



**SRK INSTITUTE OF TECHNOLOGY**  
 Enikepadu, Vijayawada 521108  
 Approved by AICTE, Affiliated to JNTUK, Kakinada  
 (ISO 9001:2008 Certified Institution)

**Financial Support Request Letter**

1. Name of the Staff Member : Dr./Mr./Ms. D. Madhuri SriLatha
2. Designation : Asst. Professor
3. Department : EEP
4. Conference / Publication / Membership Fee / Workshop / FDP / Seminar / Training / Industrial Visit / Tours With details : Deregulated Power System.
5. Date & Duration of the Program : 27-02-2016
6. Associating Professional Body / Agency : VRSEC
7. Financial support particulars :
  - i. Registration Charges : 500/-
  - ii. Travelling Allowances :
  - iii. Membership Fee :
  - iv. Others (if any) :

Date: 25/2/2016

Signature of the Staff Member

1. Recommendations of the HOD :
2. Recommendations of the Principal :  \*Sanctioned / Not Sanctioned

PRINCIPAL  
 SRK Institute of Technology  
 ENIKEPADU, VIJAYAWADA-521 108

Account Department  
 Accountant:   
 Date: 26/2/2016

No.

VOUCHER

Date 26/2/2016

# SRK INSTITUTE OF TECHNOLOGY

ENIKEPADU, VIJAYAWADA - 521 108. Ph. : 0866 - 2843839

Name of A/c..... Seminars

Paid to D. Madhuri Sri Latha Cash/Cheque 500/-

the Sum of Rupees..... Five hundred rupees only

Towards..... Seminar

Prepared by

Approved by

Audited by

₹ 500/-

Receiver Signature



# VELAGAPUDI RAMAKRISHNA SIDDHARTHA ENGINEERING COLLEGE

Autonomous - Affiliated to JNTU, Kakinada - ISO 9001:2008

AICTE Approved - NBA Accredited - NAAC 'A' Graded

Kanuru, Vijayawada - 520007

[www.vrsiddhartha.ac.in](http://www.vrsiddhartha.ac.in)



## Certificate

This is to certify that Dr./Mr./Ms. D. MADHURI SRILATHA  
has participated in a one day seminar on **DEREGULATED POWER SYSTEMS**  
organised by Department of Electrical and Electronics Engineering on  
27<sup>th</sup> February, 2016.

*Cyces*  
Co-Ordinator

*Prinvarada*  
Convener

*Prin*  
PRINCIPAL  
V.R.Siddhartha Engineering College  
(AUTONOMOUS)  
VIJAYAWADA-520007  
Principal

*Prin*  
PRINCIPAL  
SRK Institute of Technology  
ENIKEPADU, VIJAYAWADA-521 108



15-16 8.

**SRK INSTITUTE OF TECHNOLOGY**  
Enikepadu, Vijayawada 521108  
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**Financial Support Request Letter**

1. Name of the Staff Member : Dr./Mr./Ms. M. Karunakar
2. Designation : Asst. prof
3. Department : EEE
4. Conference / Publication / Membership Fee / Workshop / FDP / Seminar / Training / Industrial Visit / Tours With details : power Electronics and Drives  
for vehicular systems - Technology status & future Trends
5. Date & Duration of the Program : 23/11/2015 - 28/11/2015 (6 days)
6. Associating Professional Body / Agency : Osmania University, Hyderabad
7. Financial support particulars :
  - i. Registration Charges : 500/-
  - ii. Travelling Allowances :
  - iii. Membership Fee :
  - iv. Others (if any) :

Date: 20/11/2015

M M Karunakar  
Signature of the Staff Member

1. Recommendations of the HOD : [Signature]

2. Recommendations of the Principal : [Signature]

\*Sanctioned / Not Sanctioned

PRINCIPAL

**SRK Institute of Technology**  
ENIKEPADU, VIJAYAWADA-521 108.

Account Department

Accountant: [Signature]

Date: 21/11/2015

No. 9

VOUCHER

Date 21-11-2015

SRK INSTITUTE OF TECHNOLOGY

ENIKEPADU, VIJAYAWADA - 521 108. Ph. : 2843839

Name of A/c..... Faculty development programme.....

Paid to..... M. Karunakar (EEE)..... Cash/Cheque..... 500/-.....

the Sum of Rupees..... Five hundred rupees only.....

Towards..... Work shop.....

Prepared by

₹ 500/-

Approved by

M. Karunakar

Audited by

M. Karunakar

Receiver Signature



One Week Training Programme  
on



# Power Electronics and Drives for Vehicular Systems-Technology Status & Future Trends

Organized by

**DEPARTMENT OF ELECTRICAL ENGINEERING**

University College of Engineering (A)  
Osmania University, Hyderabad

## *Certificate of Participation*

This is to certify Dr./Mr./Ms. M.M. KARUNAKAR, SRK Institute of Technology has participated in the one week training programme on "Power Electronics and Drives for Vehicular Systems - Technology Status & Future Trends" organized by Department of Electrical Engineering, University College of Engineering (A), Osmania University, Hyderabad from 23<sup>rd</sup> to 28<sup>th</sup> November, 2015, Under TEQIP-II (Technical Education Quality Improvement Programme, Phase-II).

*Surya*  
Mrs. U. Suryavalli  
Coordinator

*Sreesobha*  
Mrs. E. Sreesobha  
Coordinator

*Mangu*  
Mr. B. Mangu  
Head, Dept. of EEE

*hi*  
Prof. S. Ramachandram  
Principal, UCE(A)

Sponsored by :

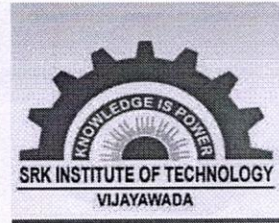


**TECHLABS**  
An ISO 9001:2008 Company



*Principals*  
PRINCIPAL

SRK Institute of Technology  
ENIKEPADU, VIJAYAWADA-521 108

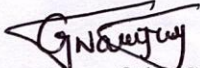


**SRK INSTITUTE OF TECHNOLOGY**  
**Enikepadu, Vijayawada 521108**  
 Approved by AICTE, Affiliated to JNTUK, Kakinada  
 (ISO 9001:2008 Certified Institution)

**Financial Support Request Letter**

1. Name of the Staff Member : Dr./Mr./Ms. B. Nava Jeevan Reddy
2. Designation : Asst. prof
3. Department : EEE
4. Conference / Publication / Membership Fee / Workshop / FDP / Seminar / Training / Industrial Visit / Tours With details : Training programme (STTP) on Technical Communication
5. Date & Duration of the Program : 30/11/2015 - 5/12/2015 (6 days)
6. Associating Professional Body / Agency : ISTE
7. Financial support particulars :
  - i. Registration Charges : 500/-
  - ii. Travelling Allowances :
  - iii. Membership Fee :
  - iv. Others (if any) :

Date: 27/11/2015

  
 Signature of the Staff Member

1. Recommendations of the HOD : [Signature]
2. Recommendations of the Principal : [Signature] \*Sanctioned / Not Sanctioned

**PRINCIPAL**  
**SRK Institute of Technology**  
 ENIKEPADU, VIJAYAWADA-521 108.

Account Department

Accountant: [Signature]

Date: 28/11/2015

15-16

No.

**VOUCHER**

Date. 28/11/2015

**SRK INSTITUTE OF TECHNOLOGY**

ENIKEPADU, VIJAYAWADA - 521 108. Ph. : 2843839

Name of A/c..... Faculty development programme.....

Paid to B. Nava Teevan Reddy Cash/Cheque..... 500/-

the Sum of Rupees..... Five hundred rupees only

Towards..... Workshop.....

Prepared by

₹ 500/-

Approved by

*BM*

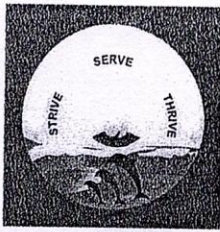
Audited by

*AG*

Receiver Signature

*G*





# GITAM UNIVERSITY

(Estd. u/s 3 of UGC Act. 1956)  
Accredited by NAAC with 'A' Grade

**HYDERABAD CAMPUS**

**Two - Week ISTE Short Term Training Programme (STTP) on Technical Communication  
conducted by IIT Bombay**

**under the**

**National Mission on Education through ICT (MHRD, Govt. of India)**

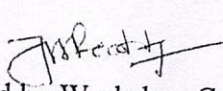
**08 October to 05 December 2015**

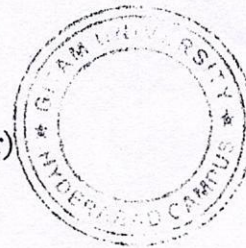
*(Online activity equivalent to one week from 08 October to 11 November and  
face to face workshop at a remote center from 30 November to 05 December 2015)*

***Provisional Certificate***\*

This is to certify that

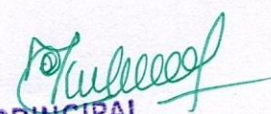
**Mr. Bavanam NavaJeevan Reddy, Assistant Professor, Department of Electrical & Electronics Engineering of S.R.K. Institute of Technology** has attended the face to face workshop component from 30 November – 05 December 2015 at **GITAM University-Hyderabad RC ID: 1295.**

  
(Signed by Workshop Coordinator)



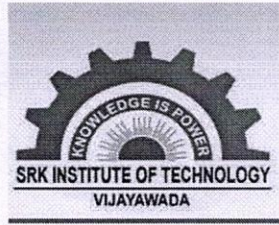
**\*This is only a provisional attendance certificate stating that the participant has attended the face to face component.**

The participants will receive the ISTE-IITB certificate only after they qualify in the online activity, the face to face workshop and the post workshop assignments.

