

## III. OVER VIEW OF KEY MANAGEMENT

Key management is a basic part of any secure communication. Most secure communication protocols rely on the substantial secure, robust, and efficient key management system. Key management primitive and trust model are described below.

### 3.1 Key management primitive

- First, if the key is disposed, the encrypted information would be disclosed. The secrecy of the symmetric key and private key must be assured locally. The Key Encryption Key (KEK) approach could be used at local hosts.
- Second, key distribution and key agreement over an insecure channel is at high risk and suffers from





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## Data Security Using Advanced Homomorphic Encryption Scheme in Cloud Storage

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**ABSTRACT:** Cloud computing techniques are used to share resources. Storing an important data with cloud storage providers comes with serious security risks. The cloud can modify the stored data, leak the stored confidential data, or return some inconsistent data to different users. This may happen due to operator errors, crashes, misconfiguration or bugs. Also, malicious security breaches such as penetration of external adversaries into the cloud storage provider, or an attack from any employee, can be much harder to detect or more damaging than accidental ones. So, the cloud data security requires authentication and integrity analysis for the storage data values. Public data audit ability and data dynamics model ensures the integrity of data storage in Cloud Computing. In existing system, an erasure code provides redundancy by breaking objects up into smaller fragments and storing the fragments in different places. The key is used to recover the data from any combination of a smaller number of those fragments. We enhance this with an advanced homomorphic encryption (AHE) scheme which is integrated with a decentralized erasure code to formulate a secure distributed storage system. The distributed storage system not only supports secure and robust data storage and retrieval. It meets the requirements that storage servers independently perform encoding and re-encryption and key servers independently perform partial decryption. The user forwards his data in the storage servers to another user without retrieving the data back. A major feature of the cloud services is that users' data are usually processed remotely in unknown machines that users do not own or operate. We propose an advanced homomorphic encryption (AHE) scheme, whereby the encryption and decryption capability of the system is enhanced.

**KEYWORDS:** Homomorphic Encryption, cryptographic Keys, Network Attached Storage, Network File System

### I. INTRODUCTION

The general process in cloud storage transfers the application software and databases to the centralized large data centres. The management of the data and services may not be fully trustworthy. Storing data in a third party's cloud system causes serious concern on data confidentiality [1]. A formal method, in order to provide strong confidentiality for messages in storage servers, the messages are encrypted by a cryptographic method before encoding it by an erasure code method, and then it can be stored. When the user wants to use a message, the code word symbols must be retrieved from the storage servers, then it must be decoded, and then decrypting them by using cryptographic keys.

There are several problems in the above mentioned straightforward integration system of encryption and encoding. Three of them are prioritized as follows: First, the user has the responsibility of most computation and the communication traffic between the user systems and storage servers and it is highly complicated process. Second, the user has to manage the cryptographic keys [2]. The security of entire system will be broken, if the user's device that store's the keys has been lost or compromised. Finally, besides data storage and retrieval, it is complicated for the storage servers to directly support some other functions like, directly forwarding the messages from one user to another one. A straight forward solution to supporting the data forwarding function in a distributed storage system is as follows: when the user A wants to forward or send a message to user B, then, he should download the encrypted message and decrypt it by using the secret key.



## A Multiple Determination Support for Web Application Clusters to Hybrid Clouds

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### Abstract

Internet environment provides huge amount of web applications for the users. Web browsers are used to initiate the web applications. Resource requirement is increased due to the peak load in the web servers. Hardware resource utilization depends upon the request traffic in the servers. Cloud computing environment provides resources to the web applications. Infrastructure, platform and software services are employed to share the resources in the cloud environment. The application migration is carried out from the web server into the cloud resources. Servers, load distributor and database operations are moved to the resources under the cloud environment. The migration process is initiated with reference to the cost, delay, spatial information about data source parameters.

Computational and data resources are provided through the cloud services. The service selection is initiated with economic and performance factors. Web workload movement to the cloud resources is managed by the CloudGenious framework. The migration can be done on multiple component environments. Evolutionary migration process for web application clusters is distributed over multiple locations. A multi-criteria-based selection algorithm on Analytic Hierarchy Process (AHP) is employed in CloudGenious model. Parallel Genetic Algorithm (PGA) is adapted to select migration solutions. The CloudGenious framework is implemented in CumulusGenious middleware.

The web application migration is supported to hybrid cloud environment through the Enhanced CloudGenious framework. The public cloud resources and private cloud data centers are utilized with user selection parameters. Data center spatial properties and control flow operations are combined in the migration process. Data selection based middleware functionalities are included in the migration process.

**Index Terms:** Computational Clouds, Task Migration, Hybrid Clouds, Web Applications and Parallel Genetic Algorithm

### 1. Introduction

“Cloud” computing embraces cyber infrastructure and builds upon decades of research in virtualization, distributed computing, “grid computing”, utility computing and, more recently, networking, web and software services. It implies service oriented architecture, reduced information technology Over head for the end-user, greater flexibility, reduced total cost of ownership, on demand services and many other things.

Some workloads have more to gain from a move to the cloud. This is often because they have a greater affinity for the attributes inherent in the cloud model. They align with the standardization, virtualization, automation and level of management and hardware support that a cloud service provides. These workloads can operate easily in a virtualized, automated cloud environment, where the infrastructure makes it possible to dynamically request services from a virtualized pool of hardware

and then automatically provision the required software stack and resource capacity.

Existing workloads with the greatest affinity for cloud may be those that are an excellent fit in terms of their potential gain and ease of deployment. These workloads require little to no customization because they can work with and benefit from the cloud’s standard catalog services. Several common IT workloads fare on these two measures, based on IBM’s research and experience with own cloud implementations. In general, the workloads that appear in the upper right quadrant have proven to be the best fit for cloud computing.

Existing workloads must be carefully analyzed to weigh potential gains against how easily they can be deployed in the cloud, whether public, private or hybrid [9]. The fact is not every workload is the same in terms of its importance and cost to the organization and this can affect its outcome in the cloud. Some of the most critical workloads are so

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# A SURVEY OF ACCESS CONTROL WITH SECURITY UNDER WIRELESS SENSOR NETWORKS

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**Abstract:** Sensor devices are deployed to monitor an area. Area surveillance is the main operation of the sensor devices. Radio frequency based data communication is adapted under the sensor network. Coverage property of the sensors is considered in the network deployment process. Sensor network operations are handled between the network owner and the user objects. All the data access privileges are granted by the network owner with reference to the payment by the users. All the user request and response transactions are secured using the privacy preservation models. The sensor data access is managed with Distributed Privacy-Preserving Access Control (DP<sup>2</sup>AC) scheme. Sensor data query process is verified with the tokens. The network owner verifies the tokens and transfers the query results to the user. Token preparation and verification operations are carried out using the blind signature values. Public verification and reuses control mechanism are supported by the Distributed Token Reuse Detection (DTRD) scheme. Witness nodes, Rectilinear Double Ruling and Spherical Double Ruling models are used for the token reusable detection process. The secured data transmission scheme is integrated with the data verification methods. Digital signature based attack control mechanism is adapted in the system. The data query operations are protected with anonymous and malicious user attacks. Computational overhead and communication overhead are also minimized in the system.

**Keywords:** *Wireless Sensor Networks, Blind Signature, Privilege Management, Token Generation and Verification and Privacy Preserved Data Query.*

## I. INTRODUCTION

Recent advances in microelectronic mechanical systems and wireless communication technologies have fostered the rapid development of networked embedded systems like wireless sensor networks (WSNs) [11]. WSN applications often need to be changed after deployment for a variety of reasons-reconfiguring a set of parameters, modifying tasks of individual nodes, and patching security holes. Many large-scale WSNs are deployed in environments where physically collecting previously deployed nodes is either very difficult or infeasible. Wireless reprogramming is a crucial technique to address such challenges.

Message authentication plays a key role in thwarting unauthorized and corrupted messages from being forwarded in networks to save the precious sensor energy. For this reason, many authentication schemes have been proposed in literature to provide message authenticity and integrity verification for wireless sensor networks (WSNs). These schemes can largely be divided into two categories: public-key based approaches and symmetric-key based approaches.

The symmetric-key based approach requires complex key management lacks of scalability and is not resilient to large numbers of node compromise attacks since the message sender and the receiver have to share a secret key. The shared key is used by the sender to generate a message

authentication code (MAC) for each transmitted message [1]. The authenticity and integrity of the message can only be verified by the node with the shared secret key is generally shared by a group of sensor nodes. An intruder can compromise the key by capturing a single sensor node. In addition, this method does not work in multicast networks.

## II. RELATED WORK

In this section, we first review some related work on privacy preserving techniques for participatory sensing, and then review the work on data aggregation. Finally, we analyze some key differences with the closely related previous work

### 2.1 Privacy Preserving Techniques

In the current state-of-the-art, a number of privacy preserving techniques for participatory sensing systems, especially the location-based services (LBSs), have been proposed by previous researchers, mainly to address the privacy of data source identity, user location, user trajectory, and sensing data content itself. These techniques can be classified into the following four categories.

#### 2.1.1 Randomization Based Techniques

Randomization based technique [9], where noise may be added into the original data, can hide the real value of sensitive information. This method was widely studied and used in data mining field. The loss of data quality is a significant shortcoming.



## Cluster based Anonymization and Knowledge Discovery on Big Data under Clouds

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### Abstract

The cloud data centers are installed to share high scalable big data values. Data analytics and mining operations are carried out with the support of big data applications and services. The big data values can be accessed by the public domain members. The big data values are composed with sensitive attributes. Data Anonymization and user identity protection are performed in the big data privacy preservation process. The data Anonymization methods are applied for the data publishing in big data environment. The big data privacy is provided with the K-anonymity, differential privacy and local recoding methods.

The big data services are protected with generalization based anonymity techniques. Proximity relations are estimated for the multiple sensitive attributes. Proximity aware clustering mechanism is adapted as local recoding scheme for the big data privacy. The initial phase of big data Anonymization is carried out with t-ancestors clustering algorithm and proximity-aware agglomerative clustering algorithm. The initial data partition is carried out using the t-Anccestor clustering algorithm with quasi identifier analysis. The local recoding process is executed to anonymized the sensitive attributes. Quasi and sensitive attributes are compared using the Proximity-aware distance measure. The clustering process is carried out with the MapReduce mechanism to improve the scalability.

The privacy preserved big data mining scheme is constructed to perform knowledge discovery on privacy preserved big data values. The system supports big data mining and analytics tasks. The service providers are identified with their performance measures. The pattern mining process is integrated with the MapReduce technique to discover the knowledge from big data values.

**Index Terms:** Big Data, Cloud Computing, MapReduce, Data Privacy and Security, Anonymization Process, Clusters and Pattern Discovery

### 1. Introduction


A powerful underlying and enabling concept is computing through service-oriented architectures (SOA) – delivery of an integrated and orchestrated suite of functions to an end-user through composition of both loosely and tightly coupled functions, or services – often network based. Related concepts are component-based system engineering, orchestration of different services through workflows and virtualization.

In an SOA environment, end-users request an IT service at the desired functional, quality and capacity level and receive it either at the time requested or at a specified later time. Service discovery, brokering and reliability are important and services are usually designed to interoperate, as are the composites made of these services [7]. It is expected that in the next 10 years, service-based solutions will be a major vehicle for delivery of information and other IT-assisted functions at both individual and organizational levels,

e.g., software applications, web-based services, personal and business “desktop” computing, high-performance computing.

The key to a SOA framework that supports workflows is componentization of its services, an ability to support a range of couplings among workflow building blocks, fault-tolerance in its data- and process-aware service-based delivery and an ability to audit processes, data and results, i.e., collect and use provenance information.

Component-based approach is characterized by reusability, substitutability, extensibility and scalability, customizability and composability. There are other characteristics that also are very important [4]. Those include reliability and availability of the components and services, the cost of the services, security, total cost of ownership, economy of scale and so on. Many categories of components are distinguished in the context from differentiated and undifferentiated hardware, to general purpose and specialized software

  
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## An Auditing-Free Cloud Storage Using Control Attribute Based Encryption

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**ABSTRACT:** Cloud storage services have grown popularly. For the importance reason of privacy, many cloud storage encryption schemas has been proposed to secure the data from those who do not have access. All such schemes assumes that cloud storage providers are secure and cannot be hacked. However in practice, some authorities may compel cloud storage providers to make public user secrets and confidential data. In this paper, we present our design for a new cloud storage encryption scheme that enables cloud storage providers to create convincing fake user secrets to protect user privacy. Since coercers cannot tell if obtained secrets are true or not, the cloud storage provider ensure that user privacy is still securely protected.

**KEYWORDS:** Cloud computing, Deniable Encryption, Attribute Based Encryption, Data security and Privacy.

### I. INTRODUCTION

Cloud storage services have rapidly become increasingly popular. Users can store their data on the cloud and access their data anywhere at any time. Because of user privacy, the data stored on the cloud is typically encrypted and protected from access by other users. Considering the collaborative property of the cloud data, attribute-based encryption (ABE) is regarded as one of the most suitable encryption schemes for cloud storage. There are numerous ABE schemes that have been proposed, hiding platform and implementation details unlimited virtualized resources provided to the users as a service is a cloud computing. Presently cloud service provided to the users offered high available storage and massively parallel computing of resources at relatively low costs. But the question is about the cloud users with different privileges store data on cloud is a most challenge issue in managing cloud data storage system. Most important problem for cloud environment is privileges.

### II. PROBLEM STATEMENT

The problem is to determine, public auditing for such shared data while preserving identity privacy remains to be an open challenge. Unique problem introduced during the process of public auditing for shared data in the cloud is how to preserve identity privacy from the TPA (Third Party Auditor).

### III. RELATED WORK

The concept of ABE (Attribute-Based Encryption) in which data owners can insert how they want to distribute data in terms of encryption. That is, only those who match the owner's conditions can successfully decrypt stored data. We can say here that ABE is encryption for privileges, not for users. This makes ABE a very helpful tool for cloud storage services since data sharing is a significant feature for such services. Cloud storage users are not practical for data owners to encrypt their data by pair wise keys. Furthermore, it is also impractical to encrypt data many times for many people. With ABE, data owners make a decision only which kind of users can access their encrypted data. Users who convince the conditions are able to decrypt the encrypted data. The scheme of deniable encryption is nothing but it also



## Attack Resistant Multimedia Data Sharing under Distributed Networks

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### Abstract

Multimedia contents can be accessed through high speed Internet access facilities. Unauthorized data transmission is verified with finger print models. The content distribution is carried out with the data and finger print values. The traitor tracing schemes are adapted to identify the redistribution points. The attack verification operations are carried out with anonymous communication models.

The copyright protection is achieved with reference to the anonymous finger print analysis method. Illegal re-distribution analysis uses the buyer identities for comparison process. The recombined finger prints model achieves high speed and scalability in data communication. The illegal data transmission is discovered through the Traitor Tracing Protocol (TTP). The traitor verification operations are carried out with the support of graph search based approach. Redistribution proxies and buyers are involved in the attacker discovery process. Merchant, Seed Buyers, Proxies and Peer Buyer transactions are handled with the support of P2P Distribution Protocol. The anonymous communication operations are carried out between the proxies and higher authorities.

Attack resistant multimedia data sharing system is constructed to share media data under distributed networks. The Enhanced Traitor Tracing Protocol (ETTP) is build with spatial and temporal verification features. Misbehavior proxies are verified with the support of Four party anonymous communication protocol Security and privacy features are integrated in the improved database search process. The communication privacy is assured with mutual anonymity communication.

**Index Terms:** Multimedia Sharing, Distributed Networks, Traitor Tracing Protocol and Multimedia Security

### 1. Introduction

The Peer to Peer (P2P) systems are constructed to share data over the nodes. Multimedia data sharing under P2P is build to provide the media files to the users. The open nature of P2P systems makes data privacy a major challenge. P2P system, there is no central authority that can authenticate and protect against malicious end users. It is up to the user to protect it and be responsible for its own actions. Consequently, each user in the system needs to evaluate the information received from another user in order to determine the trustworthiness about the information as well as the provider.

P2P systems possess inherent challenges in terms of security, privacy and anonymity because of its loose peer management and extremely distributed working principles. Hence, devising security, privacy and anonymity protection mechanisms for P2P systems poses challenges for researchers and software engineers [11]. According to Balfe et al. and Wasef and Shen, the main challenge in creating P2P systems stems from the perceived need of providing anonymity

for users of the system and the growing need of offering robust access control, confidentiality and data integrity. Illegitimate attacks in which malevolent parties may assume multiple identities undermine the efficiency of P2P systems and characterize a fundamental security threat. This is because formulating essential security services is challenging in the absence of stable and verifiable identities. The concepts of security, privacy and anonymity used in this paper are defined in the context of providing a legal content distribution in a P2P system and are described as follows:

1. Security: A mechanism aimed to protect an intellectual property and provide trustworthiness.
2. Privacy: The protection of user-related information in such a way that no personal information of an end user is revealed, unless a user is found to be guilty of illegal re-distribution. It is also called a conditional privacy.
3. Anonymity: A method to protect the identity of provider and receiver and also to protect the contents of transferred data between them.

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## A STUDY ON PROACTIVE, REACTIVE AND HYBRID ROUTING PROTOCOLS IN MOBILE AD-HOC NETWORK

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**Abstract:** A mobile ad hoc network (MANET) is a collection of wireless mobile nodes dynamically forming a network topology without the use of any existing network infrastructure or centralized administration. Routing is the process which transmitting the data packets from a source node to a given destination. Many routing protocols such as proactive, reactive and hybrid. Reactive routing protocols have been found to be user friendly and efficient when compared to other routing protocols. The main boon of routing protocols when compared with proactive and Hybrid routing protocols is the relatively unconditional low storage requirements, higher mobility and the availability of routes when needed. In this paper, we have present three types of Routing Protocols are studies i.e. proactive, reactive, and hybrid in MANETS

**Keywords:** Mobile ad-hoc network, application and challenges, routing protocol.

### I. INTRODUCTION

A wireless sensor network is a self configuring network of small sensor nodes communicating among themselves using radio signals, monitor and understand the physical world [1]. A WSN can be generally described as a network of sensor nodes that cooperatively sense and may control the environment enabling interaction between persons or computers and the surrounding environment [2]. Sensor nodes are also known as motes. These motes are highly constrained in terms of size, CPU power, bandwidth and memory.

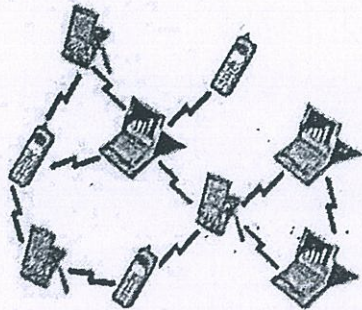


Figure 1: Mobile Ad-hoc Network

It provides a bridge between the real physical and virtual worlds. These sensor nodes are autonomous devices using a

variety of sensors to monitor the environment in which it is deployed. Due to the feature of ease of deployment of sensor nodes, wireless sensor networks (WSNs) have a vast range of applications such as monitoring of environment and rescue missions. Wireless sensor network is composed of large number of sensor nodes. The event is sensed by the low power sensor node deployed in neighborhood and the sensed information is transmitted to a remote processing unit or base station [3]. Wireless sensor networks are used in various types of applications like seismic sensing, military applications, health applications, home applications and environmental applications. There are two main applications of wireless sensor networks which can be categorized as: monitoring and tracking and other commercial applications [4].

In general the two types of wireless sensor networks are: unstructured and structured. The structured wireless sensor networks are those in which the sensor nodes deployment is in a planned manner whereas unstructured wireless sensor networks are the one in which sensor nodes deployment is in an ad-hoc manner.

As there is no fixed infrastructure between wireless sensor networks for communication, routing becomes an issue in large number of sensor nodes deployed along with other challenges of manufacturing, design and management of these networks. There are different protocols that have been proposed for these issues.

# A SURVEY OF ACCESS CONTROL WITH SECURITY UNDER WIRELESS SENSOR NETWORKS

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**Keywords:** *Wireless Sensor Networks, Blind Signature, Privilege Management, Token Generation and Verification and Privacy Preserved Data Query.*

## I. INTRODUCTION

Recent advances in microelectronic mechanical systems and wireless communication technologies have fostered the rapid development of networked embedded systems like wireless sensor networks (WSNs) [11]. WSN applications often need to be changed after deployment for a variety of reasons-reconfiguring a set of parameters, modifying tasks of individual nodes, and patching security holes. Many large-scale WSNs are deployed in environments where physically collecting previously deployed nodes is either very difficult or infeasible. Wireless reprogramming is a crucial technique to address such challenges.

Message authentication plays a key role in thwarting unauthorized and corrupted messages from being forwarded in networks to save the precious sensor energy. For this reason, many authentication schemes have been proposed in literature to provide message authenticity and integrity verification for wireless sensor networks (WSNs). These schemes can largely be divided into two categories: public-key based approaches and symmetric-key based approaches.

The symmetric-key based approach requires complex key management lacks of scalability and is not resilient to large numbers of node compromise attacks since the message sender and the receiver have to share a secret key. The shared key is used by the sender to generate a message

authentication code (MAC) for each transmitted message [1]. The authenticity and integrity of the message can only be verified by the node with the shared secret key is generally shared by a group of sensor nodes. An intruder can compromise the key by capturing a single sensor node. In addition, this method does not work in multicast networks.

## II. RELATED WORK

In this section, we first review some related work on privacy preserving techniques for participatory sensing, and then review the work on data aggregation. Finally, we analyze some key differences with the closely related previous work

### 2.1 Privacy Preserving Techniques

In the current state-of-the-art, a number of privacy preserving techniques for participatory sensing systems, especially the location-based services (LBSs), have been proposed by previous researchers, mainly to address the privacy of data source identity, user location, user trajectory, and sensing data content itself. These techniques can be classified into the following four categories.

#### 2.1.1 Randomization Based Techniques

Randomization based technique [9], where noise may be added into the original data, can hide the real value of sensitive information. This method was widely studied and used in data mining field. The loss of data quality is a significant shortcoming.





## Hierarchical Data Gathering with Network Area Verification Scheme for WSN

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### Abstract

The sensor nodes are deployed to manage the area monitoring tasks. All the sensed data values are maintained under the storage provided in the sensor nodes. The data values are transferred to the users with reference to the query values. The data query process is carried out in different ways. Intermediate sensor based data transmission model and cluster based data transmission models are adapted for the data gathering process. Mobile objects are also employed to manage the data collection process.

The data collection process is managed with multiple layer model. The hierarchical data gathering method is constructed with three layers. They are sensor, cluster and mobile collector layers. The sensor layer is bottom level layer employed to sense data values. Cluster layer is an interface between the sensor and mobile collector layers. The mobile collector is an interface between the user and sensor nodes. Distributed Load Balanced Clustering with Dual Data Upload (LBC-DDU) scheme is adapted to carry out the hierarchical data gathering process. The sensor node data values are uploaded to the cluster head. The cluster head redirects the data values into the mobile collector. All the user query responses are delivered through the mobile collector.

The hierarchical data gathering scheme is constructed with efficient cluster head pairing and polling point selection mechanism. The mobile collector trajectory plan is build with reference to the cluster head pairs and polling points. The network area verification process is initiated to analyze the data monitoring area and the data transmission reach ability measure. Trajectory plan, cluster construction and polling point selection operations are recalled to achieve complete network coverage. The bandwidth scheduling is also performed with network area details.

**Index Terms:** Data Gathering Schemes, Mobile Collector, Load Balanced Clustering and Wireless Sensor Networks

### 1. Introduction

Wireless sensor networks (WSNs) recently have been deployed and used for a large variety of critical applications, such as environmental monitoring, field estimation, field reconstruction and precision agriculture. In many applications, more than one physical attribute of a sensor field need to be sensed simultaneously. WSN deployed in a greenhouse for precision agriculture, where the soil temperature, moisture and fertility need to be measured for farmers to control the growth of crops with greater precision. These applications normally have strict coverage requirements for the deployed WSNs.

Coverage, which reflects how well a sensor field is monitored, is a critical factor for the success of a WSN. The coverage problems are highly dependent on the coverage model of individual sensor. The sensor coverage model is used to reflect sensors' sensing capability and capacity and is subject to a wide range of

interpretations due to a large variety of sensors and applications. Most of the current studies on the coverage problem are based on the disk model, which defines a disk centered at the sensor with the radius of its sensing range. The disk model is too simple and idealistic to be applied in many real-world applications. Based on a simple single-value parameter, some new sensor coverage models have been proposed according to some signal processing technologies for WSNs. They are not enough in some applications that need to reconstruct field physical characteristics, such as the temperature and moisture in precision agriculture.

Motivated from the precision agriculture applications and based on the ordinary kriging a coverage model is proposed, in our previous study from the perspective of field reconstruction. Field reconstruction is to estimate some spatially distributed physical attributes with a given reconstruction quality for the whole sensor field. Network lifetime is another

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# A SURVEY ON SECURITY ISSUES AND CHALLENGES IN VANET

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**Abstract:** The Vehicular Ad-Hoc Network, or VANET, is a technology that uses moves cars as nodes in a network to create a mobile network. VANET turns every participating car into a wireless router or node, allowing cars approximately 100 to 300 metres of each other to connect and, in turn, create a network with a wide range. VANET is emergent technologies that they deserve, recently, the attention of the industry and the academic institutions. The vehicular communications (VC) meet in the centre of numerous initiatives of the research that enhance the security and the efficiency of transportation systems, supplying, for example, acknowledgments of the ambient conditions (snow, fire, etc.), traffic in the road conditions (emergency, construction sites, or congestion). In this paper, we survey on security issues and challenges in VANET.