  
PRINCIPAL  
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ENIKEPADA, VIJAYAWADA-521 108.

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Website : [www.gitam.edu](http://www.gitam.edu)



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**Financial Support Request Letter**

- 1. Name of the Staff Member : Dr./Mr./Ms. S. Nageswara Rao
- 2. Designation : Asst. prof
- 3. Department : EEE
- 4. Conference / Publication / Membership Fee / Workshop / FDP / Seminar / Training / Industrial Visit / Tours With details : Training programme (STTP) on Technical Communication
- 5. Date & Duration of the Program : 30/11/2015 - 5/12/2015 (6 days)
- 6. Associating Professional Body / Agency : ISTE
- 7. Financial support particulars :
  - i. Registration Charges : 500/-
  - ii. Travelling Allowances :
  - iii. Membership Fee :
  - iv. Others (if any) :

Date: 27/11/2015

S. Nageswara Rao  
Signature of the Staff Member

- 1. Recommendations of the HOD : [Signature]
- 2. Recommendations of the Principal : [Signature] \*Sanctioned / Not Sanctioned

PRINCIPAL  
SRK Institute of Technology  
ENIKEPADU, VIJAYAWADA-521 108.

Account Department  
Accountant: [Signature]  
Date: 28/11/2015

No. 3

VOUCHER

Date 28/11/2015

SRK INSTITUTE OF TECHNOLOGY

ENIKEPADU, VIJAYAWADA - 521 108. Ph. : 2843839

Name of A/c..... Faculty development Programme.....

Paid to..... S. Nageswara Rao (EEE) Cash/Cheque..... 500/-.....

the Sum of Rupees..... Five hundred Rupees only.....

Towards..... Work shop.....

Prepared by

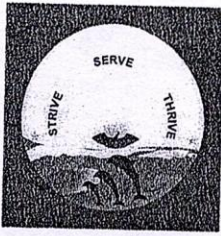
₹ 500/-

Approved by

*[Signature]*

Audited by

*[Signature]*  
Receiver Signature



# GITAM UNIVERSITY

(Estd. u/s 3 of UGC Act. 1956)  
Accredited by NAAC with 'A' Grade  
**HYDERABAD CAMPUS**

**Two - Week ISTE Short Term Training Programme (STTP) on Technical Communication**  
conducted by IIT Bombay

under the

**National Mission on Education through ICT (MHRD, Govt. of India)**

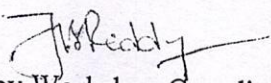
**08 October to 05 December 2015**

*(Online activity equivalent to one week from 08 October to 11 November and  
face to face workshop at a remote center from 30 November to 05 December 2015)*

**Provisional Certificate \***

This is to certify that

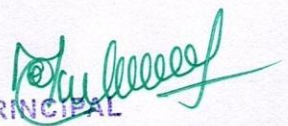
**Mr. Nageswara Rao Sikha, Assistant Professor, Department of Electrical & Electronics of  
S.R.K. Institute of Technology** has attended the face to face workshop component from  
30 November – 05 December 2015 at **GITAM University-Hyderabad R.C. ID: 1295.**

  
(Signed by Workshop Coordinator)



**\*This is only a provisional attendance certificate stating that the participant has  
attended the face to face component.**

The participants will receive the ISTE-IITB certificate only after they qualify in the online  
activity, the face to face workshop and the post workshop assignments.

  
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**Financial Support Request Letter**

1. Name of the Staff Member : Dr./Mr./Ms. N.E.K. Chandra
2. Designation : Asst prof
3. Department : EEF
4. Conference / Publication / Membership Fee / Workshop / FDP / Seminar / Training / Industrial Visit / Tours With details : Smart Grid Technology and Application
5. Date & Duration of the Program : 19/02/2016 - 20/2/2016 (2 days)
6. Associating Professional Body / Agency : VRSEC
7. Financial support particulars :
  - i. Registration Charges : 300/-
  - ii. Travelling Allowances :
  - iii. Membership Fee :
  - iv. Others (if any) :

Date: 17/2/2016

N.E.K. Chandra  
Signature of the Staff Member

1. Recommendations of the HOD : [Signature]

2. Recommendations of the Principal : [Signature] \*Sanctioned / Not Sanctioned

**PRINCIPAL**  
**SRK Institute of Technology**  
 ENIKEPADU, VIJAYAWADA-521 108.

Account Department

Accountant: [Signature]

Date: 18/2/2016

**VOUCHER**

Date... 18/2/16

No.

**SRK INSTITUTE OF TECHNOLOGY**

ENIKEPADU, VIJAYAWADA - 521 108. Ph. : 2843839

Name of A/c..... Faculty development programme.....

Paid to N.E.K. Chandra (EEE) Cash/Cheque..... 300/-

the Sum of Rupees..... Three hundred rupees only.

Towards..... F.D.P.

Prepared by

Approved by

*[Signature]*  
Audited by

₹ 300/-

*[Signature]*

N.E.K. Chandra  
Receiver Signature



# VELAGAPUDI RAMAKRISHNA SIDDHARTHA ENGINEERING COLLEGE

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Kanuru, Vijayawada - 520007

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## Certificate

This is to certify that *Dr./Mr./Ms.* N. E. K. CHANDRA  
has participated in two day faculty development program on *SMART GRID TECHNOLOGY AND APPLICATION* organised by Department of Electrical and Electronics Engineering during 19<sup>th</sup> & 20<sup>th</sup> February, 2016.

*A. Rama Devi*  
Co-Ordinator

*Annamalai*  
Convener

*Arp*  
Principal

*[Signature]*  
PRINCIPAL  
SRK Institute of Technology  
ENIKERAPU, VIJAYAWADA-521 108.



**SRK INSTITUTE OF TECHNOLOGY**  
**Enikepadu, Vijayawada 521108**  
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**Financial Support Request Letter**

1. Name of the Staff Member : Dr./Mr./Ms. ✓ Ms. K. Satyanarayana
2. Designation : Asst. prof
3. Department : EEE
4. Conference / Publication / Membership Fee / Workshop / FDP / Seminar / Training / Industrial Visit / Tours With details : ✓  
Smart Grid Technology and Applications
5. Date & Duration of the Program : 19/2/2016 - 20/2/2016 (2 days)
6. Associating Professional Body / Agency : VRSEC.
7. Financial support particulars :
  - i. Registration Charges : 300/-
  - ii. Travelling Allowances :
  - iii. Membership Fee :
  - iv. Others (if any) :

Date: 17/2/2016

K. Lakshmaiah  
 Signature of the Staff Member

1. Recommendations of the HOD : §

2. Recommendations of the Principal : I. Lakshmi

\*Sanctioned / Not Sanctioned ✓

PRINCIPAL

SRK Institute of Technology  
 ENIKEPADU, VIJAYAWADA-521 108.

Account Department

Accountant: [Signature]

Date: 18/2/2016



No.

**VOUCHER**

Date... 18/2/16

**SRK INSTITUTE OF TECHNOLOGY**

ENIKEPADU, VIJAYAWADA - 521 108. Ph. : 2843839

Name of A/c..... Faculty development program.....

Paid to..... K. Satyanarayana (EEE) Cash/Cheque..... 300/-

the Sum of Rupees..... Three hundred rupees only.

Towards..... F.D.P.

Prepared by

Approved by

Audited by

₹ 300/-

*[Signature]*

*[Signature]*

K. Satyanarayana  
Receiver Signature



# VELAGAPUDI RAMAKRISHNA SIDDHARTHA ENGINEERING COLLEGE

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AICTE Approved - NBA Accredited - NAAC 'A' Graded

Kanuru, Vijayawada - 520007

[www.vrsiddhartha.ac.in](http://www.vrsiddhartha.ac.in)



## Certificate

This is to certify that *Dr./Mr./Ms.* K. SATYANARAYANA

*has participated in two day faculty development program on SMART GRID TECHNOLOGY AND APPLICATION organised by Department of Electrical and Electronics Engineering during 19<sup>th</sup> & 20<sup>th</sup> February, 2016.*

*A. Rama Devi*  
Co-Ordinator

*Pinnabala*  
Convener

*[Signature]*  
PRINCIPAL

*[Signature]*  
Principal

SRK Institute of Technology  
ENIKZPADI, VIJAYAWADA-521 108



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**SRK INSTITUTE OF TECHNOLOGY**  
Enikepadu, Vijayawada 521108  
Approved by AICTE, Affiliated to JNTUK, Kakinada  
(ISO 9001:2015 Certified Institution)

**Financial Support Request Letter**

1. Name of the Staff Member : Dr./Mr./Ms. J. Sai Sushen Kumar.
2. Designation : Asst professor.
3. Department : MBA.
4. Conference / Publication / Membership Fee / Workshop / FDP / Seminar / Training / Industrial Visit / Tours With details : multitex book in india.  
GRI's International Journal of Innovation & Technology Semot
5. Date & Duration of the Program : March 2016.
6. Associating Professional Body / Agency : IJITM.
7. Financial support particulars :
  - i. Registration Charges : 2000/-
  - ii. Travelling Allowances :
  - iii. Membership Fee :
  - iv. Others (if any) :

Date: 8/3/16.

J. Sai  
Signature of the Staff Member

- 
1. Recommendations of the HOD : [Signature]
  2. Recommendations of the Principal : [Signature] \*Sanctioned / Not Sanctioned

PRINCIPAL  
SRK Institute of Technology  
ENIKEPADU, VIJAYAWADA-521 108

Account Department

Accountant: [Signature]

Date: 10/3/16.

No. 5

VOUCHER

Date 10/3/16

SRK INSTITUTE OF TECHNOLOGY

ENIKEPADU, VIJAYAWADA - 521 108. Ph. : 2843839

Name of A/c Faculty development programme.

Paid to J. Sai Sudheer kumar (MBA) Cash/Cheque 2000/-

the Sum of Rupees Two thousand rupees only-

Towards Paper Publication.

Prepared by

Approved by

Audited by

₹ 2000/-

BS

J. sai  
Receiver Signature

### Multiplex Boom in India

Mr. Sudheer Kumar J. S, Assistant Professor, Department of Business Administration,  
S.R.K Institute of Technology, Vijayawada. e-mail: [boon.sudheer@gmail.com](mailto:boon.sudheer@gmail.com)

#### Abstract

Approximately twenty-three million Indians go to see a film every day. With the growth of multiplexes in several cities, venue could also be an influencing factor in watching movies. The growth of multiplexes from the 1990's in India is now a pivotal factor for contribution of economic development through entertainment industry. As of 2015 there are 2050 screens in India, where as in the countries like US 40,000 and China 20,000 screens. Comparatively, India has wide scope for development of multiplexes in the coming years as the Government of India also granted industry status to the film production and with the support of 100% FDI lot of developments is in line to entertain the audience.

**Key Words:** Multiplex, Entertainment, FDI, Government of India

#### Introduction

Every consumer is significant in the success or failure of a business. What makes a consumer opt for purchasing a product or render a service is one of the important aspects to be known by an entrepreneur. One may be impacted by the cultural, geographic factors, demographic, etc.; one may be influenced by family, friends, etc. According to a study, approximately twenty-three million Indians go to see a film every day. With the growth of multiplexes in several cities, venue could also be an influencing factor in the market demand for movies. It's probably a little late to be talking about the death of single-screen theatres.

Multiplexes have become so ubiquitous these days that we forget that it was only a decade ago that standalone theatres were all we had. For a

cinema-crazy nation such as ours, this change in the way we see films is no less a change in the way of life — in our urban landscape, since most of these theatres were really striking buildings. Even though India leads the world average in terms of movies produced each year, the gross under penetration of screen continues to be a cause of worry for the industry as domestic theatricals is the primary source of monetizing content for most films. There are just 7 screens per million people in India, unlike in the US, where there are 125 screens per million people. As India moves forward, the development and growth of most industries is expected to be largely driven by the Tier 2 and Tier 3 cities which are expected to hold the focus of the film industry as well. While the metros, especially Mumbai and NCR region, still contribute about 60% of the total box office collection in India, they have reached saturation and the next phase of growth is expected to come from Tier 2 and Tier 3 Centers.

#### Media and Entertainment Industry in India

The Indian Media and Entertainment (M&E) industry is a sunrise sector for the economy and is making high growth strides. Proving its resilience to the world, the Indian M&E sector is on the cusp of a strong phase of growth, backed by rising consumer payments and advertising revenues across all sectors. The industry has been largely driven by increasing digitisation and higher internet usage over the last decade. Internet has almost become a mainstream media for entertainment for most of the people. Recent statistics and developments pertaining to the sector are discussed hereafter.

  
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**Financial Support Request Letter**

1. Name of the Staff Member : Dr./Mr./Ms. K. Raja Yashodhar
2. Designation : Asst. prof.
3. Department : MeA
4. Conference / Publication / Membership Fee / Workshop / FDP / Seminar / Training / Industrial Visit / Tours With details : Reg - Data Analytics
5. Date & Duration of the Program : 11.4.2016 to 17.4.2016 (1 Week)
6. Associating Professional Body / Agency :
7. Financial support particulars :
  - i. Registration Charges : 2000-
  - ii. Travelling Allowances :
  - iii. Membership Fee :
  - iv. Others (if any) :

Date: 7.4.2016

KY  
Signature of the Staff Member

1. Recommendations of the HOD : Sanctioned
2. Recommendations of the Principal : Sanctioned \*Sanctioned / Not Sanctioned

Account Department

Accountant: [Signature]

Date:

No.

**VOUCHER**

Date <sup>75 16</sup> 11/4/16

**SRK INSTITUTE OF TECHNOLOGY**

ENIKEPADU, VIJAYAWADA - 521 108. Ph. : 2843839

Name of A/c..... Faculty Development Programme

Paid to K. Raja Yashodhar C.A.C./Cash/Cheque..... 200/-

the Sum of Rupees..... Two Hundred rupees only

Towards..... F.D.P.

Prepared by

Approved by

*[Signature]*

Audited by

*[Signature]*

₹ 200/-

*[Signature]*  
Receiver Signature



**Velapapudi Ramakrishna  
Siddhartha Engineering College**  
(Autonomous) - Vijayawada - 520 007

One Week FDP  
**BigData**  
11-17 April 2016  
Department of CSE, VRSEC

**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

*Certificate*

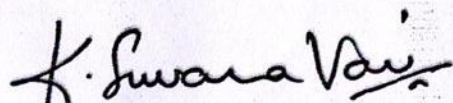
*This is to certify that*


Mr/Ms. K. Raja Yasodhar

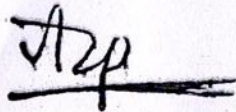
of SRK Institute of Technology

has participated in one week Faculty Development Programme on "Big Data Analytics" organized by Department of Computer Science and Engineering, VR Siddhartha Engineering College during

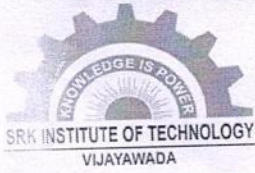
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## EXPERIMENTAL INVESTIGATION USING SPLIT INJECTION

By

K. BALA SHOWRY \*

A.V. SITA RAMA RAJU \*\*

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## ABSTRACT

The main aim of this paper is to improve the performance and to reduce the emissions of CI engine combustion. Experiments have been conducted on a single cylinder CI engine with normal injection and two pulse injection (split injection). From the simulated results and also existing experimental results it was observed that 10° dwell for double injection gives better results. In the present work, for split injection, existing cam shaft has been replaced with a modified cam shaft with a dwell angle of 10°, and experiments have been carried out with normal camshaft for single injection and with modified cam shaft for double injection. In double injection 50% of the total mass of the fuel was injected in the first pulse and the remaining 50% was injected after a dwell of 10°.

Experiments have been carried out for Single Cylinder Diesel Engine with the normal cam shaft which was existing in the engine for different loads (25%, 50%, 75% and 100%). The modified camshaft with double injection was tested with a dwell of 10°. In the first injection 50% of the fuel was injected and remaining fuel was injected after a dwell of 10°. The cycle peak pressure in double injection has been increased by 8% for full load, NO<sub>x</sub> emission has been reduced by 8.67%, and CO levels were reduced by nearly 30%.

Keywords: Split Injection, CFD, SOI (Start of Injection), DOI (Duration of Injection).

## INTRODUCTION

The diesel engine, because of its highest thermal efficiency among currently available engines, has been a main power source for over a hundred years. Its advantage in thermal efficiency is due to its combustion characteristics. Diesel fuel is injected into a high temperature and pressure environment (compression ratio as high as 24:1). Higher the compression ratio, efficiency of the cycle is high [Hey Wood; 1998]. However, for some of the same reasons that the diesel engine is highly efficient, its power density and exhaust emissions have traditionally been less desirable than Spark Ignition (SI) Combustion Engines. In a diesel engine, the combustion rate is controlled by the fuel injection rate, mixing and diffusion rates which are usually slower than the premixed combustion rate in typical Gasoline Engines. Diesel Engines usually emit more particulate and NO<sub>x</sub> than their gasoline counterparts. The high temperature and pressure environment in the diesel engine cylinder, because of its high compression ratio and high combustion temperatures makes it impossible to

completely prevent NO<sub>x</sub> from forming. The soot formed in the fuel – rich regions, although, partially oxidized in the expansion stroke, also remains in considerable amounts at Exhaust Valve Opening (EVO).