**keywords:** VANET, IEEE 802.11, Security, TDMA, SDMA, and CSMA.

## I. INTRODUCTION ON VANET

Now days, the sheer volume of road traffic affects the safety and efficiency of traffic environment. Approx 1.2 million people are killed each year on the road accidents. Road traffic safety has been the challenging issue in traffic management. One possible way is to provide the traffic information to the vehicles so that they can use them to analyse the traffic environment. It can be achieved by exchanging the information of traffic environment among vehicles[2]. All the vehicles are mobile in nature, hence a mobile network is needed which can be self organised and capable of operating without infrastructure support. With the progress of microelectronics, it becomes possible to integrate node and network device into single unit and wireless interconnection, i.e. ad hoc network. Further this network is evolved as mobile ad hoc network. VANET is an application of mobile ad hoc network. More precisely a VANET is self-organised network that can be formed by connecting vehicle aiming to improve driving safety and traffic management with internet access by drivers and programmers. Two types of communication are provided in the VANET.

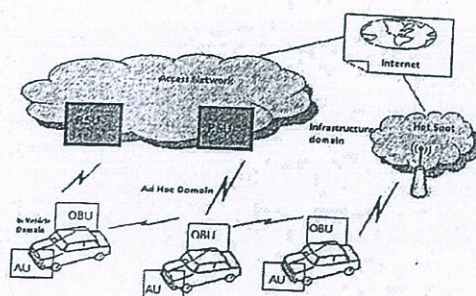


Figure 1: C2C-CC Architecture of VANET

First a pure wireless ad hoc network where vehicle to vehicle without any support of infrastructure. Second is

communication between the road side units (RSU), a fixed infrastructure, and vehicle. Each node in VANET is equipped with two types of unit i.e. On Board Unit and Application Unit (AU). OBU has the communicational capability whereas AU executes the program making OBU's communicational capabilities. An RSU can be attached to the infrastructure network which is connected to the Internet. Figure 1 describes C2C-CC architecture of VANET.

These signals can co-operate the driver for an uninterrupted and safe driving.

### VANET APPLICATIONS AND CHARACTERISTICS

To deploy VANETS, there must be some commercial applications that benefit from them. The applications where VANET can play major role can be categorised into two broad categories:

#### A. SAFETY RELATED APPLICATION

These applications are used to increase the safety on the roads. These applications can be further categorised in following way.

- **Collision Avoidance:** According to some studies, 60% accidents can be avoided if drivers were provided a warning half a second before collision. If a driver get a warning message on time collision can be avoided.
- **Traffic optimization:** Traffic can optimized by the use of sending signals like jam, accidents etc. to the vehicles so that they can choose their alternate path and can save time.
- **Cooperative Driving:** Drivers can get signals for traffic related warnings like curve speed warning, Lane change warning etc.

#### B. USER BASED APPLICATION

These applications provide the user infotainment. A VANET can be utilized to provide following services for the user apart from safety:



## Protecting Data and Query against Differential Attacks in Outsourced Cloud Search

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### Abstract

Huge volume of services and resources are shared by the cloud environment through the web. Data and services are distributed with reference to the user query values. All the query processing operations are outsourced to the remote machine under the cloud environment. The data management and security requirements are handled by the cloud server only. Encrypted cloud storage methods are adapted to secure the data shared under the clouds. All the outsourced operations are carried out on the encrypted data only. The data and query comparison operations are performed using the encrypted data search mechanism.

Security and privacy are guaranteed with encrypted storage support model. The Order Preserving Encryption (OPE) technique is adapted to support search process ranked manner. The relevance score and inverted index are protected with the Order Preserving Encryption (OPE). The distribution of encrypted data values are unchanged in the deterministic OPE mechanism. The index distribution is managed to support search operation in One-to-many OPE. One to many OPE is also denoted as probabilistic OPE Scheme. The outsourced data search on encrypted data model is carried out with the binary search algorithm. The distribution and index differences are utilized to estimate the search keyword in differential attacks.

The outsourced cloud search system is designed to protect data and query against differential attacks. The change point operations are protected with term subset reassignment mechanism. The relevant score values are inserted with noisy keyword and document values to protect the inverted indexes. The concept relationship based data search is supported with ranked results.

**Index Terms:** Outsourced Data Search, Cloud Data Centers, Order Preserving Encryption and Differential Attacks

### 1. Introduction

The key driving forces behind cloud computing is the ubiquity of broadband and wireless networking, falling storage costs and progressive improvements in Internet computing software. Cloud-service clients will be able to add more capacity at peak demand, reduce costs, experiment with new services and remove unneeded capacity, whereas service providers will increase utilization via multiplexing and allow for larger investments in software and hardware. Currently, the main technical underpinnings of cloud computing infrastructures and services include virtualization, service-oriented software, grid computing technologies, management of large facilities and power efficiency. Consumers purchase such services in the form of infrastructure-as-a-service (IaaS), platform-as-a-service (PaaS), or software-as-a-service (SaaS) and sell value-added services to users. Within the cloud, the laws of probability give service providers great leverage through statistical multiplexing of varying workloads

and easier management — a single software installation can cover many users' needs.

Two different architectural models are considered for clouds. The first one is designed to scale out by providing additional computing instances on demand. Clouds can use these instances to supply services in the form of SaaS and PaaS. The second architectural model is designed to provide data and compute-intensive applications via scaling capacity. In most cases, clouds provide on-demand computing instances or capacities with a “pay-as-you-go” economic model. The cloud infrastructure can support any computing model compatible with loosely coupled CPU clusters. Organizations can provide hardware for clouds internally, or a third party can provide it externally. A cloud might be restricted to a single organization or group, available to the general public over the Internet, or shared by multiple groups or organizations.



## Integrated Forwarder and Data Selection Scheme for Security Ensured Vehicular Communication

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### Abstract

Vehicle communication is carried out under the Vehicular Adhoc Networks (VANET). Vehicles and Road Side Infrastructure (RSI) elements are involved to construct VANET. Spatial and speed details are used to handle the VANET data transmission process. Vehicle data relay is managed with the support of On -Board Unit (OBU). Vehicle communication is carried out in two ways vehicles and infrastructure models. Shared data and infrastructure details are transferred over the vehicles. Vehicle communication and mobility activities are discovered by the attackers.

Road network and security conditions are transferred to all nodes in the VANET. Data broadcast operations are carried out with forwarder nodes. Waiting time information is used in the forwarder node selection process. Data broadcast operations are carried out using ROBust and Fast Forwarding (ROFF) protocol. Waiting time and priority factors are considered in the forwarder node selection process. Vehicle location and gap between vehicles are shown in the Empty Space Distribution (ESD) bitmap. Forwarding priority is identified with the support of the ESD bitmap information.

Data broadcast and multicast operations are handled with the integration of the Robust and Fast Forwarding (ROFF) and Trajectory based MultiCast (TMC) protocols. Forwarding capacity and Message Forwarding Metrics are estimated to identify the forwarder nodes. Data security and replica node concepts are adapted to improve the system. Network communication status is predicted with reference to the trajectory details.

**Index Terms :** Vehicular Adhoc Networks, Data Dissemination, ROBust and Fast Forwarding (ROFF) protocol, Trajectory based MultiCast (TMC) protocol and Data Replicas

### 1. Introduction

Information Technology and VANets technology advances toward more critical applications such as Vehicle Collision Warning Systems (CWS) and Driverless Vehicles, it is likely that a robust and highly available localization system will be required [2]. Unfortunately, GPS receivers are not the best solution in these cases, since their accuracy range from up to 20 or 30 m and since they cannot work in indoor or dense urban areas where there is no direct visibility to satellites. For these reasons and, of course, for security reasons, GPS information is likely to be combined with other localization techniques such as Dead Reckoning, Cellular Localization, and Image/Video Localization, to cite a few. This combination of localization information from different sources can be done using such Data Fusion techniques as Kalman Filter and Particle Filter.

The system analysis the localization requirements of a number of VANet applications. Several localization techniques can be used to estimate the position of a vehicle, and their advantages and disadvantages are applied to VANets. None of these techniques can achieve individually the desired localization requirements of critical VANet applications. The localization information from multiple sources can be combined to produce a single position that is more accurate and robust by using Data Fusion techniques.

### 2. Related Work

In the past decade, extensive research has been done to study the technical feasibility of heterogeneous integrated wireless networks. Some of this has focused on integrating wireless local area networks and cellular networks to allow for vertical handoffs. There has also been work on integrating mobile ad hoc networks (MANET) and cellular systems to improve throughput

## A PERFORMANCE EVALUATION OF HLA ARCHITECTURE FOR PACKET DROPPING ATTACKS IN WIRELESS AD-HOC NETWORK USING NS2

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**Abstract:** Link error and malicious packet dropping are two sources for packet losses in wireless ad hoc network. While observing a sequence of packet losses in the network, we are interested in determining whether the losses are caused by link errors only, or by the combined effect of link errors and malicious packet drop. Because the packet dropping rate in this case is comparable to the channel error rate, conventional algorithms that are based on detecting the packet loss rate cannot achieve satisfactory detection accuracy. To improve the detection accuracy, we propose to exploit the correlations between lost packets. In this paper, we develop a Homomorphic Linear Authenticator (HLA) based public auditing architecture that allows the detector to verify the truthfulness of the packet loss information reported by nodes. This construction is privacy preserving, collusion proof, and incurs low communication and storage overheads. To reduce the computation overhead of the baseline scheme, a packet-block-based mechanism is also proposed. In this paper, we improve the performance and good delivery ratio like throughput ratio, end to end delay ratio and Packet loss ratio in over wireless Adhoc network.

**Keywords:** Wireless Ad-hoc Network (WANET), Packet dropping, secure routing, attack detection, Homomorphic Linear Authenticator (HLA), public auditing.

### I. INTRODUCTION

In the absence of a supporting infrastructure, wireless ad hoc networks realize end-to-end communications in a cooperative manner. Nodes rely on the establishment of multi-hop routes to overcome the limitations of their finite communication range. Moreover, selfish nodes may misconfigure their devices to refuse forwarding traffic in order to conserve energy. This type of behavior is known as node misbehavior. Existing solutions for identifying misbehaving nodes either use some form of per-packet evaluation of peer behavior. On the other hand, per-packet behavior evaluation techniques are based on either transmission overhearing or achieving of Per-packet acknowledgement. This type of monitoring operations must be repeated on every hop of a Multihop route, thus it requires high communication overhead and energy expenditure. Also, they fail to detect dropping attacks of selective nature, since intermediate monitoring nodes may not be aware of the desired selective dropping pattern to be detected. Reputation-based systems use neighboring monitoring techniques to evaluate the behavior of nodes and reputation values are given to node according to its functionality of packet forwarding.

**Wireless Network:** Wireless network technologies come in several forms such as wireless PAN, Wireless LAN and Wireless WAN. These networks have their own characteristics

and properties. Wireless PANs are those networks in which the interconnected devices communicate using either Zig Bee or Bluetooth.

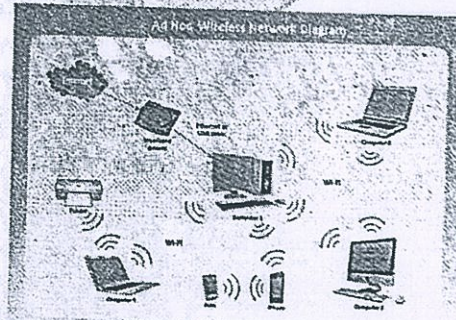


Figure 1: Wireless adhoc network

The range of this communication is very less, say 10m. Wireless LANs are networks that have various devices capable of communicating with each other.

#### Adhoc- Network

An ad-hoc network can be formed when a group of mobile devices communicate with each other without depending on any fixed infrastructure. In such cases, neighbouring nodes communicate with each other while the communication between non-neighbour nodes is performed via the

# A RESOURCE MIGRATION ON WEB APPLICATION CLUSTER TO PUBLIC CLOUDS

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**Abstract:** Web applications are accessed by millions of users over the internet via common web browser software. Cloud based virtualized services are used to support resources for web applications. Web application workloads are migrated to cloud environment to utilize the resources. web/application server, load-balancer and database are transferred from the local data center to the selected cloud infrastructure. Cloud service provider's offers computational services and Virtual Machine (VM) images for information systems. CloudGenius framework is constructed to handle process migration from web applications into public cloud resources. CloudGenius provides migration support for multi- component web applications. Evolutionary migration process for web application clusters is distributed over multiple locations. Parallel Genetic Algorithm (PGA) is applied to select migration solutions. CumulusGenius is an implementation support for CloudGenius framework.

**KEYWORDS:-** CloudGenius, CumulusGenius, Analytical Hierarchy Process, Parallel Genetic Algorithm, Virtual Machine

## I. INTRODUCTION

Cloud computing is a large-scale distributed computing paradigm in which a pool of computing resources is available to users via the Internet. Computing resources, e.g., processing power, storage, software, and network bandwidth, are represented to cloud consumers as the accessible public utility services [2]. Infrastructure- as-a-Service (IaaS) is a computational service model widely applied in the cloud computing paradigm. In this model, virtualization technologies can be used to provide resources to cloud consumers. The consumers can specify the required software stack, e.g., operating systems and applications; then package them all together into virtual machines (VMs). The hardware requirement of VMs can also be adjusted by the consumers. Finally, those VMs will be outsourced to host in computing environments operated by third-party sites owned by cloud providers. A cloud provider is responsible for guaranteeing the Quality of Services (QoS) for running the VMs. Since the computing resources are maintained by the provider, the total cost of ownership to the consumers can be reduced.

The steadily increasing domination of Cloud computing in the software market means that existing applications may need to migrate to this environment in order to reap the benefits of reduced infrastructural costs and dynamic access to computational resources. Cloud service providers offer users efficient and scalable data storage services with a much lower marginal cost than traditional approaches. Cloud applications, which implement critical business functionalities for many enterprises, demand highly available infrastructures at

affordable costs. This high availability can be provided through the allocation of different redundancy mechanisms to components of the cloud infrastructures. As a consequence, a major issue is related to the suggestion of a feasible IT infrastructure according to dependability and cost requirements [9].

## II. PROBLEM STATEMENT

A migration from an organization-owned data center to a cloud infrastructure service implies more than few trivial steps. First, an appropriate cloud infrastructure service, or IaaS offering, is selected. This demands a well-thought decision to be made that considers all relevant factors. price. Service Level Agreement (SLA) level, network latency, data center location, availability and support quality. Second, the existing web application and its execution platform, i.e., a web/application server, a load-balancer and a database, are transferred from the local data center to the selected cloud infrastructure service [3]. Next, a migration strategy needs to be defined and applied to make the transition from the local data center to the cloud infrastructure service.

The key problem in mapping web application server components to cloud data centers, is selecting the best collection of VM images and compute services to ensure that a system's QoS targets are met. Another challenge is to satisfy conflicting selection criteria related to software and computer services. To address the complexities when migrating multi component web application server clusters, we expand the migration framework CloudGenius. The CloudGenius

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# Wireless Communication under Broadband Reactive Jammer Attacks

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**Abstract :** A reactive jammer jams wireless channels only when target devices are transmitting. Compared to constant jamming, reactive jamming is harder to track and compensate against [2], [42]. Frequency Hopping Spread Spectrum (FHSS) and Direct Sequence Spread Spectrum (DSSS) have been widely used as counter measures against jamming attacks. However, both will fail if the jammer jams all frequency channels or has high transmit power. In this paper, we propose an anti-jamming communication system that allows communication in the presence of a broadband and high power reactive jammer. The proposed system transmits messages by harnessing the reaction time of a reactive jammer. It does not assume a reactive jammer with limited spectrum coverage and transmit power, and thus can be used in scenarios where traditional approaches fail. We develop a prototype of the proposed system using GNURadio. Our experimental evaluation shows that when a powerful reactive jammer is present, the prototype still keeps communication, whereas other schemes such as 802.11 DSSS fail completely.

**KEYWORDS -** Wireless Communication, Jamming Attacks, Reactive Jammer, Broadband

## I. INTRODUCTION

Jamming attacks are well-known threats to wireless communication. A jammer uses a radio frequency device to transmit wireless signals. Due to the shared nature of wireless medium, signals of the jammer and the sender collide at the receiver, and the signal reception process is disrupted. Anti-jamming techniques have been extensively studied and proposed in the literature over the past decades. Frequency Hopping Spread Spectrum (FHSS) (e.g., [13], [37]) and Direct Sequence Spread Spectrum (DSSS) are dominantly used for the anti-jamming purpose.

Although FHSS and DSSS techniques were developed more than 30 years ago, until now these techniques and their variants are all limited by a common assumption that the jammer can only jam part of the communication channels or has limited transmit power. Unfortunately, if the jammer is broadband (i.e., it can jam all channels simultaneously) or has a high transmit power to overcome the spreading gain, these methods fail to maintain the anti-jamming communication. Hence, it seems that a broadband and high-power jammer is perfect and invincible. However, when such a jammer adopts reactive jamming strategy, a closer examination on the jammer's behavior reveals its "Achilles Heel".

Reactive jamming attacks are among the most effective jamming attacks [2]. Compared to constant jamming, reactive jamming is not only cost effective for the jammer, but also hard to track and remove due to its intermittent jamming behaviors [2]. To be reactive, a reactive jammer "stays quiet when the channel is idle, but starts transmitting a radio signal as soon as it senses activity on the channel" [45]. Channel sensing causes a short delay. For example, energy detection is the most popular channel sensing approach with very small sensing time [15]. When implemented in a fully parallel pipelined FPGA for fast speed [7], energy detection requires more than 1ms to detect the existence of target signals for a 0.6 detection probability and -110dBm signal strength. In addition, upon detecting the target signal, the jammer needs to switch its status from quiet to transmitting. The switching process further takes time. As another example, German SGS 2000 series military jammer has a switching time of about 50 s [3]. Therefore, before the jammer actually jams, the sender has already transmitted  $tR$  bits, where  $t$  is the reaction time of the jammer and  $R$  is the transmission rate of the sender.

### A. Wireless communication under Broadband Reactive Jammer Attacks

This observation provides insights into designing counter-measures to deal with the broadband and high-power reactive jammers. It is easy for people to conceive that the receiver may collect information bits from the unjammed parts of received packets and try to assemble these bits together to obtain a meaningful message. However, significant technical challenges exist to prevent this intuition



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## Data Collection Scheme in Multi Sink for Wireless Sensor Networks

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**ABSTRACT:** Sensor devices are used to collect the environment information. Wireless Sensor Network (WSN) is constructed with a set of data collection units. Base station, sinks and sensor devices are used in the WSN. Power resources, bandwidth and storages are the limitations of the sensor devices. Sink nodes are used to collect data from a group of sensor devices. Many to one traffic pattern based data collection model increases the transmission load to a set of nodes. The traffic pattern based network load problem is referred as hotspot problem. Energy efficient communication protocols and multi-sink systems are used to handle hotspot problems. Static and mobility based sink placement schemes are used to handle data collection process. Mobile sinks are used to increase the network lifetime with delay constraints. Random mobility and controlled mobility models are used in the mobile sinks. In random mobility the sinks are moved randomly within the network. The sinks are deterministically moved across the network is referred as controlled mobility. The network lifetime is managed with the number of nodes and delay values. The Delay bounded Sink Mobility (DeSM) problem is initiated under sensor node allocation to sinks. A polynomial-time optimal algorithm is used for the origin problem. Extended Sink Scheduling Data Routing (E-SSDR) algorithm is used to schedule sink nodes. The mobile sink scheduling scheme is enhanced to support large size networks. Distributed scheduling algorithm is applied to schedule nodes with high scalability. The scheduling scheme is tuned for multiple sink based environment. Delay and energy parameters are integrated in the sink scheduling process.

**KEYWORDS:** WSN, DeSM, E-SSDR, MINLP.

### I. INTRODUCTION

Sensor nodes can be imagined as small computers, extremely basic in terms of their interfaces and their components. They usually consist of a processing unit with limited computational power and limited memory, sensors, a communication device, and a power source usually in the form of a battery. Other possible inclusions are energy harvesting modules, secondary ASICs, and possibly secondary communication devices. The base stations are one or more distinguished components of the WSN with much more computational, energy and communication resources. They act as a gateway between sensor nodes and the end user.

### II. WIRELESS SENSOR NETWORK

A wireless sensor network (WSN) is a wireless network consisting of spatially distributed autonomous devices using sensors to cooperatively monitor physical or environmental conditions, such as temperature, sound, vibration, pressure, motion or pollutants, at different locations. The development of wireless sensor networks was originally motivated by military applications such as battlefield surveillance. However, wireless sensor networks are now used in many civilian application areas, including environment and habitat monitoring, healthcare applications, home automation, and traffic control.

In addition to one or more sensors, each node in a sensor network is typically equipped with a radio transceiver or other wireless communications device, a small microcontroller, and an energy source, usually a battery.



## A SURVEY OF MULTI HOP PERFORMANCE OF MAC PROTOCOLS IN WIRELESS SENSOR NETWORKS

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**Abstract:** The reliability of data-delivery is a major concern in Low power Lossy Networks as they are deployed of devices of low energy, processing power and memory. The limitations of these devices leads to the dynamicity of the network. RPL is the routing protocol developed for these networks by the ROLL, working group of IETF. RPL is based on Destination Oriented Direct Acyclic Graph (DODAG). DODAGs have more than one path to the destination unlike the normal tree structure. Mac protocol supports the routing protocol to discover paths to the destinations using the link matrices. In our paper, we are comparing the three protocols: SBMAC, RBMAC and a RANDOM protocol on DODAG in terms of performance: drop rate and throughput. SBMAC follows the usual procedure of forwarding data packets depending on the routing table stored within the nodes. RBMAC forwards data packets to the nearby nodes and these nodes are then subjected to a competition to determine the next packet forwarding node. In random method, same procedure of forwarding data packets to the nearby nodes happens, but a random node will be chosen to forward the data packet.

**Keywords:** LLNs, SBMAC, RBMAC, DODAG, MAC Protocols

### I. INTRODUCTION

LLNs (Low Power Lossy Networks) are distinguished by the resources of limited energy, power etc. They get depleted of energy sooner which pave the way to the dynamic nature of network. Storing and maintaining routing table within each sensor node will demand much more energy consumption. The reliability of data packets is less in Low Power Lossy Networks. RPL was suggested by IETF which works based on DODAGs (Destination Oriented Direct Acyclic Graph). This offers more than one path from nodes to the root unlike the regular tree structure.

MAC Protocols are used for supporting the routing in Networks depending on the matrices. In Preamble sampling, the sensor nodes spend most of their time sleeping in order to save energy. They wakeup for a short duration of time called clear-channel-assessment (CCA) at every checking interval (CI). The nodes check for any primary user using the channel for the current time. If not, a preamble of length, CI followed by the data is transmitted by the sensor node. This makes sure that all receivers obtain the data. SB-MAC and RB-MAC are the two categories for preamble sampling approach based on the forwarding mechanism.

In RB-MAC, when a node needs to send the data packet to the destination, unlike the normal routing of sending data packet to the next hop node, it sends the data packet to the nodes in the nearby region. The receiver nodes then undergo a competition to determine the next packet forwarding sensor node. The SBMAC follows

the usual procedure of routing. When a node wants to send data packet to the destination, it forwards the data packet to the next hop node depending on the routing information. A disadvantage of this case is that, if the next hop node is not active as it depleted of energy, the packet delivery is failed.

So it demands, higher retransmissions, which further uses more energy. Other than comparing these two protocols, an additional protocol called RANDOM which differs from RBMAC in the selection of next packet forwarding node is also used in comparison for performance. In this method, when a node want to send data packet to the destination node, it forwards the data packet to all the nodes in the nearby region. One among the receiver nodes is elected randomly as the next packet forwarding node.

### II. RELATED WORK

The receiver based Mac protocol is used in many proposals. The CRB-MAC[6] is a receiver-based MAC protocol emphasising on reliability requirements of CSNs. CSNs (Cognitive Sensor Networks) can access both licensed and unlicensed spectrum bands (dynamic spectrum access). Low-Power Distributed Queuing [8] is an energy efficient MAC protocol which concentrates on network synchronization and channel access. It is based on three design principles: Low-Power Listening (LPL), Distributed Queuing (DQ) and Channel Hopping (CH). DODAG (Destination Oriented DAG) and its

## SUSTAINING PRIVACY PROTECTION IN PERSONALIZED WEB SEARCH OVER RE-RANKING WITH CACHE SERVICES MODEL IN WEB DATABASE

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**Abstract:** Personalized web search (PWS) has demonstrated its effectiveness in improving the quality of various search services on the Internet. However, evidences show that users' reluctance to disclose their private information during search has become a major barrier for the wide proliferation of PWS. This paper analysis a privacy protection in PWS applications that model user preferences as hierarchical user profiles. This paper proposes a PWS framework called UPS that can adaptively generalize profiles by queries while respecting user-specified privacy requirements. The proposed runtime generalization aims at striking a balance between two predictive metrics that evaluate the utility of personalization and the privacy risk of exposing the generalized profile. This paper presents a greedy algorithm, namely Enhanced GreedyIL, for runtime generalization. It also provides an online prediction mechanism for deciding whether personalizing a query is beneficial.