The problem of Diesel Engine emissions is exacerbated because of the trade-off feature between NO<sub>x</sub> and soot emissions. It is usually impossible to reduce both kinds of emissions simultaneously, since factors that tend to decrease one usually increases the other. For example, retarding the fuel injection timing is effective to reduce NO<sub>x</sub> formation by reducing the peak cylinder temperature and pressure. However, this method results in an increase of soot production because more soot is formed due to the lower temperature of in – cylinder gas which has shorter time to be oxidized [Lee, 2002]. Increasing the EGR rate can decrease the NO<sub>x</sub> emission level, however less oxygen is available to oxidize soot. Eventually, any change in these engine parameters will unavoidably affect other important engine performance measures, like retarding injection timing causes lower Thermal Efficiency and higher Brake



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# Evaluation of Mechanical Properties of Aluminium, Borassus Flabellifer Fiber and Polyester Composites

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**Abstract:** The use of natural fibres like borassus flabellifer fiber, flax, sisal, jute, kenaf, etc. as replacement to manmade fibres in fibre-reinforced composites have increased now a days due to advantages like low density, low cost and biodegradability. But the natural fibres have poor compatibility with the matrix and they have relatively high moisture sorption. In this research, the standard test method of ASTM D638M-89 is used to prepare specimens as per the dimensions for testing tensile properties of fiber-resin composites. The test specimen has a constant cross section with tabs bonded at the ends. The specimens were incorporated with borassus flabellifer fiber. Five identical specimens were prepared for each weight by varying fiber content in grams i.e. 0.5, 1.0, 1.5, 2.0, 2.5. Tensile strength of fabricated composites increases with increase in weight of fiber. The tensile properties of pure polyesters are also determined experimentally. The tensile strength of pure polyester is 35.2 N/mm<sup>2</sup>. The tensile strength of a fibered composite is 64.51 N/mm<sup>2</sup> (for maximum loading fiber that is at 2.5 grams).

**Keywords:** Composite, Natural Fibre, Tensile strength

## 1. INTRODUCTION

With the increased trend for sustainable and environmentally friendly materials, polymer composites industries has lead towards bio degradable polymers from renewable resources such as PVA (polyvinyl alcohol). Biopolymers offer environmental benefits such as biodegradability, greenhouse gas emissions, and renewability of the base material. Bio-composites are usually fabricated with biodegradable/ non-biodegradable polymers as matrix and natural fibers as reinforcement. Many lignocellulosic fibers, such as jute, hemp, sisal, abaca etc. are used as reinforcement for biodegradable bio-composites because of their good mechanical properties and low specific mass. has received much attention of biodegradable polymers. PVA is linear aliphatic thermoplastic polyester, produced from renewable agricultural resources. PVA has properties that are competitive to many commodity polymers (e.g. PP, PE, PLA, PS) such as high stiffness, clarity, gloss, and UV stability. A way to improve the mechanical and thermal

properties of PVA is the addition of fibers or filler materials. Combining PVA with natural fibers which are abundantly, readily available such as kenaf, jute, sisal etc. can lead to a totally bio degradable composite made only from renewable resources.

1. Bast or Stem fibres (jute, mesta, banana etc.)
2. Leaf fibres (Palmyra palms, Elephant grass, sisal, pineapple, screw pine etc.)
3. Fruit fibres (cotton, coir, oil palm etc.).

## 2. EXPERIMENTAL PROCEDURE

### 2.1 Materials:

Palmyra palms are economically useful and widely cultivated in tropical regions. The Palmyra palm has long been one of the most important trees of Cambodia and India where it has over 800 uses. The leaves are used for thatching, mats, baskets, fans, hats, umbrellas, and writing material and PVA (polyvinyl alcohol).

◆ Aluminum

◆ Borassus flabellifer fiber

◆ Polyester

### 2.2 Extraction of Fiber

Fiber is available in the form of bract on a Palmyra tree. First collect dried bracts from the Palmyra tree then segregate fibers from the bract then after Fibers are dried under sun for two days to remove moisture content. Further, the fibers were kept in oven for 70° C to ensure that maximum moisture was removed. Above fibers extracted by different methods are used for making composite specimens. In this work I used bract fiber these are generally 40 cm long.

### 2.3 Composite Fabrication

The test specimen has a constant cross section with tabs bonded at the ends. The specimen is prepared during layup process in the form of a rectangular mould of 160x13x3 mm thick and ground to the required dimensions. The mould is prepared on sand



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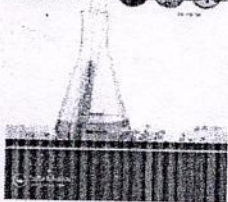
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## Performance and emission characteristics of Tertiary Butyl Alcohol gasoline blends on a spark ignition engine

Danaiah Puli & P Ravi Kumar

To cite this article: Danaiah Puli & P Ravi Kumar (2015) Performance and emission characteristics of Tertiary Butyl Alcohol gasoline blends on a spark ignition engine, Biofuels, 6:1-2, 71-78, DOI: [10.1080/17597269.2015.1050642](https://doi.org/10.1080/17597269.2015.1050642)

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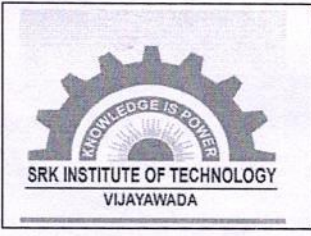
  
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## INVESTIGATION ON STRENGTH PROPERTIES OF SELF COMPACTING CONCRETE WITH COPPER SLAG AS FINE AGGREGATE

**V.Karthik**

Research Scholar, Department of Civil Engineering,  
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**Dr.G.Baskar**

Associate Professor, Department of Civil Engineering,  
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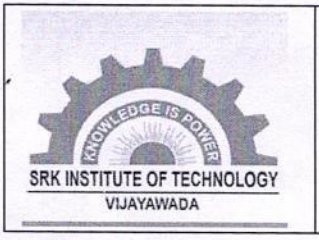
### ABSTRACT

Utilization of industrial waste materials has encouraged in construction field for the making of concrete because it contributes to reducing the consumption of natural resources. Self – compacting concrete (SCC) is a high – performance concrete which can flow under its own weight and it fills the form work thoroughly and self-consolidates without any additional mechanical vibration. Such concrete can accelerate the placement and reduce the labour needs for compaction and finishing. Copper slag is considered as one of the waste materials which can have a hopeful expectation in construction industry as partial or full alternative of aggregates. The objective of this work is to study the strength properties of self-compacted copper slag concrete. For this purpose M30 grade concrete was used and test were conducted for various proportion of sand replaced by copper slag at 0%, 20%, 40%, 60%, 80%, 100% and silica fume were used as an admixture to the concrete.

**Keywords:** Packing factor, Passing ability, Filling ability.

### INTRODUCTION

When large quantity of heavy reinforcement is to be placed in a reinforced concrete member, it is hard to ensure that the formwork gets totally filled with concrete that is, completely compacted without any honeycombs. It is not easy to do the compaction by manual or by mechanical vibrators in this situation. The representative method of compaction, vibration, generates delays and extra cost in the projects. This difficulty can now be solved with self-compacting concrete. This type of concrete can flow easily around



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## STUDY ON DURABILITY PROPERTIES OF SELF COMPACTING CONCRETE WITH COPPER SLAG PARTIALLY REPLACED FOR FINE AGGREGATE

V. Karthik

Research Scholar, Karpagam University, Coimbatore

Dr. G. Baskar

Associate Professor, Department of Civil Engineering, IRTT Erode.

### ABSTRACT

*Copper slag (CS) is an industrial by-product obtained through the manufacture of copper metal, which is produced in large quantities every year. Natural aggregates are becoming more scarce and their production and consignment is becoming hard day by day. The current trend throughout the globe is to make use of the treated and untreated industrial by-products in concrete. Thus the production of concrete has become an eco-friendly construction process. Self Compacting Concrete (SCC) is a high – performance concrete which can flow under its own weight and it can pack the entire form work and self-consolidates itself without any external vibration, and hence it accelerates the concrete placement process and reduces the labour needs. This paper deals with the study on the workability and durability properties of SCC with copper slag partially replaced for fine aggregate and containing silica fume as mineral admixture. The SCC is prepared as per the mix design procedures stipulated for SCC in the Guidelines of European Federation of National Associations Representing for Concrete (EFNARC). The SCC was prepared for various proportions of fine aggregate partially replaced by copper slag at 20%, 40%, 60% and 80%. The experimental study was carried out for Workability test on the fresh concrete by using tests like slump flow, T50, V-funnel, L-Box and J-Ring tests. The durability properties of this concrete were examined by acid resistance, sulphate attack and corrosion resistance. The results showed that by partially replacing copper slag for fine aggregate in self compacting concrete would not have any poor effects on its workability and durability properties.*

**Key word:** Copper slag, Durability, workability, packing factor, corrosion.



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## Age Group Classification of Facial Images using Rank based Edge Texture Unit (RETU)

Ch. Rajendra Babu<sup>a</sup>, Dr E. Sreenivasa Reddy<sup>b</sup>, Dr B. Prabhakara Rao<sup>a,b,\*</sup>

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### Abstract

Human beings can easily categorize a person's age group from a facial image where as this ability has not been promising in the computer vision community. To address this problem very important area of research, the present paper proposes a novel scheme of age classification system using features derived from co-occurrence parameters using Rank based Edge Texture Unit (RETU). The Co-occurrence Matrix (CM) on RETU characterizes the relationship between the neighbouring edge values, while preserving local information. The novelty of the proposed RETU is it classifies the age of human into seven categories i.e. in the age groups of 1-10, 11-20, 21-30, 31-40, 41-50, 51-60, and greater than 60. The TU of the proposed RETU ranges from 0 to 17 and thus reduces overall complexity in evaluating features from CM. The co occurrence features extracted from the RETU provide complete facial image information for age classification purpose. The RETU reduces each 3×3 sub image into 2×2 sub image while preserving the texture features and thus reduces the overall dimensionality of the image.