**Keywords:** Personalized web search, profile, Cache Search Tree, Fusion Re-ranking Algorithm, Security privacy.

### I. INTRODUCTION

Data mining is about finding new information in a lot of data. Data mining, the extraction of hidden predictive information from large databases, it is a powerful new technology with great potential to help companies focus on the most important information in their data warehouses. Data mining tools predict future trends and behaviors, allowing businesses to make proactive, knowledge-driven decisions. The automated, prospective analyses offered by data mining move beyond the analyses of past events provided by retrospective tools typical of decision support systems. Data mining tools can answer business questions that traditionally were too time consuming to resolve.

Security and privacy are not very new concepts in data mining, but there is too much that can be done in this area with data mining. Analysis of social networks and group dynamics from electronic communication give a thorough analysis of impact of social networks and group dynamics. Specifying the need to understand cognitive networks, it also models knowledge network using the Enron E-mail corpus. Recording of electronic communication like email logs, and web logs have captured human process. Analysis of this can present an opportunity to understand sociological and psychological process. Privacy preserving data analysis on graph and social networks provides various types of privacy breach and present an analysis using k-candidate anonymity, K-degree anonymity and k-neighborhood anonymity.

Previous works on profile-based PWS mainly focus on improving the search utility. The basic idea of these works is

to tailor the search results by referring to, often implicitly, a user profile that reveals an individual information goal. In the remainder of this section, we review the previous solutions to PWS on two aspects, namely the representation of profiles, and the measure of the effectiveness of personalization. Many profile representations are available in the literature to facilitate different personalization strategies. Earlier technique utilize term lists/vectors or bag of words to represent their profile.

However, most recent works build profiles in hierarchical structures due to their stronger descriptive ability, better scalability, and higher access efficiency. The majority of the hierarchical representations are constructed with existing weighted topic hierarchy/graph. The hierarchical profile automatically via term-frequency analysis on the user data and proposed UPS framework, do not focus on the implementation of the user profiles.

Actually, our framework can potentially adopt any hierarchical representation based on taxonomy of knowledge. As for the performance measures of PWS in the literature, Normalized Discounted Cumulative Gain (nDCG) is a common measure of the effectiveness of an information retrieval system. It is based on a human graded relevance scale of item-positions in the result list, and is, therefore, known for its high cost in explicit feedback collection. To reduce the human involvement in performance measuring, researchers also propose other metrics of personalized web search that rely on clicking decisions, including Average Precision (AP), Rank Scoring, and Average Rank.

## PRIVACY PRESERVING DATA ACCESS CONTROL PRIVILEGES WITH FULLY ANONYMOUS ATTRIBUTE-BASED ENCRYPTION

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**Abstract:** A data services in the cloud, users can easily modify and share data as a group. To ensure data integrity can be audited publicly, users need to compute signatures on all the blocks in shared data. Different blocks are signed by different users due to data modifications performed by different users. For security reasons, once a user is revoked from the group, the blocks, which were previously signed by this revoked user must be re-signed by an existing user. The straightforward method, which allows an existing user to download the corresponding part of shared data and re-sign it during user revocation, is inefficient due to the large size of shared data in the cloud. In this paper, we propose a novel public auditing mechanism for the integrity of shared data with efficient user revocation in mind. By utilizing proxy re-signatures, we allow the cloud to re-sign blocks on behalf of existing users during user revocation, so that existing users do not need to download and re-sign blocks by themselves. In addition, a public verifier is always able to audit the integrity of shared data without retrieving the entire data from the cloud, even if some part of shared data has been re-signed by the cloud.

**Key words:** Anony control, Anony Control- F, DiffeHellman assumption, Data access control

### I. INTRODUCTION

Cloud computing is the delivery of computing services over the Internet. Cloud services allow individuals and businesses to use software and hardware that are managed by third parties at remote locations. Examples of cloud services include online file storage, social networking sites, webmail, and online business applications. Cloud computing provides a shared pool of resources, including data storage space, networks, computer processing power, and specialized corporate and user applications. For that reason the Office of the Privacy Commissioner of Canada (OPC) has prepared some responses to Frequently Asked Questions (FAQs). To have also developed a Fact Sheet that provides detailed information on cloud computing and the privacy challenges it presents.

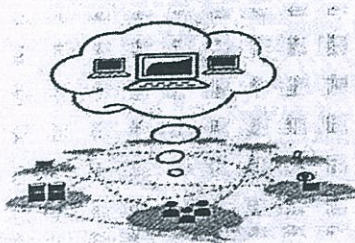


Figure 1: Cloud Computing

The following definition of cloud computing has been developed by the U.S. National Institute of Standards and Technology (NIST). Cloud computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction. This cloud model promotes availability and is composed of five essential characteristics, three service models, and four deployment models.

### II. SERVICE MODELS

The cloud computing service models are Software as a Service (SaaS), Platform as a Service (PaaS) and Infrastructure as a Service (IaaS). In a Software as a Service model, a pre-made application, along with any required software, operating system, hardware, and network are provided. In PaaS, an operating system, hardware, and network are provided, and the customer installs or develops its own software and applications.

### DEPLOYMENT OF CLOUD SERVICES

Cloud services are typically made available via a private cloud, community cloud, public cloud or hybrid cloud. Generally speaking, services provided by a public cloud are offered over the Internet and are owned and operated by a cloud provider. Some examples include services aimed at the

## TOWARDS TO GETTING BETTER ACTIVE PACKET LOSS DIMENSION ON FIREWALL IN CLOUD COMPUTING

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**Abstract:** The firewall is one amongst the central technologies permitting high-level access management to organization cloud knowledge networks. Cloud knowledge matching in firewalls involves matching on several fields from the info header. A minimum of 5 fields (protocol variety, supply and destination information processing addresses, and ports) are concerned within the call that rule applies to a given cloud knowledge. Since firewalls ought to filter all the traffic crossing the cloud sharing network perimeter, they must be able to sustain a really high outturn, or risk changing into a bottleneck. Thus, algorithms from process pure mathematics are applied. During this paper we have a tendency to contemplate a classical rule that we have a tendency to tailor to the firewall domain. We have a tendency to decision the ensuing rule "Geometric economical Matching" (GEM). The GEM rule enjoys an exponent matching time performance. Cloud computing could be a new versatile approach for providing higher process power in shared medium. It provides the distributed model supported self-evaluating techniques to enhance the process capabilities of the system with lesser social control issues. This computing model delivers computational capabilities as a calculated service from on top of parts to finish users. Although a good style of devices and their integration are involved, priority of handling security can go down. Implementing firewall for cloud suffers from varied network homeward-bound challenges like load equalization, scheduling, traffic divergence, filtering, dominant the speed of arrival, instance management, attack detection. It additionally aims toward achieving the resource optimizing-based mostly provisions and rules to lower the worth related to its possession and operations.

**Keywords:** Cloud computing, firewall, GEM.

### I. INTRODUCTION

Cloud computing is the delivery of computing services over the Internet. Cloud services allow individuals and businesses to use software and hardware that are managed by third parties at remote locations. Examples of cloud services include online file storage, social networking sites, webmail, and online business applications. Cloud computing provides a shared pool of resources, including data storage space, networks, computer processing power, and specialized corporate and user applications. When you store your photos online instead of on your home computer, or use webmail or a social networking site, you are using a "cloud computing" service. If you are an organization, and you want to use, for example, an online invoicing service instead of updating the in-house one you have been using for many years, that online invoicing service is a "cloud computing" service. Cloud computing refers to the delivery of computing resources over the Internet. Instead of keeping data on your own hard drive or updating applications for your needs, you use a service over the Internet, at another location, to store your information or use its applications. Doing so may give rise to certain privacy implications.

For that reason the Office of the Privacy Commissioner of Canada (OPC) has prepared some responses to Frequently Asked Questions (FAQs). To have also developed a Fact Sheet that provides detailed information on cloud computing and the privacy challenges it presents. The following definition of cloud computing has been developed by the U.S. National Institute of Standards and Technology (NIST):

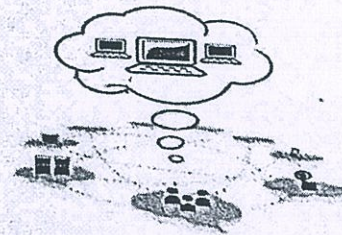


Figure 1: Cloud Computing

Cloud computing is a model for enabling convenient, on-demand network access to a shared pool of configurable



## Sensor Data Processing in Outsourced Cloud Resources

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### Abstract

Sensor data values are transferred and maintained in the outsourced cloud resources. The cloud and sensor networks are integrated to construct the sensor clouds. A data error detection approach is engaged for fast data error detection in big sensor data sets. The approach exploits the full computation potential of cloud platform and the network feature of WSN. Firstly, a set of sensor data error types are classified and defined. Based on that classification, the network feature of a clustered WSN is introduced and analyzed to support fast error detection and location. The error detection is based on the scale-free network topology and most of detection operations can be conducted in limited temporal or spatial data blocks instead of a whole big data set. The detection and location process can be dramatically accelerated. Furthermore, the detection and location tasks can be distributed to cloud platform to fully exploit the computation power and massive storage. The sensor cloud construction process is enhanced with optimized network partitioning methods. The error detection process is improved with error correction and recovery mechanisms. Big data cleaning methods are also integrated with the system for noise reduction process. Data summarization methods are applied to minimize the storage and computational resource requirements.

*Index Terms : Sensor Networks, Cloud Computing, Error Detection and Correction, Sensor Clouds and Data Recovery*

### 1. Introduction

Current WSNs are deployed on land, underground and underwater. Depending on the environment, a sensor network faces different challenges and constraints. There are five types of WSNs: terrestrial WSN, underground WSN, underwater WSN, multi-media WSN and mobile WSN. Terrestrial WSNs typically consist of hundreds to thousands of inexpensive wireless sensor nodes deployed in a given area, either in an ad hoc or in a pre-planned manner. In ad hoc deployment, sensor nodes can be dropped from a plane and randomly placed into the target area. In pre planned deployment, there is grid placement, optimal placement, 2-d and 3-d placement models. In a terrestrial WSN, reliable communication in a dense environment is very important. Terrestrial sensor nodes must be able to effectively communicate data back to the base station. While battery power is limited and may be rechargeable, terrestrial sensor nodes however can be

equipped with a secondary power source such as solar cells. In any case, it is important for sensor nodes to conserve energy. For a terrestrial WSN, energy can be conserved with multi-hop optimal routing, short transmission range, in-network data aggregation, eliminating data redundancy, minimizing delays and using low duty-cycle operations.

A key differentiating element of a successful information technology (IT) is its ability to become a true, valuable and economical contributor to cyber infrastructure. “Cloud” computing embraces cyber infrastructure and builds upon decades of research in virtualization, distributed computing, “grid computing”, utility computing and more recently, networking, web and software services [9]. It implies service oriented architecture, reduced information technology Over head for the end-user, greater flexibility, reduced total cost of ownership, on demand services and many other things. Component-based approach is characterized by reusability,

## AN OPTIMAL DATA DISTRIBUTION SCHEME FOR VEHICULAR COMMUNICATION USING ROFF AND TMC PROTOCOLS

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**Abstract-** Vehicular Ad hoc Network (VANET) is constructed with vehicles and road side infrastructures. Vehicle location and speed information are continuously collected to manage the VANET communication. Multi hop broadcasting schemes are used to disseminate safety messages. Forwarder node manages the data transmission process in multi-hop broadcasting protocols. Forwarder node selection process is carried out with reference to the waiting time details. Robust and Fast Forwarding (ROFF) protocol solves the unnecessary delay and collision issues in data dissemination process. Empty Space Distribution (ESD) bitmap describes the distribution of empty spaces between vehicles. A forwarder candidate acquires its forwarding priority using the concept of ESD bitmap. Collisions are avoided by control the waiting time differences than the predefined lower bound. The Robust and Fast Forwarding (ROFF) protocol is integrated with Trajectory based MultiCast (TMC) protocol for data dissemination process.

**Keywords:** VANET, Multicasting, ESD map, ROFF, TMC

### I. INTRODUCTION

Recent advances in short-range radio technology such as Dedicated Short Range Communications (DSRC) for inter-vehicle communications have driven significant efforts in investigating and developing vehicular networks. By sharing information among moving vehicles, a vehicular network can support a wide variety of real-world applications, including emergency alert [3], advertisement, file sharing [4], [5], data collection [6], etc. A lot of safety applications over vehicular ad-hoc networks (VANET) rely on emergency message dissemination (EMD) through multi-hop broadcast. In EMD, a certain vehicle (i.e. source) issues an emergency message when a dangerous situation such as vehicle collision has been detected. Since the emergency message includes time-sensitive life-critical information, it should be disseminated to all vehicles in the target region as quickly and reliably as possible. Commonly, the target region is a road segment that is up to several kilometers long in the opposite direction of the source. Since the one-hop communication range of a source cannot cover the target region fully, multi-hop broadcasting should be used to disseminate the emergency message [1]. Until now, many broadcast schemes have been proposed to meet the requirements on the timeliness and reliability of EMD. The reliability can be improved by retransmitting the original copy of the emergency message or removing interference from hidden nodes [2], [3]. However, retransmissions and control messages exchanged for the interference avoidance

increase the latency of the message dissemination. Apart from reliability issues, for fast message dissemination, the vehicle (called farthest vehicle) farthest from a forwarder in the message dissemination direction should be designated as a next forwarder. However, since the farthest vehicle can fail to successfully receive the message due to an inherently lossy wireless channel, the explicit designation of the farthest vehicle as the next forwarder may cause the multi-hop forwarding to be suspended. In most forwarding mechanisms [1], [4], therefore, vehicles (called forwarder candidates) which have received the broadcast message and are farther away from the previous forwarder contend to become a new forwarder in a distributed manner.

The common idea behind existing forwarding mechanisms is to differentiate each waiting time (WT) of forwarder candidates. The waiting time ranges from 0 to the predefined upper bound (PUB). A forwarder candidate selects a point in the time range and uses it as the waiting time. In particular, in order to maximize the hop progress of the message in each forwarding, each forwarder candidate uses its waiting time that is inversely proportional to the distance from itself to the previous forwarder. Hence, the farthest forwarder candidate uses the shortest waiting time and then forwards the message first. The other forwarder candidates detect the transmission from the newly selected forwarder and suppress their scheduled transmissions. We reveal two problems of existing fast forwarding schemes in this paper. First, existing schemes tacitly assume the perfect

# CRASH LIBERAL WITH IMPACT FREE PACKET ARRANGEMENT FOR BELOW THE SURFACE AURAL LOCALIZATION

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**Abstract:** This article considers the matter of packet planning for localization in associate underwater acoustic sensing element network wherever sensing element nodes are distributed haphazardly in associate in operation space. Our goal is to attenuate the localization time, and to try and do therefore we have a tendency to think about 2 packet transmission schemes, specifically collision-free, and collision-tolerant. The required localization time is formulated for these schemes, and through analytical results and numerical examples their performances are shown to be generally comparable. the packet duration is short (as is the case for a localization packet), the operating area is large (above 3 km in at least one dimension), and the average probability of packet-loss is not close to zero, the collision-tolerant scheme is found to require a shorter localization time. This is a reasonable assumption because anchors are usually located on the surface and can be equipped with a GPS. An iterative Gauss-Newton algorithm is employed by each sensor node for self-localization, and the Cramér Rao lower bound is evaluated as a benchmark.

**Keywords:** Underwater acoustic networks, localization, packet scheduling, collision tollerant.

## 1. INTRODUCTION

After the emergence of autonomous underwater vehicles (AUVs) in the 70s, developments in computer systems and networking have been paving a way toward fully autonomous underwater acoustic sensor networks (UASNs) [1], [2]. Modern underwater networks are expected to handle many tasks automatically. The data packets are usually meaningless if they are not labeled with the time and the location of their origin. In this sense, localization is an indispensable task for the network. the challenges of underwater acoustic communications such as low data rates and long propagation delays with variable sound speed [4], a variety of localization algorithms have been introduced and

analyzed in the literature [5] [6]. For instance, in the terrestrial WSNs, a sensor node can be equipped with a GPS module to determine its location. On the other hand, GPS signals (radio-frequency signals) are highly attenuated underwater, and cannot propagate more than a few meters. In addition, radio signals experience negligible propagation delays as compared to the sound (acoustic) waves. An underwater sensor node can determine its location by measuring the time of flight (ToF) to several anchors with known positions, and performing multilateration. In contrast, acoustic signals propagate very slowly in comparison with light speed, and that introduces long

propagation delays between the underwater nodes. a great deal of research exists on underwater localization algorithms, little work has been done to determine how the anchors should transmit their packets to the sensor nodes. In long base-line (LBL) systems where ers are fixed on the sea floor, an underwater node interrogates the transponders for round-tri delay estimation. The size a single sensor node can vary from shoebox-sized nodes down to devices the size of grain of dust. The cost of sensor nodes is similarly variable, ranging from hundreds of dollars to a few cents, depending on the size of the sensor network and the complexity required of individual sensor nodes.

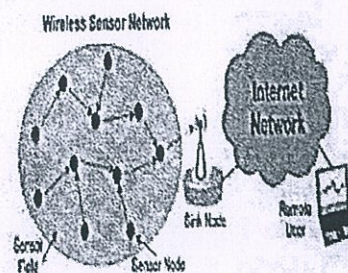


Figure 1: Wireless sensor network structure

# Conflict Lenient and Conflict Open Packet Forecast for Flooded Sound Localization

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**Abstract:** This article considers the matter of packet planning for localization in associate underwater acoustic sensing element network wherever sensing element nodes are distributed haphazardly in associate in operation space. Our goal is to attenuate the localization time, and to try and do therefore we have a tendency to think about 2 packet transmission schemes, specifically collision-free, and collision-tolerant. Through analytical results and numerical examples the performances of those schemes are shown to be comparable. In general, for tiny packet length (as is that the case for a localization packet) and huge in operation space (above 3km in a minimum of one dimension), the performances of the collision tolerant protocol is superior to its collision-free counterpart. At identical time, the anchors work severally of every alternative, and this feature simplifies the implementation method. The anchors are roughly synchronized with each other; however, the sensor nodes may not be synchronized with the anchors. This is a reasonable assumption because anchors are usually located on the surface and can be equipped with a GPS. It should be noted that no synchronization is needed when anchors use an on-demand packet transmission protocol, i.e., when an underwater node initiates the localization protocol, and the anchors are notified after reception of the transmitted packet. Anchors and sensor nodes are equipped with half-duplex acoustic modems, meaning they cannot transmit and receive simultaneously.

## I. INTRODUCTION

A wireless sensor network (WSN) is a computer network consisting of spatially distributed autonomous devices using sensors to cooperatively monitor physical or environmental conditions, such as temperature, sound, vibration, pressure, motion or pollutants, at different locations. The development of wireless sensor networks was originally motivated by military applications such as battlefield surveillance. However, wireless sensor networks are now used in many civilian application areas, including environment and habitat monitoring, healthcare applications, home automation, and traffic control. In addition to one or more sensors, each node in a sensor network is typically equipped with a radio transceiver or other wireless communications device,

a small microcontroller, and an energy source, usually a battery. The size a single sensor node can vary from shoebox-sized nodes down to devices the size of grain of dust. The cost of sensor nodes is similarly variable, ranging from hundreds of dollars to a few cents, depending on the size of the sensor network and the complexity required of individual sensor nodes.

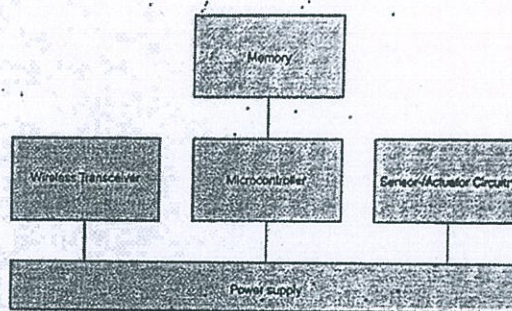


Figure 1: Simple architecture of WSN

Size and cost constraints on sensor nodes result in corresponding constraints on resources such as energy, memory, computational speed and bandwidth. In computer science, wireless sensor networks are an active research area with numerous workshops and conferences arranged each year.

## II. METHODOLOGY

Methodology is the systematic, theoretical analysis of the methods applied to a field of study. It comprises the theoretical analysis of the body of methods and principles associated with a branch of knowledge. Typically, it encompasses concepts such as paradigm, theoretical model, phases and quantitative or qualitative techniques.

A methodology does not set out to provide solutions it is, therefore, not the same as a method. Instead, a



# ENERGY CONSTRAINT AND RELAY ASSIGNMENT COMMUNICATION IN MANET

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**Abstract:** Mobile ad-hoc networks are constructed without the infrastructure. All the MANET operations are planned with the consideration of the energy and bandwidth limitations. Cooperative communication utilizes nearby terminals to relay the overhearing information to achieve the diversity gains and improve the transmitting efficiency in wireless networks. Cooperative Medium Access Control (CMAC) protocol is constructed to achieve the medium access interactions with relay model. We propose DEL-CMAC that focuses on the network lifetime extension, which is a less explored aspect in the related work. By considering the overheads and interference due to cooperation, as well as the energy consumption on both transceiver circuitry and transmit amplifier, DEL CMAC can significantly prolong the network lifetime. A distributed energy-aware location-based best relay selection strategy is incorporated, which is more reasonable for MANETs comparing with the existing schemes based on channel condition.

**Keywords:** MANET, CMAC, DEL-MAC

## I. INTRODUCTION

Mobile Ad Hoc Network (MANET) is a collection of two or more devices or nodes or terminals with wireless communications and networking capability that communicate with each other without the aid of any centralized administrator also the wireless nodes that can dynamically form a network to exchange information without using any existing fixed network infrastructure. In the near future, a pervasive computing environment can be expected based on the recent progresses and advances in computing and communication technologies[1]. Next generation of mobile communications will include both prestigious infrastructure wireless networks and novel infrastructure less mobile ad hoc networks (MANETs)[2]. Cross-layer distributed energy-adaptive location-based CMAC protocol (DEL-CMAC) is designed for Mobile Ad-hoc networks (MANETs). The design objective of DEL-CMAC is to improve the performance of the MANETs in terms of network lifetime and energy efficiency. A practical energy consumption model takes the energy consumption on both transceiver circuitry and transmit amplifier into account. A distributed utility-based best relay selection strategy selects the best relay based on location information and residual energy. Network allocation vector setting is provided to handle the varying transmitting power of the source and relay terminals. The DEL-CMAC scheme is enhanced to monitor and reduce the control message overhead in relay selection process. Shadow terminals problem is also solved in the improved DEL-CMAC protocol. The system tuned to handle the large scale network size and high mobility conditions.

The DEL-CMAC protocol is integrated with cross layer cooperative diversity aware routing algorithm to increase the throughput and minimize the delay.

## II. PROBLEM STATEMENT

To deal with the presence of relay terminals and dynamic transmitting power, we provide an innovative NAV setting to avoid the collisions and enhance the spatial reuse. Extensive simulation results reveal that DEL-CMAC can significantly extend the network lifetime under various scenarios at the cost of relatively low throughput and delay degradation, compared with IEEE standard DCF and throughput-aimed scheme Coop MAC. The mobile ad-hoc network data transmission operations are carried with the intermediate or relay nodes. The Cooperative Medium Access Control scheme is used for the cooperative data communication models. The (DEL-CMAC) scheme is adapted for the relay selection process[3]. Energy and location constraints are considered in the relay selection process. The following drawbacks are identified from the existing system. High scalability and mobility conditions are not handled by the system and Control message overhead is high in relay selection process[4]. Shadow terminals are not managed by the system and Transmission delay is increased with minimum throughput levels.

## III. RELATED WORK

### 1. Energy-Efficient Topology Control in Cooperative Ad Hoc Networks

The cooperative communication techniques can also be used in topology control to further reduce the transmission energy consumption or to improve the network connectivity[3]. In

## MESSAGE AUTHENTICATION PROCESS IN VANET DATA COMMUNICATION

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**Abstract:** Vehicular Ad-hoc Networks (VANET) are constructed to manage the communication between the vehicles. Vehicle to Vehicle (V2V) and Vehicle to Infrastructure (V2I) communication methods are supported under the VANET environment. In cryptography, a message authentication code (MAC) is a short piece of information used to authenticate a message—in other words, to confirm that the message came from the stated sender (its authenticity) and has not been changed in transit (its integrity). On Board Unit and Road Side Infrastructure (RSI) are used to carry out the communication process. In vehicular networks, broadcast communications are critically important, as many safety-related applications rely on single-hop beacon messages broadcast to neighbor vehicles. However, it becomes a challenging problem to design a broadcast authentication scheme for secure vehicle-to-vehicle communications. Especially when a large number of beacons arrive in a short time, vehicles are vulnerable to computation-based Denial of Service (DoS) attacks that excessive signature verification exhausts their computational resources.

**Keywords:** Vehicular Ad-hoc Networks, Message Authentication code, Denial of Service

### I. INTRODUCTION

VANETs are a subset of mobile ad hoc networks composed of network-equipped vehicles and infrastructure points, which will allow vehicles to communicate with other vehicles and with roadside infrastructure points. A Trusted Authority, which is responsible for providing anonymous certificates and distributing secret keys to all OBUs in the network. So that communication overheads and consumes delay in message authentication [1]. Vehicular ad hoc network (VANET) can offer various services and benefits to users and thus deserves deployment effort. Attacking and misusing such network could cause destructive consequences. It is therefore necessary to integrate security requirements into the design of VANETs and defend VANET systems against misbehavior, in order to ensure correct and smooth operations of the network. A security system for VANETs to achieve privacy desired by vehicles and traceability required by law enforcement authorities, in addition to satisfying fundamental security requirements including authentication, nonrepudiation, message integrity, and confidentiality.

Moreover, a privacy-preserving defense technique for network authorities to handle misbehavior in VANET access, considering the challenge that privacy provides avenue for misbehavior. The system employs an identity-based cryptosystem where certificates are not needed for authentication. We show the fulfillment and feasibility of our system with respect to the security goals and efficiency. Prediction Based Authentication (PBA) scheme is an efficient broadcast authentication scheme [2]. The authentication scheme handles computation-based DoS attacks and also resists packet losses caused by high mobility of vehicles. PBA is an efficient and lightweight scheme since it is primarily built on symmetric

cryptography. PBA is designed to exploit the sender vehicle's ability to predict future beacons in advance to further reduce the verification delay for some emergency applications. In addition, to prevent memory-based DoS attacks, PBA only stores shortened re-keyed Message Authentication Codes (MACs) of signatures without decreasing security.

### II. PROBLEM STATEMENT

To secure vehicular networks, an authentication scheme is indispensable to ensure messages are sent by legitimate vehicles and not altered during transmissions. Otherwise, an attacker can easily disrupt the normal function of VANETs by injecting bogus messages. Therefore, vehicles should broadcast each message with a digital signature. Therefore, vehicles should broadcast each message with a digital signature.

However, the current VANET signature standard using Elliptic Curve Digital Signature Algorithm (ECDSA) would cause high computational overhead on the standard OBU hardware, which has limited resources for cost constraints. Prior work has shown that one ECDSA signature verification requires 20 milliseconds on a typical OBU with a 400 MHz processor. When a large number of signed messages are received in a short time period, an OBU cannot process them before their dedicated deadline.

### III. RELATED WORK

**1. Flooding-Resilient Broadcast Authentication for VANETs**  
In this work, we observe that signature flooding can be mitigated by broadcast authentication schemes whose

# PERFORMANCE EVALUATION OF BLACK HOLE ATTACK IN DSR USING IDS ALGORITHM: AN MISBEHAVIOR REPORT AUTHENTICATION

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**Abstract:** Mobile Ad hoc Network (MANET) is a collection of mobile nodes equipped with both a wireless transmitter and a receiver that communicate with each other via bidirectional wireless links either directly or indirectly. The Proposed System is designed to resolve the weakness of Watchdog when it fails to detect misbehavior nodes with the presence of false misbehavior report. The core of MRA scheme is to authenticate whether the destination node has received the reported missing packet through a different route. The proposed IDS algorithm maintains the list of all the nodes which send the route reply to the source with sequence number greater than the threshold value. The source route broadcasts an RREQ message to all the neighbors within its communication range. Upon receiving this RREQ message, each neighbor appends their addresses to the message and broadcasts this new message to their neighbors. If any node receives the same RREQ message more than once, it ignores it. If a failed node is detected, which generally indicates a broken link in the RREQ message arrives to its final destination node, the destination node initiates an RREP message and sends this message back to the source node by reversing the route in the RREQ message. The performance of nodes transfer source to destination is high quality.

**Keywords:** MANET, MRA, IDS, RREQ.

## I. INTRODUCTION

The migration to wireless network from wired network has been a global trend in the past few decades. The mobility and scalability brought by wireless network made it possible in many applications. Among all the coeval wireless networks, Mobile Ad hoc Network (MANET) is one of the most important and unique applications. On the contrary to traditional Network architecture, MANET does not require a fixed network infrastructure; every single node works as both a transmitter and a receiver. Nodes communicate directly with each other when they are both within the same communication range. Otherwise, they rely on their neighbors to relay messages.

The self-configuring ability of nodes in MANET made it popular among critical mission applications like military use or emergency recovery. However, the open medium and wide distribution of nodes make MANET vulnerable to malicious attackers. In this case, it is crucial to develop efficient intrusion detection mechanisms to protect MANET from attacks. An intrusion detection system (IDS) is a device or software application that monitors network or system activities for malicious activities or policy violations and produces reports to a Management Station. Some systems may attempt to stop an intrusion attempt but this is neither required nor expected of a monitoring system. Intrusion detection and prevention systems (IDPS) are primarily focused on identifying possible incidents, with the improvements of the technology and cut in hardware costs, we are witnessing a current trend of expanding MANETs into industrial applications. To adjust to such Trend, we strongly believe that it is vital to address its potential security issues.

## II. METHODOLOGY

### A) INTRUSION DETECTION SYSTEMS

Intrusion is any set of actions that attempt to compromise the integrity, confidentiality, or availability of a resource and an intrusion detection system (IDS) is a system for the detection of such intrusions. There are three main components of IDS: data collection, detection, and response. The data collection component is responsible for collection and pre-processing data tasks: transferring data to a common format, data storage and sending data to the detection module. IDS can use different data sources as inputs to the system: system logs, network packets, etc. In the detection component data is analyzed to detect intrusion attempts and indications of detected intrusions are sent to the response component.

In the literature, three intrusion detection techniques are used. It detects intrusions as anomalies, i.e. deviations from the normal behaviors. Various techniques have been applied for anomaly detection, e.g. statistical approaches and artificial intelligence techniques like data mining and neural networks. Defining normal behavior is a major challenge. Normal behavior can change over time and intrusion detection systems must be kept up to date. False positives – the normal activities which are detected as anomalies by IDS – can be high in anomaly-based detection. On the other hand, it is capable of detecting previously unknown attacks.

## Secure Data Transmission Using Improved Diffie-Hellman Algorithm in VANET

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**Abstract-** A Vehicular Ad-Hoc Network is a form of mobile ad hoc network, which provide communications among nearby vehicles and nearest fixed equipment, like traffic sensor. Vehicular network act as an infrastructure to transfer the data between vehicles. Road Side Unit acts as a base station to deliver the data about the path to the vehicles using Diffie-Hellman key exchange algorithm. It is one of the more popular and interesting methods of key distribution. It is a public-key cryptographic system whose sole purpose is for distributing secured keys and avoiding activities of attackers. It gives high level security and more energy efficient data transmission on the network. Diffie-Hellman key exchange is used to find out another route quickly in the case of false route. It also used to recover the failure nodes. In this paper, we discuss about the secure data transmission using Improved Diffie – Hellman algorithm in VANET.

**Keywords-** VANET, Security, Privacy, RSU, OBU

### INTRODUCTION ON VANET

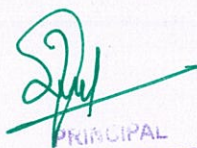
The Vehicular Ad-Hoc Network, or VANET, is a technology that uses moves cars as nodes in a network to create a mobile network. VANET turns every participating car into a wireless router or node, allowing cars approximately 100 to 300 metres of each other to connect and, in turn, create a network with a wide range. As cars fall out of the signal range and drop out of the network, other cars can join in, connecting vehicles to one another so that mobile internet is created. It is estimated that the first systems that will integrate this technology are police and fire vehicles to communicate with each other for safety purposes.

Vehicular network faces wide range of attacks and the most common attacks are: impersonation, bogus information injection, non integrity, non confidentiality, and Denial of Service (DOS). Two classes of attacks are like to occur in vehicular networks such as

1. external attacks, in which attackers not belonging to the network jam the communication or inject erroneous information.
2. Internal attacks, in which attackers are internal compromised nodes that are difficult to be detected.

Both types of attacks may be either passive intending to steal information and to eavesdrop on the communication within the network, or active modifying and injecting packets to the network. As a counter-measure against most of these attacks, the following security considerations should be satisfied providing a trusted infrastructure between communicating vehicles, mutual authentication between each communicating pair whether two vehicles or a vehicle and a fixed element of infrastructure, efficient access control mechanisms allowing not only the authorization to the network access but also the authorization to the services' access, confidential and secure data transfer.

Since ITS (Information Technology scheme) applications are mainly targeting the peoples' safety on roads, while passengers oriented Non-ITS applications are mostly concerned with commercial services provision on roads, thus Securing inter vehicular communication is different in both cases as shown in figure 1.1. As a consequence security requirements are different for each application type.



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# PERFORMANCE EVALUATION OF IMPROVED DIFFIE-HELLMAN ALGORITHM FOR SECURED DATA TRANSMISSION IN VANET

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**Abstract:** A Vehicular Ad-Hoc Network is a form of mobile ad hoc network, which provide communications among nearby vehicles and nearest fixed equipment, like traffic sensor. Vehicular network act as an infrastructure to transfer the data between vehicles. Road Side Unit acts as a base station to deliver the data about the path to the vehicles using Diffie-Hellman key exchange algorithm. The Diffie-Hellman Key Exchange is one of the more popular and interesting methods of key distribution. It is a public-key cryptographic system whose sole purpose is for distributing keys and avoiding attackers. It gives high level security and more energy efficient data transmission on the network. Diffie-Hellman key exchange is used to find out another route quickly in case of false route. Diffie-Hellman algorithm can be used to recover the failure nodes. In this paper, we improve the performance and good delivery ratio and we do several processes like throughput, network performance, reliability over VANET.

**KEYWORDS:** VANET, RSU, OBU Security, Privacy.

## I. INTRODUCTION ON VANET

The Vehicular Ad-Hoc Network, or VANET, is a technology that uses moves cars as nodes in a network to create a mobile network. VANET turns every participating car into a wireless router or node, allowing cars approximately 100 to 300 metres of each other to connect and, in turn, create a network with a wide range. Vehicular network faces wide range of attacks and the most common attacks are: impersonation, bogus information injection, non integrity, non confidentiality, and Denial of Service (DOS). Two classes of attacks are like to occur in vehicular networks such as

- i) external attacks, in which attackers not belonging to the network jam the communication or inject erroneous information.
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data transfer. Since ITS (Information Technology scheme) applications are mainly targeting the peoples' safety on roads, while passengers oriented Non-ITS applications are mostly concerned with commercial services provision on roads, thus Securing inter vehicular communication is different in both cases as shown in figure 1.1. As a consequence security requirements are different for each application type. For both types of applications, we found that the non-repudiation, the integrity and the non-traceability is important security requirements for worth considerations.

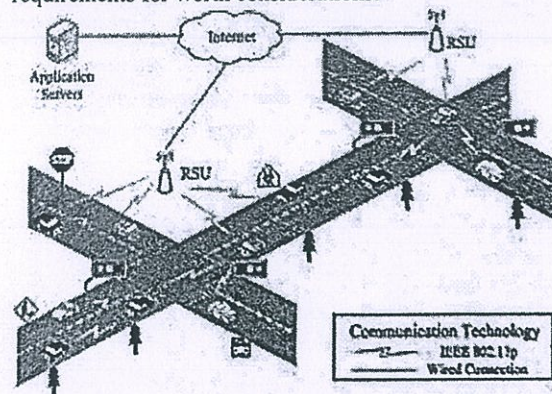


Figure 1: Communication Based on Vehicular Network by using the RSU



## NETWORK PLANNING WITH UNEMPLOYMENT SOCIAL MEDIA

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### Abstract

#### Social media Networks;

We survey the literature on social networks by putting together the economics, sociological and physics/applied mathematics approaches, showing their similarities and We expose, in particular, the two main ways of modeling network formation. While the physics/applied mathematics approach is capable of reproducing most observed networks, it does not explain why they emerge. On the contrary, the economics approach is very precise in explaining why networks emerge but does a poor job in matching real-world networks. We also analyze behaviors networks, which take networks as given and focus on the impact of their structure on individuals' outcomes. Using a game-theoretical framework, we then compare the results with those obtained in sociology.

**Keywords:** Social networks, unemployment, job search

### Introduction

A large body of research, first in sociology, then in physics, and more recently in economics, has studied the importance of social networks in different activities. Social networks are indeed important in several facets of our lives. For example, the decision of an agent to whether buy or not a new product, attend a meeting, commit a crime, find a job is often influenced by the choices of his or her friends and acquaintances (be they social or professional). The emerging empirical evidence on these issues motivates the theoretical study of network effects. For example, job offers can be obtained from direct, and indirect, acquaintances through word-of-mouth communication. Also, risk sharing devices and cooperation usually rely on family and friendship ties. Spread of diseases, such as AIDS infection, also strongly depends on the geometry of social network A network is an abstract object that models these social interactions. In particular, a network is formed by *nodes* (or *vertices*) that represent the actors involved, and *edges* (or *links*) that express the linkage among these nodes. Networks provide a simplified geometrical representation of a complex magma of social relationships. However, if social interactions represent a first-order driving force for the problem under job market outcomes and how different individuals different situations due to their asymmetric positions in the network of personal relationships. Isolated individuals, or individuals with low-quality links with the rest of the community, have weaker positions in the network and are there more prone to be and to stay unemployed for a long period of time since they do not obtain (valuable consideration, a detailed study



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## Defending Against Black Hole Attack Using DSR in MANET: An Misbehaviour Report Authentication

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**ABSTRACT:** Mobile Ad hoc Network (MANET) is a collection of mobile nodes equipped with both a wireless transmitter and a receiver that communicate with each other via bidirectional wireless links either directly or indirectly. The Proposed System is designed to resolve the weakness of Watchdog when it fails to detect misbehavior nodes with the presence of false misbehavior report. The core of MRA scheme is to authenticate whether the destination node has received the reported missing packet through a different route. The proposed IDS algorithm maintains the list of all the nodes which send the route reply to the source with sequence number greater than the threshold value. The source route broadcasts an RREQ message to all the neighbors within its communication range. Upon receiving this RREQ message, each neighbor appends their addresses to the message and broadcasts this new message to their neighbors. If any node receives the same RREQ message more than once, it ignores it. If a failed node is detected, which generally indicates a broken link in When the RREQ message arrives to its final destination node, the destination node initiates an RREP message and sends this message back to the source node by reversing the route in the RREQ message.

**KEYWORDS:** Black hole Attack, MANET, DSR, RREQ.

### I.INTRODUCTION

A Mobile Ad-Hoc network or MANET is an autonomous system of mobile routers connected by wireless links the union of which from an arbitrary graph. The Router or free to move randomly and organize themselves arbitrary. Thus the networks wireless topology may change rapidly and unproductively. Such a network is developed in ad-hoc basis without any pre-existing in infrastructure and may operating either stand alone fashion or may be connected to the layer internet. The Misbehaviour Report Authentication (MRA) scheme is designed to resolve the weakness of Watchdog when it fails to detect misbehaving nodes with the presence of false misbehaviour report. false misbehaviour report can be generated by malicious attackers to falsely report that innocent nodes as malicious. This attack can be lethal to the entire network when the attackers break down sufficient nodes and thus cause a network division. The core of MRA scheme is to authenticate whether the destination node has received the reported missing packet through a different route. a new intrusion detection system named Enhanced Adaptive Acknowledgement (EAACK) specially designed for MANETs. By the implementation of Misbehaviour Report Authentication (MRA) scheme, EAACK is able of detecting malicious nodes despite the existence of false misbehaviour report and compared it against other popular mechanisms in different scenarios during simulation. The results will demonstrate positive performances next to Watchdog, TWOACK and AACK in the cases of receiver collision, limited communication power and false misbehaviour statement. Some systems may attempt to stop an intrusion attempt but this is neither required nor expected of a monitoring system. Intrusion detection and prevention systems (IDPS) are primarily focused on identifying possible incidents, with the improvements of the technology and cut in hardware costs, we are witnessing a current trend of expanding MANETs into industrial applications. To adjust to such Trend, we strongly believe that it is vital to address its potential security issues.

# REVIEW AND ANALYSIS OF CLOUD COMPUTING AND GEO-DISTRIBUTED CLOUDS

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**Abstract**— Cloud computing has been the emerging technology in the recent years and computing has shifted its base to the clouds taking the world of computing to cloud computing. Cloud Computing is referred to a most recent emerging paradigm of computing utilities. Nowadays Cloud computing is rapidly changing the internet service enabling the small organization to build mobile application for users. Cloud computing is a significant advancement in the delivery of information technology and services. This paper surveys some of the recent technologies used in the cloud computing. we provide an introduction to cloud computing, several cloud service models and deployment models. It also explores about the characteristics, challenges of cloud computing. This article provides a contemporary discussion of the most relevant functional problems associated with the current evolution of Cloud Computing, mainly from the network perspective. The paper also gives a concise description of Cloud Computing concepts and technologies. It starts with a brief history about cloud computing, tracing its roots.

**Index Terms**— Cloud Computing, Cloud Service models, Cloud deployment models, Cloud Federation and Multimedia cloud

## I. INTRODUCTION

The term “cloud computing” describes the computation architecture taking the form of a cloud which is easily accessible by users on demand. As a metaphor for the Internet, the “cloud” is a familiar world. In a system where there is no regard for what a system is composed of, and it is simply studied as a black box of hardware and software, the term “cloud” an identification role, but as soon as it is combined with “computing,” everything changes and the meaning becomes blurred and more generic. Some vendors and researchers define cloud computing narrowly as an updated version of utility computing; basically virtual servers that are available on the Internet right now. Other analysts paint broader strokes, arguing that anything that may be consumed outside of the firewall is “in the cloud,” including conventional outsourcing [1].

The Cloud [2] is basically a metaphor for internet depending how it is depicted in computer network and is an abstraction for complex infrastructures. The basic principle behind cloud computing is that it assigns the computing resources in the great number of distributed computers rather than local computers or remote servers. This is advantageous

as it provides secure, quick, convenient data storage and the net computing service is centred by internet. So, the deployment, allocation, reallocation and monitoring of computing resources are all dynamically handled. The user needs not to care about how to buy software, servers, solutions etc. All the things are available through internet and are on-demand. The main advantage of this kind of computing is pay-per-use model, i.e. users have to pay only for what they have used. Hence it's becoming cost effective. Rajkumar Buyya, Chee Shin Yea, Srikumar Venugopala, James Broberg and Ivona Brandic [2] described about emerging IT technologies on cloud computing. They elaborate the scenario regarding market-oriented cloud architecture and resource management strategies for market-oriented Clouds. Here the following figure logically describes the basic cloud computing scenario [3].

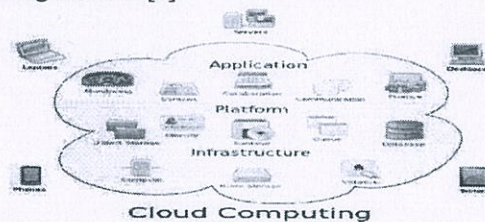


Fig. 1 Cloud Computing

Cloud computing offers massive scalability, immediate availability, and low cost services as major benefits, but as with most new technologies, it also carries with it inherent new risks and vulnerabilities too [4]. There are different cloud structures and services that are expanding, but the cloud computing penetration has not been as it was initially envisioned. Some specific concerns have halted enterprises from joining the cloud. The major one is security concerns. Security is playing a major role in companies' migration (or lack thereof) to cloud computing. Moving data into the cloud offers great convenience where users are not required to be knowledgeable about storage capacity, storing techniques, hardware management, or data maintenance. Online storage services of the cloud are offering flexible and customizable services that make data storage and management much easier and more accessible.

In the process of migrating from traditional computing methods to cloud computing, availability and integrity of data as well as security and privacy issues are of great importance. Users are more skeptical of the cloud service concept when they perceive that they must relinquish full control over their data. Incidents such as the recent downtime of Amazon's S3 [5] are very clear examples of these concerns. From a user's



## ANALYZING MULTI SINK BASED DATA COLLECTION SCHEME FOR WIRELESS SENSOR NETWORKS

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**Abstract:** Sensor devices are used to collect the environment information. Wireless Sensor Network (WSN) is constructed with a set of data collection units. Base station, sinks and sensor devices are used in the WSN. Power resources, bandwidth and storages are the limitations of the sensor devices. Sink nodes are used to collect data from a group of sensor devices. Many to one traffic pattern based data collection model increases the transmission load to a set of nodes. The traffic pattern based network load problem is referred as hotspot problem. Energy efficient communication protocols and multi-sink systems are used to handle hotspot problems. Static and mobility based sink placement schemes are used to handle data collection process. Mobile sinks are used to increase the network lifetime with delay constraints. Random mobility and controlled mobility models are used in the mobile sinks. In random mobility the sinks are moved randomly within the network. The sinks are deterministically moved across the network is referred as controlled mobility. The network lifetime is managed with the number of nodes and delay values. The Delay bounded Sink Mobility (DeSM) problem is initiated under sensor node allocation to sinks. A polynomial-time optimal algorithm is used for the origin problem. Extended Sink Scheduling Data Routing (E-SSDR) algorithm is used to schedule sink nodes.

**Keywords:** Multi Sink Node, Energy Efficient, Wireless Sensor Network, Data Routing

### I. INTRODUCTION

Sensors are hardware devices that produce measurable response to a change in a physical condition like temperature and pressure. Sensors sense or measure physical data of the area to monitored. The continual analog signal sensed by the sensors is digitized by an Analog-to-digital converter and sent to controllers for further processing. Characteristics and requirements of Sensor node should be small size, consume extremely low energy, operate in high volumetric densities, are autonomous and operate unattended, and be adaptive to the environment. As wireless sensor nodes are micro-electronic sensor device, can only be equipped with a limited power source of less than 0.5 Ah and 1.2 V. Sensors are classified into three categories.

- **Passive, Omni Directional Sensors:** Passive sensors sense the data without actually manipulating the environment by active probing. They are self powered i.e energy is needed only to amplify their analog signal. There is no notion of "direction" involved in these measurements.
- **Passive, narrow-beam sensors:** These sensors are passive but they have well-defined notion of direction of measurement. Typical example is 'camera'.
- **Active Sensors:** These group of sensors actively probe the environment, for example, a sonar or radar sensor or

some type of seismic sensor, which generate shock waves by small explosions.

The overall theoretical work on WSN's considers Passive, Omni directional sensors. Each sensor node has a certain area of coverage for which it can reliably and accurately report the particular quantity that it is observing. Several sources of power consumption in sensors are a) Signal sampling and conversion of physical signals to electrical ones, b) signal conditioning, and c) analog-to-digital conversion. Spatial density of sensor nodes in the field may be as high as 20 nodes/m<sup>3</sup>.

A wireless sensor network (WSN) is a wireless network consisting of spatially distributed autonomous devices using sensors to cooperatively monitor physical or environmental conditions, such as temperature, sound, vibration, pressure, motion or pollutants, at different locations. The development of wireless sensor networks was originally motivated by military applications such as battlefield surveillance. However, wireless sensor networks are now used in many civilian application areas, including environment and habitat monitoring, healthcare applications, home automation, and traffic control.

In addition to one or more sensors, each node in a sensor network is typically equipped with a radio transceiver or other wireless communications device, a small microcontroller, and an energy source, usually a battery. The envisaged size of a single sensor node can vary from



## Security Ensured Big Data Mining with Public Cloud Services

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### Abstract

Big data applications are constructed under the cloud environment to process the big data values. Public cloud provides easily scaled up and scaled down computing power and storage to everyone. Private cloud services are provided to group of people only. Big data can be used in disaster management, high energy physics, genomics, connectomics, automobile simulations and medical imaging applications.

Public cloud service components and private cloud data resources are integrated to form cross cloud services. Cross cloud service composition provides a concrete approach capable for large scale big data processing. Private clouds refuse to disclose all details of their service transaction records. History record based Service optimization method (HireSome-II) is privacy aware cross cloud service composition method. QoS history records are used to estimate the cross cloud service composition plan. k-means algorithm is used as a data filtering tool to select representative history records. HireSome-II reduces the time complexity of cross cloud service composition plan for big data processing.

Big data mining operations are integrated with the History record based Service optimization method (HireSome-II). Security and privacy is provided for cross cloud service composition based big data processing environment. Privacy preserved map reduce methods are adapted to support high scalability. The HireSome-II scheme is upgraded to support mining operations on big data.

### 1. Introduction

Processing large datasets has become crucial in research and business environments. Practitioners demand tools to quickly process increasingly larger amounts of data and businesses demand new solutions for data warehousing and business intelligence. Big data processing engines have experienced a huge growth. One of the main challenges associated with processing large datasets is the vast infrastructure required to store and process the data. Coping with the forecast peak workloads would demand large up-front investments in infrastructure. Cloud computing presents the possibility of having a large-scale on demand infrastructure that accommodates varying workloads.

Traditionally, the main technique for data crunching was to move the data to the computational nodes, which were shared. The scale of today's datasets has reverted this trend and led to move the computation to the location where data are stored. This strategy is followed by popular MapReduce implementations. These systems assume that data is available at the machines that will process it, as data is stored in a distributed file system such as GFS, or HDFS. This situation is no longer true for big data deployments on the cloud. Newly provisioned VMs need to contain the data that will be processed.