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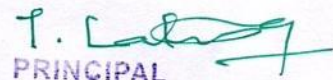
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**Keywords:** RETU; age classification; co-occurrence features; texture features; GLCM

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### 1. Introduction

The sex, age, wellbeing, feeling along these lines in the interest of human is accumulated by onlooker with perception. In fact, noteworthy research on the human face has occurred in brain science and in the other cognitive sciences early. Lately, the human correspondence range applications are effectively think from the perspective of data innovation. A real objective of data innovation is to attain programmed ID of people utilizing machines consolidate with a human-face database in such applications. It is obliged to explain the issue of age development of

  
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# Human Facial Image Age Group Classification Based On Third Order Four Pixel Pattern (TOFP) of Wavelet Image

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<sup>2</sup>Department of CSE, Dean ANU College of Engineering and Technology, India

<sup>3</sup>Department of ECE, Rector, JNTUK, India.

**Abstract:** The present paper proposes a novel scheme for age group classification based on Third Order Four pixel Pattern (TOFP). This paper identified TOFP patterns in two forms of diamond pattern which have four pixels i.e., outer diamond and inner diamond patterns in Third Order neighborhood. The paper derives Grey-Level Co-occurrence Matrix (GLCM) of a Wavelet image based on the values of Outer Diamond Corner Pixels (ODCP) of TOFP and Inner Diamond Corner Pixels (IDCP) of TOFP on wavelet image which is generated from the original image without using the standard method for generating the co-occurrence matrix. Four GLCM features are extracted from the generated matrix. Based on these feature values, the age group of the human facial image was categorized. In this paper, human age is classified into six age groups such as Child: 0-9 years, Adolescent: 10-19 years, Young Adult: 20 - 35 years, Middle Aged Adults: 36 - 45 years, Senior Adults 46 - 60 years, Senior Citizen: age > 60. The proposed method is tested on different databases and comparative results are given.

**Keywords:** GLCM, pixel pattern, age group classification, four pixel pattern, outer diamond, inner diamond.

Received July 23, 2015; accepted March 24, 2016

## 1. Introduction

In the area of computerized analysis of facial images for recognition, ethnicity classification, gender recognition etc. the age estimation is a barely explored part. However, in the recent times, the interest in this subject has significantly increased because of its many practical applications. For example, there are age limitations for driving a car, buying alcohol, use of cigarette-vending machine for under-aged people, face-recognition robust to age progression, an internet access control, films watching, video games age-based retrieval of face images and age prediction systems for finding lost children. In addition, the estimated age of consumers who look at billboards is used in age specific target advertising as consumer preferences differ greatly by age which fact should be accepted, but the human skill of age estimation is very limited. So, a computer system which supports the persons responsible would be helpful. It is well known that the human-computer interaction varies for different age groups. Thus a system which automatically adapts its interface to the age of the current user would clear this problem. Unfortunately, age classification itself is an extremely difficult task because of the continuous changes in the cranio-facial district, the skinny portion of the head and the overlying delicate tissue created by the maturing advancement [25]. Geng *et al.* [7] built up

an age prediction technique named AGES (Aging pattern Subspace), based on the following assumptions:

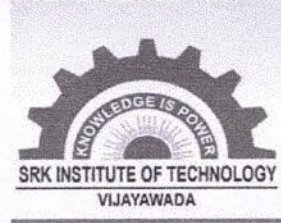
- The aging development is unmanageable.
- Every person ages differently.
- The aging growth must follow the organize of time.

Therefore they introduced aging patterns, as a succession of individual facial images variety in chronological arrangement. The images are represented by their feature vector, extracted by the Appearance Model described in [4]. To maintain verification/identification performance in the age variation, some researchers have challenged to address this issue of categorizing the subject's age [3, 5]. The feature extraction can be divided into three steps: the age group categorization [17, 12, 21, 6], the single-level age assessment [8, 19, 20, 26, 29] and the hierarchical age assessment [9, 19, 22]. Burt *et al.* [2] developed blended faces for altered age groups by accretion the boilerplate appearance and arrangement of animal faces that accord to anniversary age group. This adjustment allocates facial into three categories and the allocation ante for anniversary ambit were about 63.5%, 69.8% and 61.5%. Lanitis *et al.* [20] compared the parametric archetypal age admiration action with that of neural networks based approaches

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# Novel Approach for Child and Adulthood Classification Based on Significant Prominent Binary Patterns of Local Maximum Edge (SPBPLME)

Rajendra Babu .Ch

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**Abstract**—This paper derives a new procedure for age classification of facial image based on the local region of facial image. The local region of facial image is extracted from a Significant Binary Pattern of Local Maximum Edge (SBPLME). The SBPLME is generated by calculating the absolute value of local difference between the average of local 3×3 sub window pixel values and its neighbors instead of the center pixel value. In the case of Local Maximum Edge Binary Pattern (LMEBP) calculating the absolute value of local difference between the center pixel value of local 3×3 sub window and its neighbors. The proposed SBPLME can generate 512 (0 to 511) different patterns. The present paper utilized *Prominent LBP* (PLBP) on the proposed SBPLME. The PLBP contains the significant patterns of Uniform LBP (ULBP) and Non Uniform LBP (NULBP). Thus the derived Significant PLBP of Local Maximum Edge (SPBPLME) becomes an efficient image classification and analysis, which will have a significant role in many areas. The novelty of the proposed SPBPLME method is, it has shown excellent age classification results by reducing the overall dimension, thus reducing the overall complexity.

**Index Terms**—Age Classification, Prominent LBP, LMEBP, SBPLME, Maximum Edge.

## I. INTRODUCTION

As humans, we are easily able to recognize a person's group i.e child and adult from an image of the person's face and are often able to be quite precise in this estimation. This ability has not been pursued in the computer vision community. In order to begin researching the issues involved in this process, this paper addresses the task of classification of facial image into either child or adult. The following section briefly explains about the existing approaches to analyze the facial image. The paper is organized into three four sections. The section 2 describes the existing methods. The proposed method is discussed in section 3 and results are discussed in sections 4 and conclusions are given in section 5.

## II. EXISTING METHODS

### A. Local binary patterns (LBP)

Ojala et al. [1] was introduced the LBP operator for texture categorization and Analysis. The Local Binary Pattern (LBP) gives good results especially in texture analysis so that LBP mostly suitable in texture examination and its applications. The LBP operator has great tolerance against illumination changes and LBP calculation is also simple, due to this properties, it is well suitable for real-world applications like image texture analysis. The concept of LBP is also extended in applications such as face recognition and age classification [2, 3, 4].

To compute the LBP value at center pixel by subtracting its value from corresponding neighborhoods in the 3×3 sub window. The equation for calculating LBP values is shown in (1).

$$LBP = \sum_{i=1}^8 2^{(k-1)} f(\text{Img}(k) - \text{Img}(l)) \quad (1)$$

$$f(z) = \begin{cases} 0 & z < 0 \\ 1 & \text{else} \end{cases} \quad (2)$$

Where  $\text{Img}(l)$  denotes the center pixel gray value in 3×3 window,  $\text{Img}(k)$  is the neighboring pixels gray value. Figure 1 shows procedure for calculating LBP values from a given 3×3 sub image. The histograms of these patterns extract the existing edges in an image [5, 6].

The eight bit LBP contains one of the two possible values, So that the combination of all the eight bits results in  $2^8 = 256$  possible local binary patterns ranging from 0 to 255. There is no distinctive way to construct the order of LBP on a 3×3 neighborhood. Figure 1 shows an example on how to generate the LBP value.

The Fig 1(a) represents the sample 3×3 sub window with gray values. The central pixel value is used as a threshold value in order to assign a binary value to its





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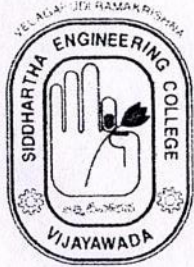
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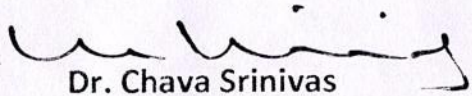


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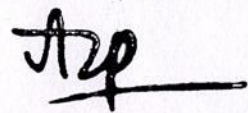
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# CEMENT STABILIZED RED EARTH AS BUILDING BLOCK AND STRUCTURAL PAVEMENT LAYER

**RAMA SUBBARAO, G.V.<sup>1</sup>, PURNA CHANDRA RAO, J.**

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## ABSTRACT

Red Earth is most commonly used as material in the building and road construction. Many a times, the red earth found in various quarries is found not suitable for construction. Cement of 4 and 8% of dry mass of red earth was added to improve its suitability as building block and structural pavement material. To know the influence of waste plastic fiber on cement stabilized red earth, 1% fiber was also added to the mixture. It is shown that the compressive strength of cement stabilized red earth blocks was improved with seven days of curing. The addition of cement to red earth enhanced soaked CBR value. The soaked CBR value of fiber reinforced cement stabilized red earth was about 1.3 to 1.5 times that of unreinforced cement stabilized red earth.

*Keywords:* red earth, cement, stabilized earth

## REZUMAT

Pământul roșu (*Red Earth*) este utilizat în general în construcția drumurilor și clădirilor. De multe ori, pământul roșu din diferite cariere nu este adecvat pentru construcții. S-a adăugat ciment în procent de 4 și 8% din masa uscată pentru a îmbunătăți calitățile pământului roșu în utilizarea ca blocuri pentru construcții sau ca material pentru pavaje. Pentru a determina influența fibrei din deșeuri de plastic asupra pământului roșu stabilizat cu ciment, s-a adăugat de asemenea un procent de 1% fibre. Se arată că rezistența la compresiune a blocurilor de pământ roșu stabilizate cu ciment s-a îmbunătățit după șapte zile de tratare. Adăugarea de ciment în pământul roșu a crescut valoarea indicelui CBR în stare umedă. Pentru pământul roșu stabilizat cu ciment armat cu fibre, valoarea CBR a fost de 1.3 până la 1.5 ori mai mare decât cea pentru pământul roșu stabilizat cu ciment nearmat.

*Cuvinte-cheie:* pământ roșu, ciment, pământ stabilizat

building bricks. Red Earths are widely distributed throughout the world in the regions with high rainfall, but especially in the inter-tropical regions of Africa, Australia, India, South-East Asia and South America, where they generally occur just below the surface of grasslands or forest clearings [1]. Red Earth is a low grade marginal material for road construction and has generally low bearing capacity and high water absorption value in comparison to conventional aggregates [2]. Red Earth possesses all bad qualities of black cotton soil such as water absorption, softening,

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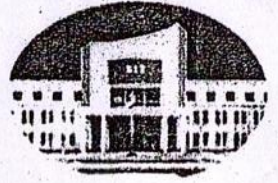
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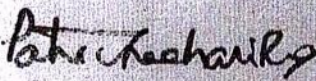
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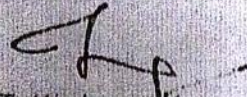
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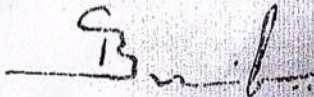
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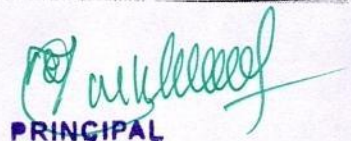
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Name of A/c..... Faculty development program

Paid to... K. Devi Naga Nandini (ECE) Cash/Cheque..... 300/-

the Sum of Rupees..... Three hundred rupees only.

Towards..... F.D.P

Prepared by

Approved by

*[Signature]*

Audited by

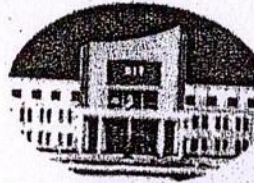
₹ 300/-

*[Signature]*

K.D.N. Nandini  
Receiver Signature



**ELECTRONICS & ICT ACADEMY AND  
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING  
NATIONAL INSTITUTE OF TECHNOLOGY WARANGAL**  
Telangana State, India.



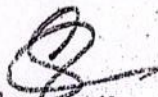
# Certificate

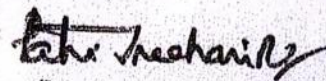
This is to certify that Devi Naga Nandini Kota  
from S R K Institute of Technology, Vijayawada  
has participated in the Faculty Development Programme (FDP) on

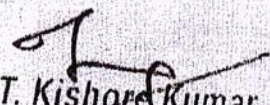
## Digital Communications and FEC coding techniques


Organized by the Electronics & ICT Academy, Department of Electronics & Communication Engineering  
National Institute of Technology, Warangal, during 11<sup>th</sup>- 15<sup>th</sup> April, 2016. Sponsored by MICT, Govt. of India.

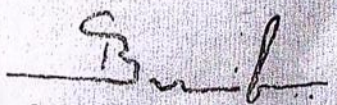
He / She is awarded.....**A<sup>+</sup>**.....grade in the test conducted.

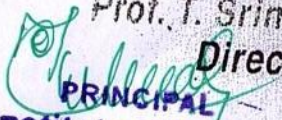
  
Dr. S. Anuradha  
Coordinator

  
Dr. P. Sreehari Rao  
Coordinator

  
Dr. T. Kishore Kumar  
Head, ECE

  
Prof. DVLN Somayajulu  
Chief Investigator  
E & ICT Academy, NITW

  
Prof. T. Srinivasa Rao  
Director

  
PRINCIPAL  
SRK Institute of Technology  
ENIKEPADU, VIJAYAWADA-521 102



15-16 25

**SRK INSTITUTE OF TECHNOLOGY**  
Enikepadu, Vijayawada 521108  
Approved by AICTE, Affiliated to JNTUK, Kakinada  
(ISO 9001:2008 Certified Institution)

**Financial Support Request Letter**

1. Name of the Staff Member : Dr./Mr./Ms. Y. Rakesh
2. Designation : Asst. Professor
3. Department : ECE
4. Conference / Publication / Membership Fee / Workshop / FDP / Seminar / Training / Industrial Visit / Tours With details : Advanced Micro Controller
5. Date & Duration of the Program : 23-7-2015 to 24-7-2015
6. Associating Professional Body / Agency : NEDAC
7. Financial support particulars :
- i. Registration Charges : 300/-
  - ii. Travelling Allowances :
  - iii. Membership Fee :
  - iv. Others (if any) :

Date: 20-7-15

[Signature]  
Signature of the Staff Member

1. Recommendations of the HOD : forwarded &
2. Recommendations of the Principal : [Signature] \*Sanctioned / Not Sanctioned

**PRINCIPAL**  
**SRK Institute of Technology**  
**ENIKEPADU, VIJAYAWADA-521 108.**

Account Department

Accountant: [Signature]

Date: 25/7/15

TECHNOLOGY  
VIJAYAWADA-521 108

No.

**VOUCHER**

Date... 25-7-15

**SRK INSTITUTE OF TECHNOLOGY**

ENIKEPADU, VIJAYAWADA - 521 108. Ph. : 2843839

Name of A/c..... FDP

Paid to..... Y. Rakesh (ECE) Cash/Cheque..... 300/-

the Sum of Rupees..... Three hundred Rupees only

Towards..... FDP

Prepared by

Approved by

*[Signature]*

Audited by

₹ 300

*[Signature]*

*[Signature]*  
Receiver Signature

**VEDAC**

RESEARCH & DEVELOPMENT

www.vedac.org



**VEDAC**

ENGINEERING ACADEMY  
TRAINING

*Certificate of Participation*

This is to certify that

Mr./Miss/Mrs. .... *Y. Rakesh (Asst. Professor), SRKIT* .....

has participated in the Two Day National Workshop on

“ADVANCED MICROCONTROLLERS WITH ARDUINO (NW-AMC 2015)”

held on 23<sup>rd</sup> and 24<sup>th</sup> July 2015 under TEQIP - II organised by the Dept of ECE,

UCEK, JNTUK, Kakinada in collabration with

VEDAC RESEARCH & DEVELOPMENT, Bengaluru.

*Dr. K Padma Raju*  
Principal, UCEK, JNTUK, Kakinada

*Dr. A.M. Prasad*  
Chairman, UCEK, JNTUK, Kakinada

*K Suresh Kumar*  
M.D., VEDAC R&D, Bengaluru

SRK Institute of Technology  
Engineering, Technology & Innovation  
www.srk.ac.in



**SRK INSTITUTE OF TECHNOLOGY**  
Enikepadu, Vijayawada 521108  
Approved by AICTE, Affiliated to JNTUK, Kakinada  
(ISO 9001:2008 Certified Institution)

**Financial Support Request Letter**

- 1. Name of the Staff Member : Dr./Mr./Ms. A. Varaha
- 2. Designation : Asst. Professor
- 3. Department : ECE
- 4. Conference / Publication / Membership Fee / Workshop / FDP / Seminar / Training / Industrial Visit / Tours With details : Digital Communication & FEC coding Techniques
- 5. Date & Duration of the Program : 11-4-2016 to 15-4-2016
- 6. Associating Professional Body / Agency : Electronics & ICT Academy
- 7. Financial support particulars :
  - i. Registration Charges : 300/-
  - ii. Travelling Allowances :
  - iii. Membership Fee :
  - iv. Others (if any) :

Date: 9-4-16

Signature of the Staff Member (Signature)

- 1. Recommendations of the HOD : Recommended
- 2. Recommendations of the Principal : T. Lakshmi \*Sanctioned / Not Sanctioned

**PRINCIPAL**  
**SRK Institute of Technology**  
ENIKEPADU, VIJAYAWADA-521 108,

Account Department  
Accountant: (Signature)  
Date: 10/4/16

No.