### 2. Related Work

Following the concept of delegation of decryption rights introduced by Mambo and Okamoto, Blaze *et al.*



## ENSURING DATA STORAGE USING PROVABLE DATA POSSESSION

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**Abstract:** Cloud computing delivers convenient, on-demand access to shared pools of data, applications and hardware over the internet. Cloud computing provides unlimited infrastructure to store and execute customer data and program. Due to this redundancy the data can be easily modified by unauthorized users which can be stored in the database. This leads to loss of data privacy and security to database. Extensive security and performance analysis shows that the proposed scheme ensures that cyclic redundancy check and time-tested practices and technologies for managing trust relationships in traditional enterprise IT environments can be extended to work effectively in both private and public clouds. Those practices include data encryption, strong authentication and fraud detection, etc.

**Key words:** cloud storage, cloud security, workflows, reliability

### I. INTRODUCTION

Several Computing, which is an Internet-based development trends are opening up the era of Cloud and use of computer technology. Moving data into the cloud offers great convenience to users since they don't have to care about the complexities of direct hardware management. The pioneer of Cloud Computing vendors, Amazon Simple Storage Service (S3) and Amazon Elastic Compute Cloud (EC2) are both well known examples. While these internet-based online services do provide huge amounts of storage space and customizable computing resources, this computing platform shift, however, is eliminating the responsibility of local machines for data maintenance at the same time. As a result, users are at the mercy of their cloud service providers for the availability and integrity of their data. On the one hand, although the cloud infrastructures are much more powerful and reliable than personal computing devices, broad range of both internal and external threats for data integrity still exist. Examples of outages and data loss incidents of noteworthy cloud storage services appear from time to time. On the other hand, since users may not retain a local copy of outsourced data, there exist various incentives for cloud service providers (CSP) to behave unfaithfully towards the cloud users regarding the status of their outsourced data. For example, to increase the profit margin by reducing cost, it is possible for CSP to discard rarely accessed data without being detected in a timely fashion. Similarly, CSP may even attempt to hide data loss incidents so as to maintain a reputation.

know told me of a meeting where he was explaining virtual private servers to group of non-technical people. The group was having trouble understanding some of the most basic concepts. He finally gave up and told the group that the servers were "in the Cloud." At that point, everyone in the group brightened and said they now understood. But they really didn't understand. They just thought they did because they thought they understood term Cloud Computing. But, in all likelihood, they did not understand that either. The presenter in this story was not trying to mislead people when he resorted to using "the Cloud" to help explain what he was discussing. Nevertheless, you may find intentional attempts to mislead if "Cloud" is added to products and services when those products and services really do not involve Cloud Computing. The term for this is cloud washing.

#### a) Its managed

One basic principle of cloud computing is that you no longer need to worry how the service you're buying is provided: with Web-based services, you simply concentrate on whatever your job is and leave the problem of providing dependable computing to someone else. Easily we manage the raw data.

#### b) It's "on-demand"

Cloud services are available on-demand and often bought on a "pay-as-you go" or subscription basis. So you typically buy cloud computing the same way you'd buy electricity, telephone services, or Internet access from a utility company. Sometimes cloud computing is free or paid-for in other ways (Hotmail is subsidized by advertising, for example).

### II. OVERVIEW OF CLOUD COMPUTING

The terms of Cloud Computing can be sometimes useful and sometimes misleading because people seem to think they understand the meaning of the term even when they don't. To illustrate the use of the term, someone I

# Dynamic Scaling Online Social Network Applications into Geo-Distributed Clouds

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**Abstract—** Geo-distributed IaaS (Infrastructure-as-a-Service) clouds provide an intriguing platform to deploy Online Social Network (OSN) services. To leverage the potential of clouds, a major task of OSN providers is optimizing the monetary cost spent on cloud resource utilization while providing satisfactory to OSN users. In this paper, the most notable initiatives towards whole application scalability in cloud environments are presented. This paper proposes efficient proactive algorithms for dynamic, optimal scaling of a Online Social Network in a geo-distributed cloud. Our key contribution is an online content migration and request distribution algorithm with the following features: (1) future demand prediction by characterizing social influences among the users in a simple but effective epidemic model; (2) oneshot optimal content migration and request distribution based on efficient optimization algorithms to address the predicted demand, and (3) a  $\Delta(t)$ -step look-ahead mechanism to adjust the one-shot optimization results towards the offline optimum. Using simulations based on realistic topologies, demand and cost, we demonstrate the effectiveness of our solution in realistic settings.

**Index Terms—** Geo-distributed clouds, Online Social Network, online content migration and one-shot optimization.

## I. INTRODUCTION

A fundamental innovation of cloud computing is the transformation of the arrangement of computing resources from static, long term and high upfront ownership investment based systems to dynamic provisioning systems. By providing cloud infrastructure and platform as services dynamic resource sharing across organizational and geographical boundaries can be enabled seamlessly to respond to changing demands and requirements. As a result, we witness the growing attentions of hybrid cloud and multi data center cloud deployment from both industry and academic research communities. These cloud technologies offer solutions to deal with high velocity and high volume of big data generated from geographically dispersed sources while providing real-time experience to a broader range of cloud consumers. More companies, such as IBM, Google, and Facebook, are managing multiple cloud-based data centres, which are usually geographically dispersed, to deal with the increasing computational requirements on large-scale data intensive analysis while providing guaranteed low latency to their

customers. Furthermore, recent study on efficient energy management for datacenters [1] shows that compared with putting all the infrastructures into a single datacenter, it is more energy efficient to divide a single high-density datacenter into multiple smaller datacenters, and keep low energy costs for each of them..

Cloud computing has recently gained significant popularity as a cost-effective model for delivering large-scale services over the Internet. In a Cloud computing environment, infrastructure providers (namely, cloud providers) build large data centers in geographically distributed locations to achieve reliability while minimizing operational cost [1]. The service providers (SPs), on the other hand, leverage geo-diversity of data centers to serve customers from multiple geographical regions. Today, large companies like Google, Yahoo and Microsoft have already adopted this model in their private clouds, offering a wide range of services to millions of users world-wide. As Cloud computing technologies become mature, an increasing number of companies are expected to adopt this model by moving into clouds. A key technique of each SP in cloud service management is to distribute servers in multiple data centers in order to meet the performance requirements specified in Service Level Agreements (SLA), while reducing operational costs by optimizing the placement of servers in multiple data centers. This typically involves solving two problems jointly: (1) deciding on the number of servers placed in each data center, and (2) routing each request to appropriate servers to minimize response time. As infrastructure providers typically offer on-demand and elastic resource access, it is possible to adjust the number of servers to match service demand in a dynamic way. Furthermore, the cost of reconfiguration (i.e. the cost of adding and removing servers) must be taken into account. The consideration for reconfiguration cost is important for ensuring the system stability and minimum management overhead and costs.

For instance, these operations have costs for setup (e.g., VM image distribution) and tear-down (e.g., data / state transfer). Thus, it is in the interest of SPs to reduce such reconfiguration cost. On the other hand, the price of resources offered by infrastructure providers are also subject to change. In particular, energy consumption is a major contributor to the operation cost of a data center. In many regions of the U.S., the electricity grid of each region is managed independently by a Regional Transmission Organization (RTO) which operates wholesales electricity markets in order to match

# PERSONALIZED TRAVEL PACKAGE RECOMMENDATION USING COCKTAIL ALGORITHM

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**Abstract**— As the worlds of business, entertainment, travel and Internet technology become more linked, new types of business data become available for creative use and formal analysis. This project provides a study of online travel information for personalized travel package suggestion to the best course of travel. A target along this line is to address the unique characteristics of travel data, which differentiates travel packages from traditional items for recommendation. The characteristics of the travel packages, tourist feedback, season are analyzed and used for proposing on personalized travel package recommendation. A tourist-area-season topic (TAST) model is developed to represent travel packages and tourists by different topic distributions, where the topic extraction is conditioned on both the tourists and the intrinsic features (i.e., locations, travel seasons) of the landscapes. This also provides the tourist information and tourist feedbacks to evaluate a package for recommendation. The experimental results show that the approach is thus much more effective than traditional recommendation methods for travel package recommendation.

**Index Terms**— Travel Package, Recommender Systems, Cocktail, Topic Modeling, Collaborative Filtering

## I. INTRODUCTION

As an emerging trend, more and more travel companies provide online services. However, the rapid growth of online travel information imposes an increasing challenge for tourists who have to choose from a large number of available travel packages for satisfying their personalized needs. Moreover, to increase the profit, the travel companies have to understand the preferences from different tourists and serve more attractive packages. Therefore, the demand for intelligent travel services is expected to increase dramatically. Since recommender systems have been successfully applied to enhance the quality of service in a number of fields, it is natural choice to provide travel package recommendations. Actually, recommendations for tourists have been studied before and to the best of our knowledge, the first operative tourism recommender system was introduced by Delgado and Davidson. Despite of the increasing interests in this field, the problem of leveraging unique features to distinguish personalized travel package recommendations from traditional recon- mender systems remains pretty open.

A cocktail approach on personalized travel package recommendation to address these challenges. Specifically, first analyze the key characteristics of the existing travel packages. Along this line, travel time and travel destinations are divided into different seasons and areas. Then, develop a Tourist-Area-Season Topic (TAST) model, which can represent travel packages and tourists by different topic distributions. In the TAST model, the extraction of topics is conditioned on both the tourists and the intrinsic features (i.e., locations, travel seasons) of the landscapes. As a result, the TAST model can well represent the content of the travel packages and the interests of the tourists. Based on this TAST model, a cocktail approach is developed for personalized travel package recommendation by considering some additional factors including the seasonal behaviors of tourists, the prices of travel packages, and the cold start problem of new packages. Finally, the experimental results on real-world travel data show that the TAST model can effectively capture the unique characteristics of travel data and the cocktail recommendation approach performs much better than traditional techniques[1][2].

Various models of the system and the corresponding travel package recommendation strategies based on TAST model. Also, the tourist-relation-area-season topic (TRAST) model, which helps understand the reasons why tourists form a travel group. This goes beyond personalized package recommendations and is helpful for capturing the latent relationships among the tourists in each travel group. In addition, systematic experiments conducted on the real-world data. These experiments not only demonstrate that the TRAST model can be used as an assessment for travel group automatic formation but also provide more insights into the TAST model and the cocktail recommendation approach.

### A. Objective

Travel package recommendation system is to present more powerful and flexible travel recommender systems. Time complexity rate of the system is to be reduced in this system. Reliability of the system is to be enhanced. Efficiency rate of the system is to be improved. High quality results in the recommender system.

# A Comparative Study of heart disease prediction USING DATA MINING TECHNIQUES

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**ABSTRACT:** Heart disease is the number one problem of the world. Heart disease more than people deaths occur during the first heart attack. But not only for heart attack have some problems attacked for breast cancer, lung cancer, ventricle. Valve, etc... a common heart disease is nothing. but a cardiovascular disease or a coronary heart disease is a very dangerous disease. most people attack for heart disease from the world. Coronary heart disease blood vessels around it. This disease causes disability as damage to brain so resulting in death. Data mining techniques are used is due to extract value from very large. In this paper focus on classification techniques was evaluated of prediction of heart disease. Using medical profiles such as age, sex, blood pressure, chest pain type, fasting blood sugar. It can predict like of patients getting heart disease.

**Keywords:** Data mining, Heart disease, classification, cluster,

## I. INTRODUCTION

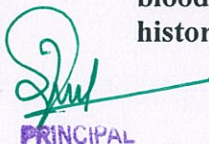
Now day's Heart disease is main reason for death in the world. Heart disease is a number one problem from the world. Heart disease is leading cause of death in the world. Over the past few years. Some types of disease occur from heart. There are several kinds of causes, reason, factor which increase the risk factor of heart disease. There are considered as important reason of heart disease. Most of hospitals admitted in heart disease patient. This disease mostly affected in male because smoking habits. This paper analyzes the different kinds of heart disease using the classification techniques.

## II. HEART DISEASE

Heart is important part of our human body. More than country affected for heart disease every year some of the million people for death from heart disease. Life is itself dependent on efficient working a heart. as brain, circulation of blood in body is inefficient the organs like brain suffer and if then heart is not properly within it. More then disease attack for heart. now

days many hospitals not proper treatment. but increasing the payment of bill. some of hospitals average treatment for patients so result is better. Now day's use of computer technology in the fields of medicine area diagnosis. Heart disease is a group of condition affecting the structure and function of heart and has more root causes. Heart disease is the leading cause of every year death in the world. Some types of disease occurs attack for heart. Types of disease considered are **coronary heart disease, angina pectoris, congestive heart failure, cardiomyopathy, congenital heart disease, arrhythmias, myocarditis, heart attack; heart cancer etc.** in this disease is particularly specific very dangerous disease to cardiovascular disease or coronary heart disease. There are considered some important reasons of heart disease.

Age Smoking Sugar Obesity  
Depression Hyper tension High  
blood cholesterol poor diet Family  
history Physical inactivity.

  
PRINCIPAL

109

201

## A Comparative Study of Perceiving Intrusion Using Data Mining Techniques

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**ABSTRACT:** By the rapid development of the computer network during the past few years, the security of information issue comes to be more and more difficult. The Intrusion Detection Systems (IDS) can be used widely for protecting network. Data mining techniques are extensively used, due to some attributes like the scalability, adaptability and validity. This paper focuses on review of the existing intrusion detection system by using data mining techniques and discussing on various disputes in the existing system based on certain classification parameters such as accuracy, detection rate, false alarm etc.

**Key Terms:** Data Mining, Intrusion Detection System, Classification, Clustering.

### I. INTRODUCTION

In recent years, with the terrific growth in networked computer resources, a variety of network-based applications have been developed to provide services in different areas such as ecommerce services, social media services, banking services, government services, etc. These Internet applications need a satisfactory level of security and privacy. On the other hand, the intruder create many vulnerable programs that attacks the various information on the networks. There is an increasing availability of tools and tricks for attacking and intruding networks. Compared with previous protection system, the Intrusion detection System (IDS) has come to be a key factor for the security of the network in the current online world. The data mining approach used in the field of IDS yields an improvement of detection rate, managing the false alarm rate and reduce false positive rate.

### II. INTRUSION DETECTION SYSTEM

The intrusion detection system is an approach that presets the intrusion that are occurred on the network. The intrusion has many types namely viruses, worms, Trojan horse, etc. The foregoing defense system like firewall, virtual private network haven't a sufficient ability for recognizing critical intrusions from the network. The role of IDS is to trap the hacker's presence on the network and inform to the network administrator or user of the system and also raises alarms or signals when the security violations are occurred. The figure 1 describes the overall architecture of IDS. Initially the information can be retrieved from the database, which is checked by the firewall. It can be protected by the IDS and sends the information to the corresponding network. IDS plays an important role to secure the network and its main goal is to view the network activities automatically to identify the malicious attacks. Over the years, the researchers and designers have used many techniques to design the IDS. But, there have been limitations exist in present intrusion detection systems.

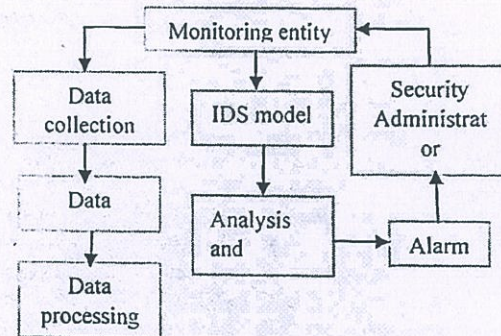


Figure 1: Overall architecture of Intrusion detection system

The IDS notices many attacks on the networks like (i) scanning attacks, (ii) denial of service (DOS) attacks, and (iii) penetration attacks. Each of these three categories of computer attacks has distinct signatures and behaviors - to which IDS is designed to analyze, detect and triggers an alarm when encountered. Once an alarm is set, the network administrators has to analyze the logs to decide whether these unexpected activity is indeed anomalous. IDS use either (i) Signature based detection or (ii) anomaly based detection

#### A. Signature based detection

A Signature based detection system monitors the network traffic for matches to the signature that is preconfigured and predetermined by the domain experts. Once frequent instances tie with the preconfigured domain then the IDS take the appropriate actions. This type of intrusion detection system can only detect the known threats but the unknown attacks are not identified by this method, and whenever a new software is arrived then this model needs an updating.

#### B. Anomaly based detection

The new or unknown threats are identified by an anomaly based detection approach. This method builds a

## Comparative Study of Predicting Heart Disease By Means Of Data Mining

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### ABSTRACT

At the present time all the activities are done in the world through internet. The use of computer in the fields of medicine are highly improved. The computerized hospital includes the activities like treatment of illnesses, maintain the patient's information up-to-date that leads to handle huge amount of data regularly. It is very difficult to handle the large amount of data for predicting the heart disease. Data mining approach is a good way for predicting the heart disease at minimum effort. This paper analyses the existing prediction system and discussing the various disputes on the existing system. The result of this paper helps the health consultants to diagnose the disease in less time and predict the probable problems well in advance and save the patient life.

**Keywords:** Data mining, Heart diseases, classification

### I. INTRODUCTION

Data mining turn into the ultimate method for finding the practical solutions to the day to day problems, and the health care is no exception to this. Most of the data mining methods are developed to help clinicians for making better decisions about the patient treatment purposes. nowadays a data mining techniques are mostly used in the areas such as healthcare organizations, health informatics, epidemiology, patient care and monitoring systems, assistive technology, large-scale image analysis to information extraction and automatic identification of unknown classes. The goal of this paper is to analyze several datamining techniques that are existed in recent years for the diagnosis of heart disease. Many researchers used datamining techniques in the diagnosis of diseases such as tuberculosis, diabetes, cancer and heart disease, in which several data mining techniques are used in the diagnosis of heart disease such as KNN, Neural Networks, and Bayesian classification. Classification based on clustering, Decision than just heart attacks. It applies to a number of conditions that affect the heart, including coronary artery disease, arrhythmias, atrial fibrillation, heart valve disease, congenital heart disease, cardiomegaly (enlarged heart), cardiomyopathy (heart muscle disease), and more. Heart disease is the number one cause of death in the United States for both men and women. Sometimes, symptoms can be subtle and go unnoticed until a major event like a heart attack occurs. Noticeable symptoms include: chest pain (angina), extreme fatigue, and shortness of breath. Certain lifestyle habits and risk factors contribute to heart disease. Some risk factors—like age and gender—can't be controlled. However, others can be. To keep your heart healthy, it's a good idea to lower your blood pressure, eat a high-fiber, low-fat diet, exercise regularly, manage your stress, and quit smoking.

#### A. Types of heart diseases:

Heart disease is a word used to describe many different conditions affecting the heart. Coronary heart disease is a common type of heart disease. This condition results from a buildup of plaque on the inside of the arteries, which reduces blood flow to the heart and increases the risk of a heart attack

Tree, Genetic Algorithm, Naive Bayes, Decision tree, WAC which are showing accuracy at different levels. Using medical profile such as age, sex, blood pressure and blood sugar we can easily predict the likelihood of patients getting heart disease.

### II. HEART DISEASE

Heart disease labels that is a series of conditions that affects the heart. Diseases under the heart disease umbrella include blood vessel diseases, such as coronary artery disease; heart rhythm problems. The term "heart disease" is often used interchangeably with the term "cardiovascular disease." Cardiovascular disease pointed or choked blood vessels that can leads several problem like a heart attack, chest pain (angina) or stroke. In most of the countries death is caused by the heart diseases that is surveyed by WHO (World Health Organization) and the CDC. The adults of the countries UK, USA, Canada and Australia be distressed from heart disease. The term "heart disease" refers to more

and other heart complications. Other forms of heart disease include:

- irregular heartbeat (arrhythmias)
- congenital heart defects
- weak heart muscles (cardiomyopathy)
- heart valve problems
- Heart infections
- cardiovascular disease

#### B. Heart disease statistics

Approximately 610,000 people die from heart disease in the United States every year, according to the Centers for Disease and Control Prevention (CDC). It's the leading cause of death in both men and women. Coronary heart disease is the deadliest of all heart diseases, just as it's the most common form. The Heart Foundation estimates 380,000 related deaths per year. The symptoms of heart disease vary between gender. Some are more obvious in men, who made up more than half of all heart disease-related deaths in the United States in 2009, according to the CDC. According to The Heart Foundation, 1 in 3 women die of heart disease every year in the United



# A Novel Method for Vehicle Detection using Edge Detection and Fuzzy Logic Based Algorithm

M. Jansirani, P. Sumitra

**Abstract:** Vehicles moving on road are of importance because problems like traffic congestion, economic waste, jamming on the underpasses and over-bridges (if the vehicle passing through is not of the permissible size) are associated with them. These problems can be dealt with by using various morphological processes based image processing techniques to detect the vehicles. In this thesis, the images of moving and still vehicles have been taken and an algorithm is used for vehicle detection which is based on image processing techniques and classification of vehicles in the form of natural description based on fuzzy logic such as classification based on area and circumference using Fuzzy Logic. To perform classification, fuzzification of area and circumference is done and each vehicle type (e.g. small, medium and big) is assigned a measurement range of values by designing fuzzy rules and finally defuzzification is done. Edge detection is considered to be fundamental step in the field of image processing and computer vision. There are 3 types of discontinuities in a digital image: point, line, edge. The most common way is to use spatial masks which have properties to detect these discontinuities. More than isolated points and lines detecting edges are important because they form an important part of image segmentation. Edge detection is basically a method of segmenting an image into regions based on discontinuity, enhancing the presence of these discontinuities in the image allows us to improve the perceived image quality under certain conditions. Edge detection makes use of differential operators to detect changes in the gradients of the grey or color levels in the image. Edge detection is divided into two main categories: first-order edge detection, example for first order edge detection are Sobel, Robert, Perwitt and second-order edge detection, example for second order edge detection are Laplacian and Canny. Image edge is often buried by noise, so it's necessary to research edge detection algorithm. Since traditional edge detection like Sobel, Perwitt, Robert operator are sensitive noise, to overcome that problem, some new algorithm is applied in edge detection such as Canny, Morphology, Neural network and Fuzzy logic. This is to be implemented in MATLAB. Fuzzy logic is one of the new methods and it was based on set theory. Fuzzy logic based algorithm is very efficient and flexible to detect the edges of vehicle in an input image by scanning it through the 2\*2 mask. The main benefit of fuzzy set theory is able to model the ambiguity and the uncertainty. In the proposed method trapezoidal and triangular membership function of mamdani type FIS is used for four inputs containing two fuzzy set and one output containing one fuzzy set. The 2\*2 masks is slide over entire vehicle image, and then pixels values of masks are examined through various ten rules which are defined in FIS rule editor. Based on these set of rules the output of fuzzy is decided that particular pixel is edge or not. For getting better results Gaussian filtering is used. Experimental result shows the ability of the proposed method in finding the thin edges of vehicle image.

**Index Terms:** Fuzzy Logic, Neural Network, Canny, Morphology.

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## I. INTRODUCTION

Fuzzy logic provides a simple way to arrive at a definite conclusion based upon vague, ambiguous, imprecise, noisy, or missing input information. Fuzzy logic is a mathematical representation of human concept formulation and reasoning. Fuzzy logic is a widely used tool in image processing since it gives very efficient result. It can be implemented in hardware, software, or a combination of both. Fuzzy reasoning is nothing else than a straightforward formalism for encoding human knowledge or common sense in a numerical framework. Fuzzy Logic has been applied to problems that are either difficult to face mathematically or applications where the use of Fuzzy Logic provides improved performance and/or simpler implementations. At present, the application of Fuzzy Logic exceeds the control domain since it is also employed for other knowledge based decision making tasks. It involves medical diagnosis, business forecasting, traffic control, network management, image processing, signal processing, computer vision, geology and many more[1]. Edge detection is a well developed field on its own within image processing. Edge is the important characteristic of image[2]. Edges come in an image because of variation of the discontinuities of the scene features, usually brightness, and give rise to edges. In other words, edges are representation of the discontinuities of the scene intensity function. There could be various reasons such as type of materials, surface texture, lighting conditions, which play important role in forming these discontinuities. An edge is a set of connected pixels that form a boundary between two disjoint regions. Edge can be described based on edge strength, edge direction and edge position.

And different types of edges are step edge, ramp edge, roof edge, ridge edge. The quality of edge detection can be measured from several criteria. The five criteria for edge detection are: Good detection, Noise sensitivity, Good localization, Orientation Sensitivity, Speed and efficiency. Edge detection aims to mark sharp intensity changes in an image and is a basis for a large number of image analysis and machine vision applications. Many edge detection techniques have been developed for extracting edges from digital images, each designed to be sensitive to certain type of edges. There are two different edge detection operators: first order edge detection or gradient based classical operators as their names suggest, first order edge detection is based on the use of first order image derivatives, example for first order edge detection operator are Robert, Perwitt, Sobel operator and second order edge detection or Laplacian based operators is based on the use of second-order image derivatives example for second order edge detection operator are canny

# A STUDY ON MIST AND MALACHI ALGORITHM FOR ACCOUNT RECOVERY PROCESS IN CLOUD COMPUTING

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**ABSTRACT**-Cloud computing is emerging as a new thing and many of the organizations are moving towards the cloud but lacking due to security reasons. Security is one of the major issues which reduces the growth of cloud computing and complications with data privacy and data protection continue to plague the market. The security algorithms introduced in this paper, the MIST and Malachi are two new algorithms to protect user data through account security. In the MIST algorithm, when a user logs in for the very first time, they are prompted with three questions and for each of those, they can choose very specific multiple choice answers. After the user provides answers to all given questions, a cloud system is using the MIST algorithm for password recovery. Malachi is a developing algorithm which takes an entirely different approach to account security. Instead of using click-based interfaces like the MIST, Malachi relies entirely on typed user input.