**VOUCHER**

Date... 10/4/16

**SRK INSTITUTE OF TECHNOLOGY**

ENIKEPADU, VIJAYAWADA - 521 108. Ph. : 2843839

Name of A/c..... Faculty development program

Paid to..... A. Vanaja (ECE) Cash/Cheque..... 300/-

the Sum of Rupees..... Three hundred rupees only.

Towards..... F. D. P.

Prepared by

Approved by

Audited by

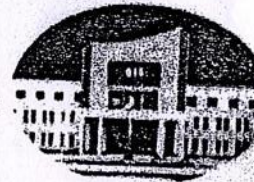
₹ 300/-

12/11/16

Receiver Signature



**ELECTRONICS & ICT ACADEMY AND  
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING  
NATIONAL INSTITUTE OF TECHNOLOGY WARANGAL**  
Telangana State, India.



# Certificate

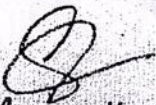
This is to certify that A. Vanaja  
from S R K Institute of Technology, Vijayawada

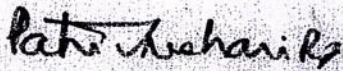
has participated in the Faculty Development Programme (FDP) on

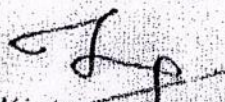
## Digital Communications and FEC coding techniques


Organized by the Electronics & ICT Academy, Department of Electronics & Communication Engineering  
National Institute of Technology, Warangal, during 11<sup>th</sup> - 15<sup>th</sup> April, 2016. Sponsored by MICT, Govt. of India.

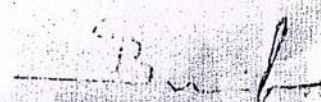
He / She is awarded A<sup>+</sup> grade in the test conducted.

  
Dr. S. Anuradha  
Coordinator

  
Dr. P. Sreehari Rao  
Coordinator

  
Dr. T. Kishore Kumar  
Head, ECE

  
Prof. DVLN Somayajulu  
Chief Investigator  
E & ICT Academy, NITW

  
Prof. T. Srinivasa Rao  
Director





**SRK INSTITUTE OF TECHNOLOGY**  
Enikepadu, Vijayawada 521108  
Approved by AICTE, Affiliated to JNTUK, Kakinada  
(ISO 9001:2008 Certified Institution)

**Financial Support Request Letter**

1. Name of the Staff Member : Dr./Mr./Ms. A.V.P. SARVARI
2. Designation : Asst professor
3. Department : ECE
4. Conference / Publication / Membership Fee / Workshop / FDP / Seminar / Training / Industrial Visit / Tours With details : VLSI Design techniques using Xilinx & Mentor Graphics EDA Tools
5. Date & Duration of the Program : 23/6/2016 to 26-6-2016
6. Associating Professional Body / Agency : Corvel
7. Financial support particulars :
  - i. Registration Charges : 300/-
  - ii. Travelling Allowances :
  - iii. Membership Fee :
  - iv. Others (if any) :

Date: 22-6-16

Signature of the Staff Member A.V.P.

1. Recommendations of the HOD : [Signature]
2. Recommendations of the Principal : [Signature] \*Sanctioned / Not Sanctioned

**PRINCIPAL**  
**SRK Institute of Technology**  
**ENIKEPADU, VIJAYAWADA-521 108.**

Account Department

Accountant: [Signature]

Date: 27/6/16

No.

**VOUCHER**

Date..... 27-6-2016..

**SRK INSTITUTE OF TECHNOLOGY**

ENIKEPADU, VIJAYAWADA - 521 108. Ph. : 2843839

Name of A/c..... FDP

Paid to..... A.V.P. Sarvam..... Cash/Cheque..... 300/-

the Sum of Rupees..... Three hundred Rupees only.

Towards..... FDP

Prepared by

Approved by

Audited by

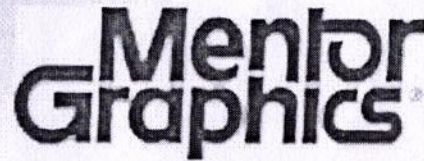
₹

300/-

Receiver Signature

# ANDHRA LOYOLA INSTITUTE OF ENGINEERING AND TECHNOLOGY

Approved by AICTE, New Delhi & Affiliated to JNTUK, An ISO 9001:2008 Certified Institution  
ALC Campus, I.T.I Road, Vijayawada-520008



## DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING CERTIFICATE OF PARTICIPATION

*This is to certify that Dr./Mr./Ms./Mrs. VENKATA PRASANNA SARAVARI A.....  
of SRK INSTITUTE OF TECHNOLOGY..... participated in Three Day Faculty  
Development Program on "VLSI design techniques using XILINX & MENTOR  
GRAPHICS EDA tools" conducted on 23<sup>rd</sup> to 25<sup>th</sup> June, 2016 at Andhra Loyola  
Institute of Engineering and Technology, Vijayawada.*

CoreEL Technologies Pvt. Ltd.,  
Hyderabad

(M. Rama Krishna)

Principal  
SRK Institute of Technology  
ENIKEPADU, VIJAYAWADA-521 108.

PRINCIPAL

(Dr. O. Mahesh)

Principal




15-16 30

**SRK INSTITUTE OF TECHNOLOGY**  
Enikepadu, Vijayawada 521108  
Approved by AICTE, Affiliated to JNTUK, Kakinada  
(ISO 9001:2008 Certified Institution)

**Financial Support Request Letter**

1. Name of the Staff Member : Dr./Mr./Ms. V. Sri Lakshmi
2. Designation : Asst. prof
3. Department : ECE
4. Conference / Publication / Membership Fee / Workshop / FDP / Seminar / Training / Industrial Visit / Tours With details : Signal processing for Communication
5. Date & Duration of the Program : 4-1-2016 to 8-1-2016
6. Associating Professional Body / Agency : Electronics & ICT Academy
7. Financial support particulars :
  - i. Registration Charges : 300/-
  - ii. Travelling Allowances :
  - iii. Membership Fee :
  - iv. Others (if any) :

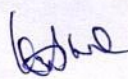
Date: 1-1-16

Signature of the Staff Member 

1. Recommendations of the HOD : Granted
2. Recommendations of the Principal : T. Lakshmi \*Sanctioned / Not Sanctioned

**PRINCIPAL**  
**SRK Institute of Technology**  
**ENIKEPADU, VIJAYAWADA-521 108.**

Account Department

Accountant: 

Date: 01/1/16

No.

**VOUCHER**

Date... 01/1/16.....

**SRK INSTITUTE OF TECHNOLOGY**

ENIKEPADU, VIJAYAWADA - 521 108. Ph. : 2843839

Name of A/c..... Faculty development program.....

Paid to..... V. Sri Lakshmi (ECE)..... Cash/Cheque..... 300/-.....

the Sum of Rupees..... Three hundred rupees only.....

Towards..... F.D.P.....

Prepared by

Approved by

*[Signature]*  
Audited by

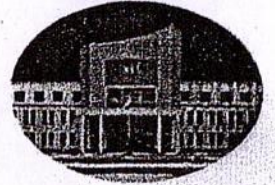
₹ 300/-

*[Signature]*

*[Signature]*  
Receiver Signature



**ELECTRONICS & ICT ACADEMY AND  
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING  
NATIONAL INSTITUTE OF TECHNOLOGY WARANGAL**  
Telangana State, India.



**Certificate**

This is to certify that V. Sri Lakshmi  
from SRK Institute of Technology, Vijayawada  
has participated in the Faculty Development Programme (FDP) on

**SIGNAL PROCESSING FOR COMMUNICATIONS**

Organized by the Electronics & ICT Academy and Department of Electronics & Communication Engineering  
National Institute of Technology, Warangal, during 4<sup>th</sup>-8<sup>th</sup> January, 2016. Sponsored by DeitY, MICT, Govt. of India.

He / She is awarded At.....grade in the test conducted.

*S. Anuradha*  
Dr. S. Anuradha  
Coordinator

*T. Kishore Kumar*  
Dr. T. Kishore Kumar  
Head ECE&Coordinator

*DVLN Somayajulu*  
Prof. DVLN Somayajulu  
Chief Investigator  
E & ICT Academy, NITW

*T. Srinivasa Rao*  
Prof. T. Srinivasa Rao  
Director

PRINCIPAL  
SRK Institute of Technology  
SRIKAPADU, VIJAYAWADA



# SRK INSTITUTE OF TECHNOLOGY

Enikepadu, Vijayawada 521108

Approved by AICTE, Affiliated to JNTUK, Kakinada

(ISO 9001:2008 Certified Institution)

15-16 31

## Financial Support Request Letter

1. Name of the Staff Member : Dr./Mr./Ms. M. Nagarani
2. Designation : Asst. prof
3. Department : ECE
4. Conference / Publication / Membership Fee / Workshop / FDP / Seminar / Training / Industrial Visit / Tours With details : Signal processing for Communications.
5. Date & Duration of the Program : 4-1-2016 to 8-1-2016
6. Associating Professional Body / Agency : Electronics & ICT Academy
7. Financial support particulars :
  - i. Registration Charges : 300/-
  - ii. Travelling Allowances :
  - iii. Membership Fee :
  - iv. Others (if any) :

Date: 1-1-16

[Signature]  
Signature of the Staff Member

1. Recommendations of the HOD : forwarded
2. Recommendations of the Principal : T. L. Srinivas \*Sanctioned / Not Sanctioned

PRINCIPAL  
SRK Institute of Technology  
ENIKEPADU, VIJAYAWADA-521 108.