## Key words

Cloud computing, Mist, Malachi, E.mail. Account recovery.

## I.INTRODUCTION

Cloud Computing is cheaper than other computing models; zero maintenance cost is involved since the Cloud Service Provider is responsible for the availability of services, and clients are free from maintenance and management problems of the resource machines. Due to this feature, Cloud Computing is also known as utility computing,

or 'IT onDemand'. In this paper focus mainly on eliminating the weak passwords and account recovery vulnerability that are common in today's computing systems. Average users sometimes do not realize the importance of strong passwords, and other inconvenient security measures, and thus leave their accounts vulnerable to attacks in exchange for convenience.



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**Achieving High Secure Data Storage in Cloud  
Computing**

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**Abstract:** Nowadays, cloud computing has attained great prominence due to various reasons for instance, on demand resource sharing and online storage of data. It is a collection of shared pool of information, resources that makes up a cloud. In this paper, emphasis is to provide a various encryption techniques and effective security solution and also to reduce cloud storage to reduce its overhead. The various security techniques over cloud platform and show analysis of protection by using various cryptographic techniques which is most useful and helpful in the information security. This technique is a two way secured data encryption system, which focus on the matters related to user's privacy, authentication and accuracy. The security and performance of encryption algorithms must be balanced. This paper, encryption algorithms (AES, Blowfish, RSA) has been discussed to analyze the performance level of each algorithm.

**Keywords:** Cloud Security, Symmetric & Asymmetric Encryption, Data Integrity, Cryptography

### I. INTRODUCTION

Cloud computing is a kind of Internet-based computing that provides shared processing resources and data to computers and other devices on demand. It is a model for enabling ubiquitous, on-demand access to a shared pool of configurable computing resources (e.g.,

networks, servers, storage, applications and services),[1]which can be rapidly provisioned and released with minimal management effort. Now a day's Security of data has become a big distress. Hence, to block these loop holes related to security, an integrated methodology is proposed in this paper. This involves utilization of two algorithms, asymmetric encryption-Rivest, Shamir and Adleman (RSA) and symmetric Key Standard-Advanced Encryption Standard (AES) to provide two way data encryption. As we know, in encryption a plain text is transformed into cipher (secret)text using a special key before transmission [2]. This key can be either public or private. However at receiver side,

in decryption, this cipher text is then decoded in order to obtain the original message using a key. Many algorithms have been given in literature for the encryption and decryption so far [3-5].

In this paper we will discuss about various security techniques over cloud platform and show analysis of protection by using various cryptographic techniques which is most useful and helpful in the information security.

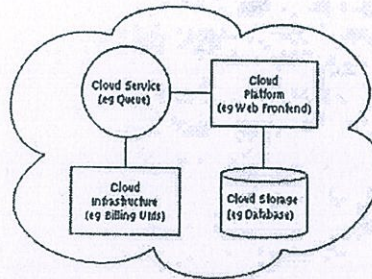


Fig 1: cloud computing

### II. LITERATURE REVIEW

Cloud computing has some unavoidable flaws like security of data, files system, backups, network traffic, host security. They have suggested a concept of digital signature with RSA algorithm, to encrypt the data while drifting it over the network. Thus, by this,



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## AN OVERVIEW OF MOTIVATIONAL SCHEMES PROVIDED IN SPB LTD,PALLIPALAYAM,ERODE.

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### 1.1) Abstract

This study focuses on how the workers are motivated on the various aspects of financial and non-financial motivational schemes offered by SPB Ltd,Pallipalayam, Erode.Human Resources are considered as the "Back bone" of the various industrial sectors. Without preserving and proper maintenance of the human resources, it is highly impossible to obtain the desirable goals of the organization. Hence, the management of the organizations must provide the financial and non-financial motivational schemes for the employees in order to encourage them to do the work properly, effectively and to retain the talented workers constantly. The resources of men, money, materials and machinery are collected, coordinated and utilized through people.

### 1.2) Introduction

In today's rapidly changing corporate environment, organisations want to use the maximum potential of their human resources to stay ahead in the fierce competition and survive. Great organisations are built on the inherent values of their human resources, as motivated and committed employees almost always allow an organisation to grow faster than similar competitive organisations. Well motivated and committed workforces feel that organisations value them and they play an essential role in their organisation which significantly enhances both employees' as well as organisational performance<sup>1</sup>. Motivated and committed employees with high levels of job involvement are considered as an important asset of an organisation. Keeping the employee motivated and committed with high job involvement are always rewarding to a business as motivated and committed employees are more productive and ensure higher productivity which usually results in higher profits<sup>2</sup>.

In a manufacturing industry such as automobile, pump, textile, engineering, sugar and paper industry employees who are highly motivated and committed to the organisation provide excellent quality of services keeping the customer happy and satisfied which is always positive for a business. Motivated employees will put maximum efforts for achieving organisational goals. The untapped reservoirs, physical and mental abilities are tapped to the maximum. Better performance will also result in higher productivity. The cost of production can also be brought down if productivity is raised. The employees should be offered more incentives for increasing their performance. Motivation will act as a stimulant for improving the performance of employees.

When the employees are not satisfied with their job it will result in attrition whenever the employees get an alternative offer. The dissatisfaction among employees also increases absenteeism. The employment training of new employees costs dearly to the organisation. When the employees are satisfied with their jobs and they are well motivated (by financial and non-financial incentives), then they remain in the organisation. The rate of absenteeism will also be low because they will try to increase their output. Those enterprises, which offer better monetary and non-monetary facilities to their employees, have a better employer image. Such enterprises are successful in attracting better-qualified and experienced persons. Since there is a better manpower and several development programmes, the employees like to join such organisations. Motivational efforts will simplify Human Resource function also. A good motivational system will create job satisfaction among employees. The employment will offer them better service conditions and various other incentives. There will be an atmosphere of confidence among employers and employees. There will be no reason for conflict and cordial relations will create a healthy atmosphere. So motivation among employees will lead to better industrial relations.

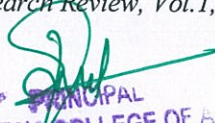
### 1.3) Importance of Motivational Schemes

The term "motivation" is also highly essential for an organization to attain the following:

- a) Improve overall efficiency.
- b) Create more volume of Job satisfaction.
- c) Build friendly relationship and effective co-operation.

<sup>1</sup> Shore, L. M., & Martin, H. J. (1989). Job satisfaction and organisational commitment in relation to work performance and turnover intentions. *Human Relations*, 42(7), 625-638.

<sup>2</sup> Denton, K. (1987). Effective Appraisals: Key to Employee Motivation. *Industrial Engineering*, 19(12), 24.

  
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## A COMPARATIVE STUDY ON MOTIVATIONAL SCHEMES FOR THE EMPLOYEES OF SPB LTD AND TNPL OF TAMIL NADU

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### Abstract

Human Resources are considered as the "Back bone" of the various industrial sectors. Without preserving and proper maintenance of the human resources, it is highly impossible to obtain the desirable goals of the organization. Hence, the management of the organizations must provide the financial and non-financial benefits for the employees in order to encourage them to do the work properly, effectively and to retain the talented workers constantly. Hence, this study focuses on the motivational schemes provided for the employees of SPB Ltd and TNPL of Tamilnadu.

### 1.1 Introduction

Motivation is the word derived from the word "Motive" which means needs, desires, wants or drives within the individuals. It is a for process of encouraging or stimulating the people to attain the common goals and aims of the organization easily. One of the most important functions of management is to create willingness and encourage the employees to do their activities effectively. Therefore, the major role of a group leader is creation of interest with regard to performance of employees in their jobs. The term motivation is also called as a stimulus to greater action.

For stimulating the people within the organization both monetary and non-monetary incentives are something which are given in addition to the salary of the employees. Besides the monetary and non-monetary incentives, the employees also have certain other stimuli which can drive them to do better. The earliest economist like Adam Smith (1994) defines "Man as a rational animal motivated by the desire to maximize his economic gain and this has subsequently led management to believe that workers can be instantly motivated to increase production by means of mere promise of more money." It is believed that if the organizations too offer effective incentive schemes to their employees, they will be motivated and hence increase the productivity.

Motivation refers to reasons that underlie behaviour which is characterized by willingness and violation. Motivation has dealt with both intrinsic and extrinsic motivation to scrutinize their ability. Intrinsic motivation is animated by personal enjoyment, interest, or pleasure, whereas extrinsic motivation is governed by reinforcement contingencies. Motivation involves a constellation of closely related beliefs, perceptions, values, interests, and actions. Motivation within individuals tends to vary across subject areas and this domain specificity increases with age.

### 1.2 Importance of Motivational Schemes


The term "motivation" is also highly essential for an organization to attain the following:

- a) Increase in productivity.
- b) Improve overall efficiency.
- c) Create more volume of Job satisfaction.
- d) Build friendly relationship and effective co-operation.
- e) Retain the employees for a longer period.
- f) Help in self-development of the individual.
- g) Create healthy and safety working environment.
- h) Develop team work among the employees.
- i) Create a sense of belongingness and organizational commitment.
- j) Boost higher morale among the employees.
- k) Reduce high rate of labour absenteeism and employee turnover.
- l) Besides motivation is also highly important in an organization to create the more empowered employees team and to develop their effective contribution for more profit.

### 1.3 Statement of the Problem

In this present scenario, motivational schemes are highly important for maintaining the human resources effectively. But the employers of many organizations fail to fulfill the motivational benefits for the employees both financially and non-

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**An Empirical Analysis on Consumer perception towards product in organized Retail Sector**

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Online published on 15 March, 2019.

**Abstract**

The Indian retail is playing a very important role in recent era. Indian population consists of middle class income group of consumers who are more value oriented in seeking good quality of products with affordable prices, expect cordial environment for shopping, proper exchange and return of defective goods. This is one of the reasons to the migration of consumers from unorganised to organised retail sector. The rapid spread of modern format stores is the most vital feature of the developments in retail in India in recent year. Super markets, hyper markets, retail chains and malls account for a sizeable number of the total retail business especially in urban India i.e. tier one cities. But now this has been extended to two tier two and tier three cities as retailers find good potential in these areas. Therefore it is a real challenge for the retailers to stay back and exploit the consumer boom to get the consumer's acceptance by considering their preference. Beside this, the technology advancement and emerging social networking media leave a great impact on the purchase patterns of the consumers. In the light of this background, the present paper is an attempt at discussing about the Consumer perception towards product in organized Retail Sector.

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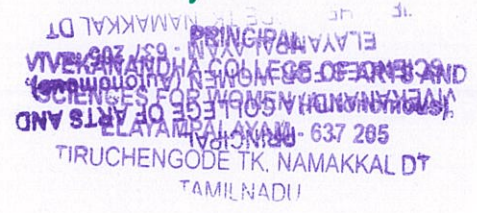
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## ஜமால் முகம்மது கல்லூரி (கன்னடசி)

ஆற்றல் வளத் தனித்தகுதி பெற்றது  
தேசியத் தர மறுமதிப்பீட்டு மூன்றாம் சுற்றில் 'A' தரச்சான்று பெற்றது.  
பாரதிதாசன் பல்கலைக்கழகத்தோடு இணைவு பெற்றது  
திருச்சிராப்பள்ளி - 620 020.  
தமிழ்நாடு, இந்தியா.

## நாட்டுப்புற இலக்கியங்களில் சமுதாயச் சிந்தனைகள்

ஆ. இன்பவள்ளி

உதவிப் பேராசிரியர், தமிழ்த்துறை, விவேகாணந்தா கலை மற்றும் அறிவியல் மகளிர் கல்லூரி, (தன்னாட்சி),  
எளையாம்பள்ளி, நாமக்கல் - 637205, தமிழ்நாடு, இந்தியா.

தனிதனியாக வாழ்ந்த மனிதன் கூட்டமாக வாழ்ந்த போது அது சமுதாயம் எனப்பட்டது. அச்சமுதாயத்தில் நம்பிக்கைகள் பழக்கவழக்கங்கள் நின்று நிலவத் தொடங்கின. கூட்டமாக வாழத் தொடங்கிய மக்கள் தமக்குள் பல்வேறு வகையான பண்பாடுகளை கொண்டிருந்தனர். அவ்வாறு ஏற்படும் போது ஓச்சாற்றலும், பகிர்தலும் கொள்ளும் பாங்கும் தோற்றம் பெற்றிருக்க வேண்டும்.

**சமுதாயம்**

இறைவனின் படைப்பில் பல உயிரினங்கள் தோன்றினாலும் மனித இனம் சிறப்புற்று விளங்குகிறது. மனிதப் பிறவியாகப் பிறப்பது மிகவும் அரியது என்பர். மனிதன் மற்றும் பிற உயிரினங்கள் சேர்ந்த அமைப்பே சமுதாயமாகும்.

‘ஒரு குழுவாக வாழ்கின்ற மக்களையும் வாழ்வியல் தன்மைகளையும் ஆராய்ந்து விளக்கும் அமைப்பிற்கு அல்லது படிப்பிற்கு சமூகவியல் என்று பொருள் தருகின்றது’ கிரியாவன் தற்காலத் தமிழ் அகராதி.

**சமுதாய வாழ்க்கை**

சேர்ந்து வாழும் பண்பு சமுதாய வாழ்க்கையின் வேர். இதர பழக்கவழக்கங்களும் மரபுகளும் நாட்டுக்கு நாடு வேறுபடுத்தல் உண்டு. தமிழகத்தில் குறிஞ்சி, முல்லை, மருதம், நெய்தல், பாலை என்று நிலத்தன்மைக்கும், நீர் நிலைக்கும் ஏற்ப நிலங்களைப் பிரித்து அந்தந்த நிலத்திற்கு ஏற்ற வண்ணம் வாழ்ந்து வந்தனர் நம் தமிழர் என்ற செய்தியை தொல்காப்பியர் தொல்காப்பியத்தில் குறிப்பிட்டுள்ளார்.

‘மாயோன் மேய காடுரை உலகமும்

சொல்லிய முறையால் சொல்லவும் படுமே’

மக்களின் அடிப்படைத் தேவைகளை பூர்த்திச் செய்யக் கூடிய கட்டமைப்பை உடையது சமுதாயமாகும் என்பது புலனாகிறது.

**சமுதாயக் கோட்பாடு**

சமுதாயமும் சமுதாய மக்களும் தங்களுக்கென்று வகுக்கப்பெற்ற வரையறை அடிப்படையில் வாழ வேண்டும்.

தனிமனிதனுக்கு தனிக் கோட்பாடும், சமுதாயத்திற்கென்று தனிக்கோட்பாடும் வகுத்து அவற்றின் அடிப்படையில் வாழ வேண்டும் என்ற கட்டுப்பாட்டினை உடையது நமது சமுதாயமாகும் என்பதை நினைவிற கொள்ள வேண்டும்.

சமூகவியல் பற்றிய ஆய்வில் மிகவும் முதன்மையான இரண்டு கோட்பாடுகள் உள்ளன. ஒன்று தனிமனிதனை முதன்மைப்படுத்துகின்றது. மற்றொன்று சமூகத்தை முதன்மைப் படுத்துகின்றது.

‘தனி மனிதன் தான் சமூகத்தின் அடிப்படை அலகு’ என்று மார்க்ஸ்வேபர் என்னும் சமூகவியல் அறிஞர் கூறுகின்றார்.

சமூகப் பொருண்மைகளை அடிப்படையாகக் கொண்டு சமுதாயத்தை ஆராய்ந்து அவசியமானதாகும். ‘சமூகமே அதகிர மையத்தின் அடிப்படை’ என்னும் கோட்பாட்டை எழில் தூக்கை என்னும் சமூகவியல் அறிஞர் முன்னிலைப்படுத்துகிறார்.

**குடும்ப அமைப்பு**

குடும்பம் என்பது ஒரு சிறு குழுவாகவும் இருக்கலாம். பலர் அடங்கிய ஒரு பெருங்குழுவாகவும் இருக்கலாம். அதில் குறைந்த அளவு ஒரு ஆணும் பெண்ணும் இடம் பெற வேண்டும். இவ்விருவரும் அவர்களுடைய சமுதாயம் ஏற்றுக் கொண்டுள்ள திருமண முறைப்படி மணம் செய்து கொண்டவர்களாக இருக்க வேண்டும். அவ்வாறு ஓர் ஆணும் பெண்ணும் கணவன் மனைவி என்ற உறவை ஏற்படுத்திக் கொள்ளும் போது தான் அவர்கள் ஒரு குடும்பமாக அமைகிறார்கள்.

கணவனே குடும்பத்தின் தலைவன், தலைவன் வழிகாட்டுதலிலேயே குடும்ப அமைப்பு இயங்குகின்றது. கணவனை பேணுதல் மனைவியின் தலையாயக் கடமையாக போற்றப்பட்ட செய்தியை

‘வினையே ஆடவர்க்குயிர்

மனையுறை பேணல் மங்கைக்கு கடனே’

என்னும் பாடல்வழி அறிய முடிகின்றது.

**குடும்ப உறவுகள்**

குடும்பத்தில் உறவுகள் ஒன்றோடு ஒன்று உறவுடையதாக இருந்தால் மட்டுமே அக்குடும்பம் சிறந்த குடும்பமாக இருக்க முடியும். காலங்காலமாக குடும்பங்கள் அனைத்தும் கூட்டுக் குடும்பங்களாகத்தான் வாழ்ந்து வந்தன. குடும்ப உறவுகளே சமுதாய மேம்பாட்டிற்கு தேவையான அமைப்பை உருவாக்கித் தருகின்றன என்பதை நம்மால் உணரமுடிகின்றன.

சமுதாய நிறுவனங்களுடன் ஒன்றாகவும் அடித்தளமாகவும் இருப்பது குடும்பம். குடும்பங்களில் தொகுதியே சமுதாயம். குடும்ப உறவுகள் சீபெற்றால் தான் சமுதாய உறவுகள் சீபெற்றுத் திகழும். இதனை நன்குணர்ந்திருந்த நாட்டுப்புற மக்கள் தங்கள் குடும்ப உறவுகளைச் சிறப்பாக அமைத்துப் பேணினர்.

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# Female Culture – A Hindrance in Modern Life? - An Analysis

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**Abstract:** Scientific inventions and theories are turning society more and more materialistic. Reason or rationalism examines religion and spirituality on logical grounds and reduces religion to the levels of superstition. God realization falls out of material realization. The belief in horoscope and astrology terminates in mere superstition at the end. Life as an eternal trap in the universe-this is the epitome of pessimism. In the situation the search for freedom –the human quest for liberty is put forth as Where is freedom to be found? Where is there fresh air to breathe?. For the past thirty six billion years women are the careers and nurturers of human generations on earth. Any woman can be an officer but to be a good mother is not a easy task now a days. She has to balance her job with her responsibility as a mother. A child always wishes his mother to be very near to him. Work tensions never allow them possible. So all women who are empowered with a job has to play more. She has the additional responsibilities to satisfy her child also. She may be a higher official or a wages earner, all her responsibilities are the same.

**I bring fresh showers for the thirsting flowers,  
From the seas and the streams  
And laugh as I pass in thunder.**

**Shelley, The Cloud**

As god can not be present in every family to nurture infants He has given a mother. To any one born on this earth mother is the first deity and first teacher. World has become a village, a global village with all e commerce, e mails and with all electronic facilities. Yet a machine to substitute the responsibility of a mother is not found out. Considering the fossils available in Mauritius it is far more than thirty six billion years life on the earth continues.

Indian culture always celebrates woman as a deity and *Shri LALITHA SAHASRANAMAM starts with the words Ohm SHRI MATHRE NAMAGA* with a meaning salutes to god almighty. The first role model and teacher is the mother. A woman’s preoccupation is with the inner world of sensibility rather than the outer world of action. She tries to give up a style supple and suggestive enough to convey the fever and fretfulness of the stream of consciousness of her character. If a woman is financially free, she has the healthiest and psychologically most balanced mind. The sanity of her tastes and attitudes is almost exemplary for her fellow religionists. It will be a serious endeavor to recreate a picture of this exigent and piercing mind. A mother has the sharpness and penetration of vision of extraordinary degree. She cuts the matter and the ratiocinative powers of her intellect are as keen as any philosopher’s. They are kept in constant curb and have to serve the conscious or subterranean plan the authoress has in view. She seems to possess to a high degree the intuitive power of seeing into the nature of things. She is likely to become one with sparrow like Keats and peck about the gravel. Her vision intuits the future shape of an incident and thus strong in hind sight as well as character.

Twentieth century and twenty first century have seen many women scientists, doctors and professionalists. In Tamil Nadu women ministers become very famous. Women become train pilots, station masters, inspectors, IAS officers and surgeons. Still the government prefers lady teachers only. Her insightful intuitions into life spectacle help elucidation of a plan and system inherent in the in the scheme of things in life. The harmony of sharpness and insight endow her with a sense of devotion necessary for a subjective teacher for unerring revelations at every stage. Women have rejected conventional claims and by higher education dramatically altered their perspective. Meet Ritu Karidhal, Anuradha T.K& Nandhini harinath are rockstars of Isro &women behind the successful launch of pslv-c37.

Modern women writers like Shashi Desh Pande, Arundhati Roy, Manju Kapur, Namita Gokhle, Gita Hari Haran, Shoba De,Bharati Mukherjee and Shona Ramaya articulated various aspirations and resistance to patriarchal norms. There is a gang of women writers in English and in the regional language. All arts emerge from communion among artists heart and life spectacle. Response of sensitive hearts and minds acquires different art forms –pictures, music, sculpture, poetry, and fiction. Nature has endowed her with over dose of sensivity, shapes, colours, sounds, odours, hues and tints. All strike at the sensitive chords and inspire exuberant effusions. All characters-Mayas, Monishas, Sitas, Bims and Rukminis are all keenest poetesses, although they are not termed as such. The women novelists have imparted a bit of her soul to all of them and partly lives in them. The subtlety of her cognitive perceptual powers yoked with a hypersensitive emotive faculty. These acquire a form of rebellion of noble souls stung by the heartlessness of universe as in Shakespeare’s *The Tempest* and Kalidasa’s *Abhijana Shakunthalam*. Humanistic form man is considered a dignified centre of the universe and his sufferings and miseries are looked at as indignities and violation of the divinity of man. Secular attitudes supplement the humanistic note in every literary figure.

Modern world allows equality in all the fields and equal right for life, education, property, religion, jobs, marriage, profession and politics for a woman is legal according to UNO. It is supervised by branches of human rights commission all over the world. As all countries are interdependent they have to give proper respect to human rights of women and children. Universal sympathy for the sorrowful and the suffering is the hall mark of a mother’s personality. The spectacle of suffering among human beings and animals and the lower animated world magnetically draws her mind and heart. Mother Teresa is the best example for it. Life on earth continues

# Identity Apartheid: Quest for Completeness in Mukherjee's Tiger's Daughter

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The term Diaspora, originally meant dispersal from one's homeland, is now used as a metaphoric designation for all immigrants, exiles, refugees and expatriates, whose lives, experiences and languages have been altered by paradigms of geographical dislocation, biculturalism and bilingualism. Diasporic writing exhibits tremendous creativity, hybridity, heteroglossia and linguistic experimentation. Concerns touching upon race, ethnicity, belonging, otherness ('othering' as well), gender, subalternity, voice and values are some of the themes explored under this area of study. A lot of interdisciplinary work also happens in diasporic studies.

This paper analyzes *The Tiger's Daughter*, of Mukherjee with regard to the problems of immigrants in lands of their settlement, how they suffer due to dislocation, how they adapt themselves by adopting to the host culture, the conflicts that arise thereby in values and whether they assimilate totally or partially and the different steps involved in the process. It is being recognized as "plural and in process" according to Brah, and culture is perceived as 'constructed and constantly evolving' in terms of Werbner. As our ideas shift surrounding these two key components of diaspora studies, our conception of the diaspora itself needs to shift as well. Furthermore, definitions of diaspora that require a central connection with one's geo-political place of origin, real or imagined, are becoming increasingly problematic.

Bharathi Mukherjee's debut novel *The Tiger's Daughter* is a categorical presentment of the formative years of the protagonist Tara's marital life at the United States. The novel is also recourse on Tara's home coming and the retrospective images of India enlisted in her memories seven years ago. Tara is an elite Bengali Brahmin girl, comes back to her home land after spending seven years with her husband David Cartwright. The novel is a string of experiences underwent by Tara at emotional, social, cultural and psychological levels on the plane of two different countries. The novel therefore is a first hand experience of a woman who explicates her life and times and two different dimensions of Time and space.

Tara Banerjee Cartwright is the main character of the novel. Calcutta is her birth-place and she gets educated in New York. Her father, Bengal Tiger Banerjee is a firm, determined and a fearless man. He chalks out medical and disability insurances for his factory laborers and organizes classes at night in the tobacco firm for the benefit of illiterate workers. His brave heartedness urged him to send his daughter to the US in the prospect of higher education. Tara is now married to an American after falling in love with him. She becomes an American and also an American wife in a true sense. The United States has bestowed her with two key essential life elements, one is Foreign education and the other is marriage. She comes back to her home land after seven long years. Bharati Mukherjee projects her mental trauma and her struggle between the culture of both lands. The novel is a clear presentment of Tara's inner inhibitions and her anguish.

There is a cultural, social, and psychological transformation that takes place with her migration and subsequent marriage. The novel is a manifestation of her struggles and her inevitable dilemma of belongingness. *The Tiger's Daughter* gives a vivid manifestation of cultural conflict. It is a scintillating story of an upper class Bengali girl who frequents the US for higher education. Her initial inhibitions and predicaments of a new culture make her adapt to it and get married to an American. The life spent there for seven years makes her come back to India only to find herself a stranger in this strange land, India. Tara realizes her double alienation, and double identity and opines that she is neither Indian nor American in its true sense.

The story travels time backwards and begins in the year 1879, on a rainy day. Hari Lal Banerjee, the 'Zamindar' of village Pachapara gets his daughter married off and the story takes off during the wedding ceremony. Hari Lal Banerjee did not even dream of the prospect of the coming generations. He "did not hear the straining and imprisoned ghost of change" (2). "The shadows of suicide or exile, of Bengali soil sectioned and ceded of workers rising against their bosses could not have been divined by even a wise man in those days" due to that facts (6).

Tara's longiness for her home land blooms when she comes back home but her initial reactions to the houses on Marine drive after her return did not amuse her because, "now their shabbiness appalled her" (18). The gap between her perceptions of India and the realities scandalize her. She also becomes restless on watching many sick people sitting on trunks around Calcutta. Her train travel does not delight her for she feels more uncomfortable in her journey. A Marwari family makes their way to the compartment, which she observes as:

But the gentlemen in the compartment simply did not interest her. The Marwari was indeed very ugly and tiny and insolent. He reminded her of a circus animal who had gotten the better of his master. The Nepali was a fidgety older man with coarse hair. He kept crossing and recrossing his legs and pinching the creases of his pant both men, Tara decided could effortlessly ruin her journey of Calcutta. (20)

Tara's marriage to David was also another facet to highlight her immigrant experience. Tara feels that she is not being given any credit for her contributions to family maintenance. Her personality gets broken down to finer fragments and during prayer she does not remember her next course of ritual; She comments on her inability, "it was not a simple loss, Tara feared, this forgetting of prescribed actions; it was a little death, a hardening of the heart, a cracking of axis and center. But her mother came quickly with the relief of words" (51). When she hears "Raghupati Raghava Rajaram Patita Pavana Sitaram", She wants to sing the prayer. She feels that the sing along of the hymn "would stave off the madness that curled under the pungent sunlight" (53). She

# Dynamics Of Sacrifice: Feminism and Dalitism in K.A.Gunasekaran's Thottil Thodangi

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K. A. Gunasekaran's Thottil Thodangi is a play which focuses on Feminism. The play is written for women who suffer in the hands of men being marginalized from the society, Dalit women are doubly marginalized. This play also consists of a play within a play. The plot takes place in four different places. The victim in all the situations seems to be women.

The play begins with a lullaby, a mother sings for her child is heard on the stage. When lights were on a caste Hindu old man is lying in his chair. Chandiramathi appears before him and cries. She informs him that her son was dead. A snake has bitten her son. She worries for her husband's wrong doing, who sold both her and son to the caste Hindu. Now the caste Hindu man worries because he lost a slave. The mother wants to do rituals for her son but the old man permits her to go after finishing the house hold works.

The scene shifts to a police station Inspector reads news paper and two constables guard the station. A young woman enters into the station to give food for her husband. The inspector inquires her name and she replies as Padmini. He tries to seduce the woman. She shouts against him but she was helpless. None came for her rescue. Padmini's husband shouts at Inspector but of no use. Everybody chases her and the woman was brutally alleged by Inspector and other police men-inside the police station.

The scene again shifts to Chandiramathi's house. She works hard to leave the house very soon. The caste Hindu shouts at her for crying. She asks justification for the act of her husband who sold as slaves to the old man. Caste Hindu man replies that, the fate of one's life makes the life of a downtrodden.

One again the scene shifts to a house where a woman lives alone. Police men arrive at the house and enquire the woman. She replies her name as Vijaya. They ask for her father who is not in home. Using the loneliness police men tried to seduce the woman. They ask her to come to police station which she refuses. But out of compulsion she was dragged. All police men seduced Vijaya.

On the other hand Parvathi, an activist speaks on the stage. She informs people regarding the welfare schemes for them. Street lights, road facility and the supervisors will be arranged to look after the work and she expects the fullest cooperation of the people to work more.

As soon as she got down from the stage, a mob surrounded her and shouted for her doings. Being a woman she was assaulted by men. She was assassinated on the road. All the situations prevails in the society. The women are victimized and they become the victim in this play. True incidents are the backdrop of the play. In order to create awareness and equality the society has to travel miles to change the discrimination.

There is always a notion exists that if a new work of art emerges means it should be incomprehensible. For example; a scene in a drama shows a man having tea for more time on stage. A problem in the modern art forms lies in using some rules from the folklore aspects. With such rules the characters form a sequence and dance in between along with the other characters till the end.

Without these flaws the play Paliyātukal was neatly developed on stage. Within the sixty minutes of the performance, the first ten minutes of the play signifies Body theatre. It relates with space between theatre and the individual. This forms the basis for the nonverbal theatre. With such effect of presentation and the background score, the importance of the performance is conveyed. In the backstage the discussion between Ambedkar and Mulk Raj Anand happened during May 1950 is played.

One who removes the skin of cows, cleans the human waste, working in fields and tribal people were called as ruffians and untouchables. They were suppressed for years together. Situation gets worse even after five thousand years. If one is doing menial jobs he has to continue it and he will be considered as downtrodden. Even one can touch an animal but not an untouchable says Ambedkar to Mulk Raj Anand.

With the conversation the scene moves along with the plot. The play is based on a stone inscription. In order to make run a temple car the village people were planning to give a sacrifice to God. An untouchable was chosen for sacrifice. With this message from the inscription play is performed.

Saints seek a human sacrifice form the village. Some are beating the parai instrument. He shots at them to beat and asks to stop after some time. Such conversation seems to be a parody in the play. This effect is carried out throughout the play.

It is decided to sacrifice a man called Chinandi, he cries before them. His wife to cries to the village heads. A transgender helps the Chinandi and his wife to escape from that village. It is evident and becomes obvious in the end why the transgender helps them from village. The upper caste people were justifying the human sacrifice on the other hand in the play.

When the victim escapes the village heads select another man from the untouchables. He too cries before them and asks them whether there is any man woman separation in giving sacrifice to god. He requests them to sacrifice his wife on behalf of him.

# The Emergence of Black Women from Marginalization with Special Reference to Paule Marshall's Brown Girl Brownstones

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**Abstract--** All over the world, the female community is marginalized not only because of their gender but because of their race, culture, colour etc. The diasporic women are in the worst condition. In the patriarchal society, getting their place and attaining self identity is the difficult task for the female. The experience and struggles of marginalized women remain same irrespective of their geographical and cultural variations. The immigrant people, especially women, in the foreign country are automatically marginalized and their 'self' is denied. This article deals with the experience of African American woman in the marginalized society with special reference to the protagonist of Paule Marshall's Brown Girl Brownstones. The article clearly explains how the women in the novel face the struggles, obstacles and humiliation in order to retain and sustain their self-identity.

**Key Words--** Marginalized, women, race, culture, self-identity,

In the modern world, separating from a group or a family or a nation is common and unavoidable. This separation or migration takes place due to various reasons like to earn or to escape from the poverty or from drought which prevails in their own nation. The immigrant people struggle between the two nations and two cultures. They struggle to cope up with the new culture, tradition and language. In the same way, the African people immigrated to western countries to escape from their poverty or drought. The social class theory of Karl Marx is based on stratification or inequality in society. Marxian perspective says the stratified society is divided into two social groups - ruling class and subject class. The relationship between the two social groups is not of equal or symmetrical instead it is equal to the relationship between exploiter and exploited and oppressor and oppressed. As per the theory, the relationship between the native people and the immigrant people are like the relationship between exploiter and exploited and oppressor and oppressed. The immigrant black people are oppressed by the native white people.

They are not considered as 'theirs' in their mother country or as 'them' in the immigrant nation but they are considered as 'other'. The very word 'other' totally demolishes their 'self'. They are marginalized by the dominant or the native people. The condition of immigrant women is more critical than the men. Women are dominated and considered as the 'other sex' in the patriarchal society. Immigrant women have to struggle more against gender, colour, race, ethnicity and culture to build their shattered 'self'. The African women who immigrated to United States face the harsh reality in the immigrant nation to retain their 'self' on par with the white natives. Many African-American women writers expose their experience in the marginalized society through their writings. One such writer is Paule Marshall, who through her semi autobiographical novel **Brown Girl Brownstones** (1959), gives an account of the struggle of African American women.

Paule Marshall's first novel **Brown Girl Brownstones** deals with the experience of the marginalized female in the foreign country. The novel revolves around the central character Selina, who is the first generation Barbadian immigrant. Selina suffers from marginalization from her childhood to womanhood. From the childhood she searches for her 'self'. Initially she identifies herself that she is not like the other members in the family. Especially she is not like her sister Ina. Then Selina finds that she is separated from the family by noticing the missing of her photo in the family photograph. Selina cannot understand the strong mind of her mother in leading the family in the midst of the struggles and in sustaining the family identity in marginalized society. She sees only the materialistic life of her mother and the Barbadian Association. According to her, the Barbadian society is formed to get the materialistic 'identity' on par with the native white people and not to relate their 'self' to their roots. The protagonist then identifies herself with the other people in the community. First she identifies the 'self' with the colour and beauty of the white people of her age. Selina's feminine beauty is shattered when she compares herself with that of the white feminine beauty. Selina finds that she does not have blond hair, blue eyes and white skin like the native. This difference makes her feel the 'other' in the white community. This affected her 'self' in that young age. When the black children go to school on the way the white children passes some comments on the 'blackness' of their skin. The black children are not welcomed by the white children. "Sometimes the white children on their way to school laughed at their blackness and shouted "nigger," but Barbadian women sucked their teeth dismissing them." (Marshall 11). The black children tolerate the racial discrimination and they can't overcome the insulting remarks of the white society.

The black women are marginalized even in their own patriarchal society. Selina also faces the marginalization in the family especially by her mother Silla, who favours her son. Silla tries to see her dead son in Selina. Silla treats her daughter as her son. Even mother denies the individual self of her daughter Selina. Selina in turn tries to sustain her 'self' by saying "I keep telling you I'm not him. I'm me. Selina" (38). She witnessed the male dominance and importance in the society even in the case of Clive. Clive is given more importance by his mother. Women are marginalized even in her own Barbadian community. Selina has to struggle a lot to empower her self- identity in the patriarchal society.

Selina tries to identify her 'self' with that of other marginalized women of her community. She realizes that she has some bond with Rachel as she is also abandoned by her community and Rachel like Selina is not close with her mother. They danced

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# Woman is the Healer of Humanity with Reference to Divakaruni's The Mistress of Spices

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Divakaruni is an Indian-born American immigrant. To her credit, she has a collection of remarkable novels, short stories, and poetry. She writes on a variety of themes such as Feminism, Transnationalism, and Multiculturalism. Divakaruni was born in Calcutta on 29 July 1956 in a Bengali Hindu family. She migrated to the United States of America in 1976 when she was nineteen years old. While continuing her studies in English Literature at the doctorate level at UC-Berkeley, she lived in its international house and worked in the dining hall, slicing Jell-O, removing dishes from the dishwasher. She willingly does all types of jobs since it frees her from the economic burden. She received a Ph.D., in English from the University of California, Berkeley. Her days in Berkeley have been involved with women's social service organizations and Divakaruni is a co-founder and former president of Maitri, in San Francisco a helpline founded in 1991 for South Asian women, dealing with domestic abuses. It provides them support, counselling, and advice for the abused women. She now lives in Sunnyvale, California. She became aware of the differences in culture and wanted to write as a means of exploring these differences. In an interview with Julie Mehta, in *Arranging One's Life*, Divakaruni says:

Immigrating was the most transformative experience of my life-it exposed to me a life beyond my existence in Calcutta. Immigrating to America made me see my own Indian culture in a different way, it made me both appreciate my culture and question some aspects of my culture. (Jan 2000)

As a humanitarian, she senses that the feelings she has for her country will be the same for the whole community. She speaks for women empowerment and explores the life of immigrant troubled wives and daughters in America. Her concern for immigrant women has transfigured in all her works. In *The Mistress of Spices* and *Queen of Dreams*, various contemporary issues such as racial discrimination, domestic issues, class and gender discrimination have been dealt. Divakaruni, through her central characters Tilo and Mrs. Gupta, highlights their humanitarianism concepts where both are born with special talents.

Divakaruni's characters are round in which they grow and help others grow in all ways in their lives. Most of her characters play the role of facilitator and they risk their own life to help others, and moreover they are so humane in nature. Her women, though have minor flaws, they remodel themselves as they wish and perfect whereas Bernard Shaw's characters are only pieces of Shaw and they have no self-development.

*The Mistress of Spices* is a story about a magical woman Tilo and her service towards humanity through the power of spices. Tilo selects an Oakland country for her service. She has an ardent desire to remain on the island, along with her first mother. Tilo, for the first time, feels the discomfort in her store and experiences a pang of longing for a place to call home. Tilo tolerates all her pains and diverts her mind by helping the immigrants who come to her store. Tilo identifies the problems of her customers and tries to set them free.

Haroun's father and his grandfather used to give boat rides to tourists on Dal Lake. The tourists are banned coming to the Dal Lake as the rebels occupied the auspicious Srinagar city armed with machine guns. Fear of death persuaded Haroun to force his grandfather to leave the island. But the old man who is much attached towards his homeland rejected his offer, and bravely confesses it is the land of his ancestors. He also said that during that particular night the rebels entered into their village in search of men to take along with them. When people refused and restricted them, it led to a bloody war. Haroun lost his grandfather and his father in the rebels' gunshot. Tilo senses some kind of evil in the life of Haroun, which is going to happen soon. She wants to save him by the power of spices. She must get Kalojire, a spice which is the protector against the evil eye. Before she makes it ready and gives it to him, Haroun is violently beaten by an American. She goes in search of Haroun to give him the spice to heal his pain both physical and mental. In *The Mistress of Spices*, all the male characters need the support of a woman.

Ahuja's wife Lalitha is a regular customer to Tilo's spice store. Ahuja is a watchman at the docks. She speaks about her life in Kanpur, where she is financially independent to lead a decent life. All her rosy dreams shattered when a neighbour brought a marriage offer from America, which her mother accepted without any second thought. Lalitha's husband ill-treats her, assaults her verbally, suspects her and it creates a psychological tension in the mind of Lalitha. It is worth mentioning here the position of women as highlighted by Simone de Beauvoir: "She is defined and differentiated with reference to man and not he with reference to her; she is the incidental, the inessential as opposed to the essential. He is the Subject, he is the Absolute-she is the Other" (xvi). Through Lalitha, Divakaruni brings out the domestic violence on women. Though the Indian men are in the soil of American land, they still have the attitude of beating their wives, and using them as sex objects. Barbara L. Fredrickson and Tomi-Ann Roberts, (1997) coined the term "Objectification theory" which argues that in western cultures, women are frequently sexually objectified in the media and interpersonal interactions as well as reduced to a body, or parts, available for satisfying the sexual needs and desires of men. They are not treated as a person with feelings, desires and needs and so on.

Lalitha, says that once she thought of running away from his home, but is aware about the position of women in the society, where women are harassed by men. Tilo helps her by giving her the spice Fennel to build her mental strength to progress in her life. Tilo highlights the humanistic approach to life where nobody has the right to beat or force a lady for bed. Daksha is another Indian immigrant who faces domestic violence when she tries to balance both her profession and work. Tilo gives her pepper and amla to manage her life.

## Women and Media

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**“There is no chance of the welfare of the world unless the condition of women is improved. It is not possible for a bird to fly on one wing.” - Swami Vivekananda**

The most significant and longest social movement continuing is movement for emancipation of women. Though the primary goal for women empowerment is to improve the quality of life of women but it has also deep ramifications in social, economic and political scenario of body polity. The media through its reach to people at large has been instrumental though not to the extent desired in supporting the movement for women emancipation by focusing neglect and marginalization of the position of the women in society. It sounds intriguing how from a highly dignified position in India's mythic history, the woman in India has been relegated to a secondary position. The vested interests of the ruling elite and the male lobby influenced by alien cultures legitimized woman as an individual of little consequence. It would be a sad commentary on the subordinate role of women in India when woman is ideally viewed as Shakti (Power), the origin of power itself but in reality found as helpless, hapless woman without any identity except that of a wife, or the mother who has very little voice in decision making and has very little by way of her own basic choice.

Although discrimination against and exploitation of women are global phenomena, their consequences are more tragic in the some parts of the globe particularly in under developed countries where, ignorance, deprivation of the basic \* Address by Mr. Justice G.N. Ray, Chairman, Press Council of India at the inauguration session of National Press Day on November 16, 2008 at Vigyan Bhawan, New Delhi. Necessities of life, and the ever-growing pressure of transition from tradition to modernity- all combine to aggravate the inequalities that women suffer to a point at which their existence is reduced to a continuous battle for survival.

### Media's Role in empowerment of women

In India Communication is extremely important for women's development and mass media play significant role. It is to be noted that growth of women's education and their entry into employment has contributed to the growth of media. In all spheres of life whether for controlling population growth, spread of literacy or improving quality of life for vast masses, women have crucial role to play. However, women can be expected to play this role when they become conscious of their strength and are not deliberately marginalized by male domination. In this context, media has an important role to play – to create awakening in women to achieve their potential as the prime movers of change in society. In today's world, print and electronic media play a vital role in effectively conveying message that needs to be conveyed. Portrayal of women by the Media By and large the media scene in India is that media does not address serious issues about exploitation and in-equal treatment to women in different spheres but is keen in reporting sex related incidents by way of sensationalizing news of atrocities on women. Thus instead of highlighting the exploitation of woman they end up becoming one of the reasons in increase of violence as their coverage more often than not tend to glorify the crime against women. It is true that media has brought to light, as never before, certain mis-demeanours against women but in a very subtle manner it also perpetuated the stereotyped image of woman as a householder and an inconsequential entity in the traditional value system.

### Portrayal of women in media

Generally, women's problems never figure on the front page of a newspaper unless it is a gruesome murder or a case of rape. Newspapers even on women's page does not usually address relevant issues for women empowerment but reporting is concerned with beauty tips recipes, fashion syndrome etc. It is unfortunate that there is lack of sensitivity among the newspapers in general to women and their problems. I would like to refer to the Study conducted by the Media Advocacy Group viz. “Violence against Women: Media Coverage and Representation”. The Media Advocacy Group made the following recommendations on reporting violence against the women. (i) Media needs to take an extended, broader view of crimes against women. It has to be instrumental in conducting a social audit on factors responsible for increasing crimes, particularly against women and children, including indifferent investigative procedures, miscarriage of justice, and growing social impunity of the perpetrators of crime. (ii) It also has to be instrumental in creating an awareness among civil society of the causes and nature of the crime itself, and of the preventive measures. (iii) When treating these issues, media has to be extremely factual and empirical. The study also stated that the only regulation that governs a sensitive reporting on this issue is that the rape victim's name should not be disclosed.

Barring this, the study found that everything else is graphically reported. Often the victim's family name and address is cited, making a mockery in the letter and spirit of the regulation. Though much of this violation and malpractice are committed by a small group of publications, others are spurred on to imitate and keep pace with the sensational trend. Therefore, I urge the media to take a serious look on the issue and do self-regulation and self-monitoring with extreme care and caution. Aarushi murder case is another prime example of irresponsible and sensational reporting by the Media. The gruesome murder of a teenage girl for days have been the sound basis of increased TRPs of the News Channels. The media both electronic and print are morally and legally bound to avoid sensationalization news relating to victims of crimes.

Many of the women's magazines are devoted to fashion, glamour, beauty aids, weight reduction, cookery and how to sharpen 'feminine instincts' to keep men and their in laws happy. There are comparatively fewer articles on career opportunities, health awareness, entrepreneurship, legal aid, counseling services, childcare services and financial management. A study in this

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# The Portrayal of Twenty First Century woman in Chetan Bhagat's Half-Girlfriend

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Chetan bhagat is a rising star in the contemporary modern Indian literature, is a multitalented personality. He is a novelist, columnist, screenwriter, television personality and motivational speaker, known for his English language dramedy novels about young urban middle-class Indians. Chetan bhagat was born in New Delhi in a middle class Punjabi family on the 22 April 1974. His father was an army man and his mother, a government employee.

Chetan Bhagat novels are Five Point Someone(2004), One Night @ the Call Center (2005),the 3 Mistakes of My Life (2008), 2 States (2009), Revolution 2020(2011),What India Wants (2012), Half-Girlfriend(2014), Making India Awesome (2015),and One Indian Girl.(2017). He won the Society young Achiever's Award in 2000 and the Publisher's Recognition award in 2005. Chetan Bhagat also found himself place in the Time magazine's list of "world's 100 most influential people" in the year 2010.

"Half-girlfriend" is a young adult romance novel by Indian author Chetan bhagat. The novel set in rural Bihar, New Delhi, Patna and New York. The story of a Bihari boy in quest of winning over the girl she loves. The story begins with Madhav jha, a rural boy from Dumraon, a village in Buxar, Bihar, as he comes to meet the author Chetan bhagat and leaves behind a few journals from his half-girlfriend who he believes has dies. Chetan bhagat calls him up the next morning to hear his story. Madhav jha starts describing his story to Chetan bhagat. Madhav is a Bihar boy; he gets admission in Stephen College in Delhi through sports quota. He falls in love with an English speaking rich Delhi girl. The rich and beautiful girl Riya somani is from Delhi and she also admission through the sports quota. Madhav and Riya are basketball players. Both are became close friends due to their association with basketball.

Madhav jha is not a good English speaker. Riya helps him prepare the speech. Madhav wants to make her as his girlfriend, but she refuses

"One, don't ever try to talk to me. Two, we are not friends anymore. I have promised my friends and myself I will choose my friends carefully. Three, stop hounding me, it's disturbing. I don't want to tell my parents or the college authorities" (77)

After their break-up Madhav personality changed. People in college start to call him as SSS, or the silent saint of Stephen's. A year later, Riya marries her childhood friend Rohan and settles in London, where Rohan is a big business man. Rohan's family was so rich. Her marriage life doesn't give happy to her, she is always insulted by her husband, and she wants to be stay away from her husband. "I made a mistake, a big, big mistake. I can't be in denial anymore. I made a mistake marrying Rohan"(201). Rohan ill-treated Riya; he slapped her in front of his mother. She didn't stop him. He even pulled her hair. She found that her husband had illegal affair with a girl called Kristin. After that she left London without informing to anyone and came home.

She doesn't inform about her marriage to Madhav. Madhav settles in his hometown and helps his mother, Rani Sahiba, who runs her school. The condition of the school is somewhat bad. There is no toilets and proper class in the school.. He decides to meet local MLA ojha for financial help, but the MLA refuses to help. An opportunity comes when MLA ojha informs Madhav about Bill Gates, visit to some schools in Bihar. He tries his best to convince Gate to fund his school, but to do. So he has to prepare a speech, preferably in English.

Madhav gave good speech in the function. Riya helps him for the speech. Bill Gates inspires by Madhav speech, he got fund for his school. Meanwhile, Riya left a letter for Madhav in his home. The letter is about her love towards Madhav and she also mentioned her health condition. she has three months to live. After read the letter, he searched Riya all over the place. But Madhav was not able to find her.

"A good thing has come of my decision to leave here. I feel free enough to tell you everything. I don't have to hold back or say the right thing anymore. . . I thought of how hard it was going to be to leave you. Funny, I've never felt that way about leaving this world. But leaving you, yes, that is difficult" (190)

After three years, it is a revealed from Riya's journal that she is alive and that she had faked her cancer. Madhav goes in search of her in New York. After three months of extensively searching, he finds her at a jazz event and the two reconcile. The story ends with the author visiting the rural school in dumaroan, three and a half years later, and seeing that both Madhav and Riya are successfully running the school, and also have a son, shyam.

Overall, Riya somani is the best example of twenty first century woman, who faces lot of struggle in her marriage life. Even though, she married her cousin, she is not happy in her marriage life. She got divorce from her husband. After that she joined in a musical band which was her passion. At the end, she is married her love Madhav. Indian women's sacrifice their wish for their family. They have to face lots of problems in family and in society. In this novel also Riya somani came across so many troubles and tasks in their life. At last, she took good decision that is married Madhav.

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# Idolizing Sunitha Krishnan: A Study on Rape Victim's Stoicism

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Tracing the emergence of human species, various factors led to the destruction of human community. The calamities may be natural or outcome of man's mechanism. Destruction ever changed till the date which plotted against women is Rape. In Good reads site, Kurt Cobain voted his voice against rape through a wonderful definition,

Rape is one of the most terrible crimes on earth and it happens every few minutes. The problem with groups who deal with rape is that they try to educate women how to defend themselves. What really need to be done is teaching men not to rape. Go to the source and start there.

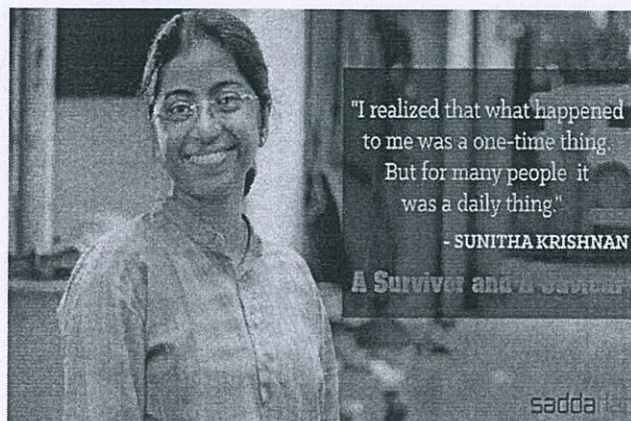
The movie 'I spit on your grave' by Stephen R. Monroe clearly depicts the horror of rape and dolor faced by a victim of rape. In the movie the victim turned to a combatant after what she has faced under five rapists. She murdered the rapists one after the other as a cold blooded murderer. The lynching shows sufferings she underwent during physical pillage. Researcher defended this massacre as an avenge undertaken by the girl.

This perspective changed by a real life rape survivor Sunitha Krishnan, who turned as survivor of thousands and thousands of women being sexually assaulted in the name of human trafficking. Surviving and make other victims to survive in the society that gaze a rape victim awkwardly is a kind of prolific act undertaken by Sunitha. What the director conveyed in his movie 'I spit on your grave' is undoubtedly beyond reality. The cause Sunitha Krishnan promoting though not excluded reality, it needs guts, patience and chiefly humanity which are hard to trace. Facing the intolerable pain physically and mentally, rape victims possess huge pile of energy. This Researcher has taken the opportunity to promote the life of Sunitha as mean for all victims to regain their identity.

Many have spoken regarding sufferings encountered by the victim of rape socially, physically and mentally. Here the researcher's perspective differs from that of others, who is about to prompt the dawn in life of the rape victim. As if natural calamity is no fault of human, rape is an accident where the victim is no way to be blamed. The existing society teaches don't get raped instead of don't rape. India becomes a country where a gang raped woman is sent to prison for going back on her statement in court, justice for sexual assault survivors is still a far cry. Here the presenter questions prevailing situation that accuses the protagonists. Research or researcher does not have answer to end sexual violence or what the society calling as rape. The researcher's perspective deals about life of woman stamped as rape victim. The heroic worship of rape victim is initiated through this research as she is not the provoker of the crime.

The researcher projecting the life of Sunitha Krishnan who faced the adversity at the age of fifteen under eight barbarians. For the next two years she was completely ostracized, stigmatized by the society. With a ray of hope she jumped out from that cocoon and started working against women and child trafficking. The society designed her as a dead duck, but encountering as many as obstacles could never be dreamt of, now she is the co-founder of Prajwala, the eternal flame exclusively for women atoned by sex trafficking. The women Sunitha rescued are now working in various companies with handsome salaries. This audacity, daring and dauntlessness made Sunitha Krishnan the real hero.

The researcher here has taken the opportunity to bring Sunitha Krishnan, co-founder of women's rehabilitation organization Prajwala, an eternal flame which reintegrates sex trafficked victims into society. Sunitha was born in Bangalore to Malayali parents Raju Krishnan and Nalini Krishnan.



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Sunitha was a precious child who from the age of eight started working for the feeble people. At the age of fifteen, while working for on a literacy campaign for dalit children she was molested by eight men. This incident served as a force for what she does today. The definition given by Sunitha Krishnan in a speech to TED at Infosys campus in Mysore is thought provoking and ground breaking,



# Quest for Self Identity- Postmodernist Woman: Ian McEwan's Black Dogs

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## I. INTRODUCTION

Ian McEwan is a post modern British novelist; his novels explore much more complex, issues, believable and of much less pessimistic view. His novels deal with existing issues like, war, culture, social and political status, psychological, dark and pathological obsessions, crimes and incestuous relationship. The novel Black Dogs published in the year 1992, depicts a fictional memoir of two people June and Bernard. Set in late 1980's Europe at the time of the fall of the Berlin Wall, it is the intimate story of the crumbling of a marriage, as witnessed by an outsider. Jeremy is the son-in-law of Bernard and June Tremain, whose union and estrangement began almost simultaneously. Seeking to comprehend how their deep love could be defeated by ideological differences Bernard and June cannot reconcile, Jeremy undertakes writing June's memoirs, only to be led back again and again to one terrifying encounter forty years earlier a moment that, for June, was as devastating and irreversible in its consequences as the changes sweeping Europe in Jeremy's own time. In a finely crafted, compelling examination of evil and grace, Ian McEwan weaves the sinister reality of civilization's darkest moods- its black dogs with the tensions that both create love and destroy it. Their story is told by Jeremy whose union and estrangement began almost simultaneously.

In 1944, the couple met at London. Bernard had a desk job with the intelligence service, June was working there as a linguist. The two courted, fell in love, married and at the end of the war, took a honeymoon in France in 1946. They had a similar idea on life; both are young, idealistic, and British communists. Both come from the British upper class and are cultured, educated, and polished. Their future plans are to spend their lives an idealistic, communist utopia on earth through their involvement with the practical politics of socialism. June and Bernard were devout communists, "Marx, Lenin, Stalin, the way forward- we agreed on everything". June recalls, "We'd founded a private utopia, and it was only a matter of time before the nations of the world followed our example".

The present study focuses on self identity on three unique characters, June and Bernard Tremain's love, marriage and the principles and doctrines on before and after honeymoon. Secondly Jeremy's self identity from orphan life to adult. One of the common skin textures of all McEwan's works is the strength of the conflicts. And one of the main causes of most conflicts is the difference in the perception of reality. The author tries to investigate how people react when they are suddenly exposed to violence and the life of the main characters is closely investigated on a social and political background.

The two met as members of the communist party and fell in love with each other but eventually their personalities turned out to be totally opposed. While June appears to be a spontaneous being, with spiritual interests, a natural believer, Bernard, on the other hand, is an unshakable materialist, rational, always looking for a logical explanation and concerned only with matters that can be perceived through the five senses. The novel took a turn by an incident in 1946, when June and Bernard were in their honeymoon, in a village in France. One day, when they were out walking, June let Bernard far behind her and was confronted by ferocious black dogs, which had been used by the Nazi to torture the prisoners during the war. Miraculously, June managed to escape, but the incident had a deep impact on her later life. That horrifying moment turned out to be some sort of spiritual awakening for her, a somewhat mystical experience which made her rediscover her belief in god.

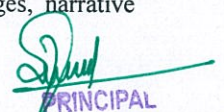
Bernard on the other hand, although he never stopped loving her, was angry at her seclusion and her lack of social responsibility. He remained a materialist and a rationalist until his death. The character of Jeremy differs from other characters; he is an orphan and his teen years were spent chasing parents, finally finds June and Bernard. And apart from the need of parents, he also suffers from the matter of identity search. Though June and Bernard loved each other deeply, they could not save their relationship and after the incident that made June redefine herself, she also began to realize that they were too different to survive as a happy couple. She also became more and more convinced that the evil of the society is in fact due to the evil that is innate to each individual and that is why the problems of the society cannot be solved unless each individual manages to deal with the evil within. The real black dogs which attacked June were the factor that produced some sort of spiritual enlightenment inside June as they developed into symbols to the pure evil which exist inherently within each individual. However it throws in short reflections on the Berlin Wall, the Holocaust, sex and family life in the 1980's and being an orphan and turning into a cuckoo in other people's families. Black Dogs symbolically refers that personal depression, cultural depression, and civilizations worst moods.

## CONCLUSION

McEwan uses the dogs as a metaphor for the potential for corruption, perversion, and violence in modern Europe. On the contrary the same image represents the potential of spiritual and materialist return. Finally all the three characters try to establish their self identity by their characters but the circumstances, situations, environments, modern life style and cultures did not allow their task. The Black Dogs interweaving the political with personal, intimate relationships, through the characters the pain and isolation of childhood. Author has used various modern techniques to connect his narrative like symbols, images, narrative techniques, for example Black Dogs, Fall of Berlin Wall, Nazism, and reflect of the Second World War.

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# Women and Literature Indian Women's Contribution to Literature

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**Abstract--** The role of women in the world is increasingly day by day. Globalization has given the women a greater opportunity to work with confidence and spread their name in national and international levels. Women have played a more important role than men. Today women are equally competent, they are more confident. Now Women are playing important role in the economy, with their hard work and sincerity, they have surpassed in every profession. Empowerment of women has emerged as an important issue in recent times. Empowering women is a united approach; empowerment is a process of increasing the spiritual, political, social, or economic strength of individuals and communities.

This paper is going to bring out the over view of women and their contribution to literature. The trend of educating women began again in the late 19<sup>th</sup> century with the rise of the reformist movement in India in which women participated and rebelled against the British rule. This led to a new stage for the development of women's literature in India. Women writing in 20<sup>th</sup> century move towards a medium of modernism in which feminist statements were combined with political news. Women are the part and parcel of the Indian society. The contribution of women to national economy and human welfare is well known, Indian woman writers have described the women's problems, sufferings, marital conflicts and human psyche in the life of female characters.

## Indian Women's contribution to literature

People belonging to literature have always been an important part of the society and Indian women are not an exception. The women in India have made an outstanding contribution to literature, and their role is well acceptable in all literary circles. **Women and literature** are closely related to each other because it requires a lot of artistic creativity to be good at literature and women are too good when it comes to artistic creativity. Women novelists from India are the one to give a new shape to the English literature of India. The present Indian English literature is developed due to the effort of many prolific writers. The best part is mostly given by the women writers.

When novels were not so popular in the world of literature, **women writers in India** used to create lyrics for songs, write short stories and small plays too. The famous literary persons believe that women writers were the one who supported the old tradition of narrating tales in India. In between the 19<sup>th</sup> century, more women became English writers, and as the time went on, women writers were able to fill the emotions of ladies in their writings. This had a great force on the language patterns of Indian literature. Women writers introduced new styles in Indian writing, and such novels have become very popular among the Indian readers these days.

The work of the women writers has not been given its due importance in the past, most probably due to male chauvinism. In the past, the basic subject matter of women writers was the feelings of a woman while she is restricted in the walls of a house, while the main authors used to write on exciting themes. So the work of male authors was able to collect more praise from the readers.

But in the 19<sup>th</sup> century, many Indian women writers played their role against the British rule by participating in the India's reform movement, and this was the point when the work of women writers started getting praise. This was because they were written on the themes of freedom of the country from the British rule.

In the last century, the readers recognized the work of women writers as a strong way to spread modernism and feminist statements. In the past 20 years, there has been a remarkable progress when we talk about feminist writings in the Indian literature. Now in the present generation, women writers are more welcomed and are wealthier and also they are foreign qualified too.

Women writers have presently begun voicing their feelings and thoughts in a powerful way, shaking off their depressing experience of the past in a male-dominated society. The consciousness of individuality, the sense of incompatibility with their custom – bound surroundings, the bitterness of male-dominated thoughts of ethics and behaviour, troubles at home and at the place of work or in society; all these topics come up before them in a flood of projection. Women writers are rather more conscious and nearer to the sequential realities, more aware of the delicate nuances of human psyche than their male counterparts.

Modern women writers written their novels based on the issues related to women, for instance; rape and other societal issues as well, like corruption and injustice. Most of the stories focus on the themes of unknown psyche of females, male domination, slavery, feministic values and we can witness many such stories where the sorrows of unlucky housewives are portrayed. These novels are well appreciated by the readers and they entered into the hearts and minds of the readers. In practically every last trace of the written works of the globe the women writers are transcending the borders and making their presence felt. The function of women in the cutting edge expositive expression is not confined just to show. Opposite the globe the women writers have earned a notable distinguishment for themselves. They have effectively secured equality of women with the men in the enjoyment of rights.

In the land where a girl's life is threatened right from when she is just an embryo in her mother's womb, there are these women who not only have set examples for other women, but also have made the country proud. The women writers of the present

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# Feminiton and Media

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India's newspaper evolution is nearly unmatched in world press history. India's newspaper industry and its Westernization, India's press is a metaphor for its advancement in the globalized. While a majority of the poor working people in rural and urban areas still remain oppressed and even illiterate, a significant proportion of people—roughly about 52 percent of the population over 15 years of age were recorded as being able to read and write. Freedom of speech and expression is a constitutionally guaranteed fundamental right of the Indian people.

The way women are shown in movies these days is hardly different than those before a decade or a few. Women have been shown to consider being an ideal homemaker as the goal of their life. Leaving few exceptions, movies of recent times have hardly shown an 'ideal woman' doing anything but being a housewife. Even in those movies where a woman is shown to have more decision power in hand than her husband, the wife is almost always portrayed in bad light. Media not only portray women as mere commodities, they often unintentionally stereotype women.

Social media democratized feminist activism, opening up participation to anyone with a Twitter account and a desire to fight the patriarchy. By removing the barriers of distance and geography, sites like Facebook, Twitter, Tumblr, and Instagram have made activism easier than ever, facilitating public dialogues and creating a platform for awareness and change. But feminist social media activism doesn't just raise awareness – it has generated tangible results, too. There is still a long way to go, and social media activism alone won't solve the world's problems. But it has potential to be a powerful force for women trying to fight back against sexism. Social media activism will probably never fully replace traditional activism – it won't replace the power of peaceful protests, demonstrations and rallies – but what social media can do is give a voice to those who are otherwise voiceless.

Like others engaged in social activism, feminists have long been interested in how the media represents them. This is because the media is a key space where people find out about the world around them, and is many people's only source of information about feminism. As a result, media representations matter greatly. Like others engaged in social activism, feminists have long been interested in how the media represents them. This is because the media is a key space where people find out about the world around them, and is many people's only source of information about feminism. As a result, media representations matter greatly.

The exploitation of women in mass media is the use or portrayal of women in the mass media (such as television, film and advertising) to increase the appeal of media or a product to the detriment of, or without regard to, the interests of the women portrayed, or women in general. Feminists and other advocates of women's rights have criticized such exploitation. Additionally, the sexual objectification of women in film has a detrimental effect on girls and young women. Research shows that when girls had extended exposure to films in which female super heroes were dressed in over-sexualized costumes, they became more aware of their own body competence. Additionally, the exposure impacted their view of the female gender and female roles.

More women are involved in careers in the communications sector, but few have attained positions at the decision-making level or serve on governing boards and bodies that influence media policy. The lack of gender sensitivity in the media is evidenced by the failure to eliminate the gender-based stereotyping that can be found in public and private local, national and international media organizations.

The continued projection of negative and degrading images of women in media communications - electronic, print, visual and audio - must be changed. Print and electronic media in most countries do not provide a balanced picture of women's diverse lives and contributions to society in a changing world. In addition, violent and degrading or pornographic media products are also negatively affecting women and their participation in society.

Programming that reinforces women's traditional roles can be equally limiting. The world-wide trend towards consumerism has created a climate in which advertisements and commercial messages often portray women primarily as consumers and target girls and women of all ages inappropriately.

Women should be empowered by enhancing their skills, knowledge and access to information technology. This will strengthen their ability to combat negative portrayals of women internationally and to challenge instances of abuse of the power of an increasingly important industry. Self-regulatory mechanisms for the media need to be created and strengthened and approaches developed to eliminate gender-based programming. Most women, especially in developing countries, are not able to access effectively the expanding electronic information highways and therefore cannot establish networks that will provide them with alternative sources of information. Women therefore need to be involved in decision-making regarding the development of the new technologies in order to participate fully in their growth and impact.

Social roles for women have changed since World War II, and over this same period television entered the American home and became identified as the mass medium of our time. The correspondence between the media and the women's movement may be illusory, for the

# The Portrait of Women Character in Shashi Deshpande's *That Long Silence*

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Shashi Deshpande is one of the leading novelists in Indian English literature. She shot into limelight with the publication of her novel *That Long Silence* (1988) which won her prestigious Sahitya Akademi Award in 1991. As a novelist Shashi Deshpande's area of expertise lies in her realistic presentation of the life of women in general and the educated, modern, middle-class women in particular. She makes an attempt to explore the inner 'psyche' of the modern women who are at the cross lines between tradition and modernity. Their problem lies in their inability to discard the traditional values at once and follow their newly acquired values. Most of her novels reflect predicaments and struggles of this type of women. Jaya starts to maintain silence since the moment when she knows the fact that to Mohan "anger made a woman 'unwomanly'. He tells her that his mother never raised her voice against my father however badly he behaved to her. The author throws light on the issues of gender injustice and power structure of patriarchy reflected in several characters in *That Long Silence*. Silence becomes an important motif in the novel to express the gender bias of the society.

Shashi Deshpande highlights in her novels that modern women are more assertive and confident yet they are unable to liberate themselves from the limitations associated with each role assigned to them. Deshpande penetrates to the hearts of issues related with women and their lives. Deshpande defines feminism as a constructive force which in the patriarchal social set-up should emancipate women from their subordinate position without destabilizing human relationships and family bonds. Her feminist ideology not only advocates the social emancipation of women by repudiating to submit to patriarchal oppression, but also suggests that women should realize their potential and assert their self identity. In her novels she has projected the modern, middle class Indian women who are struggling to overcome their subordinate position in the male-dominated society. Her women have an optimistic attitude towards life and hence solve the predicament of their lives with a hope for a better future. They do not negate the family life. Reining their identities as wives, mothers and daughters, they finally restore their individuality and assert their true selves.

Jaya has grown up in a family where she could develop her individually under the indulgence of her father and was educated in a convent school. Her father named her 'Jaya' that means 'winner.' Having high opinion about his daughter her father tried his best to inspire Jaya assuring that she is not like others and that Jaya will flourish in life. Unluckily, Jaya's father died of heart attack at an early age before she completed her graduation.

It is a great blow to her career, as she had never developed a friendly relationship with her mother who often opposed her father. Jaya prefers to stay in the hostel rather than being with her mother who hardly felt the death of her husband. Jaya is surprised at her mother's careless attitude. Jaya's mother leaves for Ambegaon, her parental home after her husband's death simply ignoring her twenty years of life with her husband in Saptagiri as an interlude. Jaya's decision to marry Mohan' is an out-come of her defiance attitude against her mother and her willingness to get freedom from the control of parental home.

Mohan also chooses Jaya because he wants to marry a well-educated and cultured girl who can speak good English under the impression that she can understand him and cooperate with him to lead a happy and peaceful life. He never bothers for dowry, money and other practices of marriage. Jaya's brother explains it to her; he believes what he wants is an educated, cultured wife. He says he isn't bothered about dowry, money and all that an educated cultured wife. He decides to marry Jaya when he saw her speaking English fluently. Jaya writes realistic stories for the newspapers and magazines apart from her domestic duties. The readers, editors and even her husband Mohan love her writing dealing with man-woman relationships.

A realistic story of her even won her a prize that narrates about a man who could not reach out to his wife except through her body. But Mohan gets hurt assuming that the story is about their personal life and it is revealed to the world, Kamat, Jaya's neighbor and a widower with whom she could freely discuss her stories, remarks that they are lacking in emotion and anger. She replies that expressing anger is not a womanly trait.

Deshpande depicts two different pictures of Indian women at two parallel levels in the novel – the lower class women engaged in menial domestic chores to earn their living; and middle class women of some financial independence. She further divides middle class women into two categories: those who never question their marriage and submit to insult, injuries and humiliation without any complaint; and those who, refusing to become the victim of trends, raise voice against their oppression. Jaya, the protagonist, belongs to the second category of middle class women. In the beginning, she is not different from other women of her class, but towards the end, we notice a great change in her personality.

Deshpande brings out the similarities and differences among Jaya and other female characters in the novel – among women of different generations Jaya, her mother and her grandmother, among women of the different classes Jaya, Nayana and Jeeja, among women of the same class and generation Jaya, her cousin, Kusum and her neighbour, Mukta. The condition of women from lower class, as presented by Deshpande, is really pitiable. Their suffering starts much before their marriage. They start adding to the family income at a tender age, the way Jeeja's granddaughter, Manda, does. They continue working and earning all their life. They are married off at the age considered suitable by their parents, to any boy who has one head, two eyes, two ears, two hands and two legs like any man. Marriage does not bring any positive change in their lives, but it brings with it endless pain, suffering

# The Women – The Pinnacle of Power

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**Abstract--** This paper is with the perspectives of the women with an indomitable spirit in, Sidney Sheldon's novels, the American novelist. Sidney Sheldon women such as Noelle page, Catherine Doughlas, Leslie Stewart, Jennifer Parker, Tracy Whitney, Dr. Paige Taylor, Dr. Kat Hunter, Dr. Honey Taft, Ashley Patterson, Tony Prescott, Alette Peters, Dana Evans, Lara Cameron and so on are invincible and very much women of the world. These women of Sidney Sheldon's transform themselves in a terrible way. They are beautiful, courageous, unpredictable, loveable and perfect in facing the reality. These kinds of spirits are to be sensed and visualized in popular literature of this days. As a presenter, I feel much privileged to present some of the fictional women characters of the popular American writer, Sidney Sheldon in this paper. In most of his novels we can witness an extraordinary willpower among his women characters. To say clearly, these fictional women are motivating, inspiring and captivating the mind of the readers, especially the women.

**Keywords--** *The womanhood – the survivor, the indomitable, the flawless and the exclusive and the most powerful soul*

FULL PAPER

Real Women are Classy, Strong, Independent, Loyal and Loveable and One thing about them is they know they deserve better

One can witness such qualities of the real women by reading Sidney Sheldon's novel.

Sidney Sheldon is a man for All Seasons. He always portrays the women characters with extraordinary willpower in his novels. His novels often featured determined women who persevere in a tough world run by hostile men. The novels contained a lot of suspense and devices to keep the reader turning the page. Most of his readers were women. Asked why this was the case he said: "I like to write about women who are talented and capable, but most important, retain their femininity. Women have tremendous power — their femininity, because men can't do without it." He has shown much care and effort to take these women into the heart of his readers. His women characters are not noisy or showy. In his novels, the women characters are invincible and indispensable. They just come into the eyes of the readers and make the readers to feel that they are travelling with them and witnessing the happenings all together. They are the very much women of existing-practical life.

Best known today for his exciting blockbuster novels, Sidney Sheldon is the MASTER OF ALL MASTERS by presenting his women characters in awesome manner. He is the author of The Best Laid Plans, Nothing Lasts Forever, The Stars Shine Down, The Doomsday Conspiracy, Memories of Midnight, The Sands of Time, Windmills of the Gods, If Tomorrow Comes, Master of the Game, Rage of Angels, Bloodline, A Stranger in the Mirror, and The Other Side of Midnight. Almost all have been number-one international bestsellers. His first book, The Naked Face, was acclaimed by the New York Times as "the best first mystery of the year" and received an Edgar Award. of all time.

The above mentioned novels are a few of his bestselling books. In those novels, the importance of the story revolves around the women characters. In The Other Side of Midnight, the women characters Noelle page and Catherine Doughlas are contrary in their view on life. Both of them make their careful moves to steady their life with gloriousness. Noelle Page, an actress, is a most unusual woman. She is beautiful and talented, very planning and very casual. Besides, there was no way one could capture her with words. She is an enigma, defying solution. Catherine is beautiful, reserved, a typical female with tender qualities and attitude and loyal to her womanish husband. Here, Sidney Sheldon pictures these two women as seen in every society, one is tough with cravings towards sophisticated and dignified life and the other one with passions and longings towards a conjugal life.

The Best Laid Plans tells the explosive story of the beautiful and ambitious Leslie Stewart, who learns that for some men power is the greatest aphrodisiac, and of Oliver Russell, the handsome governor of a small southern state, who finds out why hell has no fury like a woman scorned. With the unexpected twists and turns that are the hallmarks of his novels, Sidney Sheldon spins a tale of two equally determined people headed on a collision course. Oliver has a strategy to win the White House; Leslie has a scheme to make him wish he'd never been born. They both should have known that even the best-laid plans can go dangerously astray...with deadly consequences. The Best Laid Plans takes readers inside two of America's most powerful and ruthless institutions: the world of politics with its scandals, corruption, and cover-ups; and that of newspaper publishing, where it is not unusual to use the power of the press to destroy lives -- or bring down heads of state -- in pursuit of a story or to settle a score.

In Rage of angels, the woman character, Jennifer Parker is a brilliant, lovely attorney on her way up. In this story, Sidney Sheldon grabs the attention of the reader in first rate by colouring the heroine character with surprise after surprise. This story really places the women readers to feel that they are the ones in the novel as Jennifer Parker. Though her career was threatened by a Mafia prince, she springs up with unbelievable stamina in facing the troubles and remains the toughest woman in men's world.

The plot is so intense and unputdownable. Jennifer Parker, she is an intelligent associate, but her life turns up side down after she is chosen to be a pawn in the trial of a Mafia Michael Moretti. She become notorious and no Law Firms accept her. But this strong girl never give up, she struggle and fight.

The story focuses on Jennifer, a young idealist lawyer from a small town who has moved to the big city to put away the bad guys. After a major, albeit innocent, mistake she is completely outcast from her prosecutor's office and struggles to stay in the city and become a top.