Account Department

Accountant: [Signature]

Date: 1/1/16

No.

**VOUCHER**

Date. 21/1/16

**SRK INSTITUTE OF TECHNOLOGY**

ENIKEPADU, VIJAYAWADA - 521 108. Ph. : 2843839

Name of A/c..... Faculty development program.....

Paid to. M. Naga Mai (ECE) Cash/Cheque..... 800/-

the Sum of Rupees..... Three hundred rupees only.

Towards..... F.D.P.

Prepared by

Approved by

Audited by

₹ 800/-

B.M.

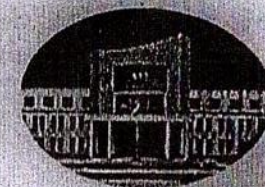
[Signature]

M. Naga Mai  
Receiver Signature





**ELECTRONICS & ICT ACADEMY AND  
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING  
NATIONAL INSTITUTE OF TECHNOLOGY WARANGAL**  
Telangana State, India.

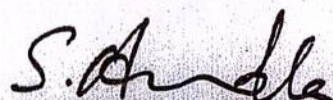


## Certificate

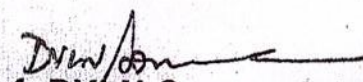
This is to certify that Naga Mani Mendu  
from SRK Institute of Technology, Vijayawada  
has participated in the Faculty Development Programme (FDP) on  
**SIGNAL PROCESSING FOR COMMUNICATIONS**

Organized by the Electronics & ICT Academy and Department of Electronics & Communication Engineering  
National Institute of Technology, Warangal, during 4<sup>th</sup> - 8<sup>th</sup> January, 2016. Sponsored by DeitY, MICT, Govt. of India.

He / She is awarded A+ grade in the test conducted.

  
Dr. S. Anuradha  
Coordinator

  
Dr. T. Kishore Kumar  
Head ECE&Coordinator

  
Prof. DVLN Somayajulu  
Chief Investigator  
E & ICT Academy, NITW

  
Prof. T. Srinivasa Rao  
Director

Principal  
National Institute of Technology  
Vijayawada - 526 108



# SRK INSTITUTE OF TECHNOLOGY

Enikepadu, Vijayawada 521108

Approved by AICTE, Affiliated to JNTUK, Kakinada

(ISO 9001:2008 Certified Institution)

15-16 39

## Financial Support Request Letter

1. Name of the Staff Member : Dr./Mr./Ms. P. Ravindra
2. Designation : Asst. Prof
3. Department : ECE
4. Conference / Publication / Membership Fee / Workshop / FDP / Seminar / Training / Industrial Visit / Tours With details : Digital Communication & ECE Coding Techniques
5. Date & Duration of the Program : 11-4-2016 to 15-4-2016
6. Associating Professional Body / Agency : Electronics & ICT Academy
7. Financial support particulars :
  - i. Registration Charges : 300/-
  - ii. Travelling Allowances :
  - iii. Membership Fee :
  - iv. Others (if any) :

Date: 9-4-16

P. Ravindra  
Signature of the Staff Member

1. Recommendations of the HOD : Recommended
2. Recommendations of the Principal : T. Lakshmi \*Sanctioned / Not Sanctioned

PRINCIPAL

**SRK Institute of Technology**  
**ENIKEPADU, VIJAYAWADA-521 108.**

Account Department  
Accountant: [Signature]  
Date: 20/4/16

No. 28

**VOUCHER**

Date.. 20/04/16

**SRK INSTITUTE OF TECHNOLOGY**

ENIKEPADU, VIJAYAWADA - 521 108. Ph. : 2843839

Name of A/c..... Faculty development program

Paid to..... P. Raveendra (ECE) Cash/Cheque..... 300/-

the Sum of Rupees..... Three hundred rupees only.

Towards..... F.D.P.

Prepared by

Approved by

*[Signature]*

Audited by

₹ 300/-

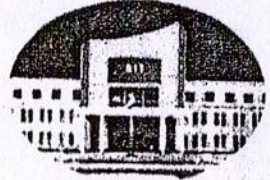
*[Signature]*

*[Signature]*

Receiver Signature



**ELECTRONICS & ICT ACADEMY AND  
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING  
NATIONAL INSTITUTE OF TECHNOLOGY WARANGAL**  
Telangana State, India.



# Certificate


This is to certify that P. Raveendra  
from S R K Institute of Technology, Vijayawada

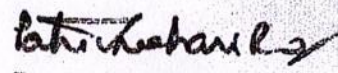
has participated in the Faculty Development Programme (FDP) on

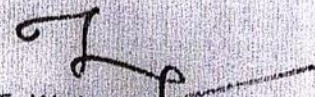
## Digital Communications and FEC coding techniques

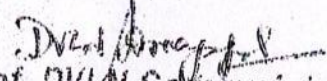
Organized by the Electronics & ICT Academy, Department of Electronics & Communication Engineering  
National Institute of Technology, Warangal, during 11<sup>th</sup>- 15<sup>th</sup> April, 2016. Sponsored by MICT, Govt. of India.

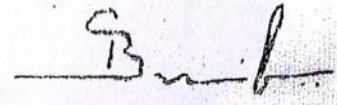
He / She is awarded A<sup>+</sup> grade in the test conducted.

  
Dr. S. Anuradha  
Coordinator

  
Dr. P. Sreehari Rao  
Coordinator

  
Dr. T. Kishore Kumar  
Head, ECE

  
Prof. DVLN Somayajulu  
Chief Investigator  
E & ICT Academy, NITW

  
Prof. T. Srinivasa Rao  
PRINCIPAL  
Director

**S R K Institute of Technology**  
ENKEPADI, VIJAYAWADA-521 105



15-16 43 ✓

**SRK INSTITUTE OF TECHNOLOGY**  
Enikepadu, Vijayawada 521108  
Approved by AICTE, Affiliated to JNTUK, Kakinada  
(ISO 9001:2008 Certified Institution)

**Financial Support Request Letter**

1. Name of the Staff Member : Dr./Mr./Ms. T. Vishnu Pragna
2. Designation : Asst. prof
3. Department : ECE
4. Conference / Publication / Membership Fee / Workshop / FDP / Seminar / Training / Industrial Visit / Tours With details : IJREST, Dec 2015 (segmentation of Lung Nodule in chest CT)
5. Date & Duration of the Program : 12-12-2015
6. Associating Professional Body / Agency : IJREST
7. Financial support particulars :
- i. Registration Charges : 2000/-
  - ii. Travelling Allowances :
  - iii. Membership Fee :
  - iv. Others (if any) :

Date: 10-12-15

T. Vishnu Pragna  
Signature of the Staff Member

1. Recommendations of the HOD : Forwarded
2. Recommendations of the Principal : T. Lakshay \*Sanctioned / Not Sanctioned

**PRINCIPAL**  
**SRK Institute of Technology**  
**ENIKEPADU, VIJAYAWADA-521 108.**

Account Department

Accountant: [Signature]

Date: 10/12/15

No.

**VOUCHER**

Date... 10/12/15

**SRK INSTITUTE OF TECHNOLOGY**

ENIKEPADU, VIJAYAWADA - 521 108. Ph. : 2843839

Name of A/c..... Faculty development program

Paid to... T. Vishnu Priya (ECE) Cash/Cheque..... 2000/-

the Sum of Rupees..... Two thousand rupees only

Towards..... Paper publication

Prepared by

Approved by

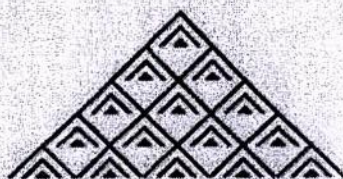
Audited by

₹ 2000/-

*[Signature]*

*[Signature]*

T. Vishnu Priya.  
Receiver Signature



**I J R E S T**  
E-ISSN: 2349-7610

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**Manuscript Title:**

Segmentation of Lung Nodule in Chest CT Using Different Segmentation Technique

**Author's Name:**

G.Priyanka and T.Vishnu Priya

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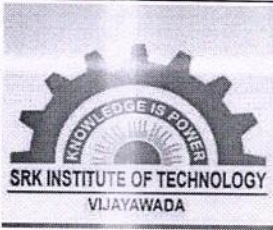


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**International Journal of Research in  
IJRCCT Computer and Communication Technology**

**Iris Data Hiding, Encoding By Using Huffman Coding DWT, SVD  
Scheme Authenticated By Multi SVM**

A Rajarajeswari\*, B Ravi\*\*

\*M.Tech pursuing, ECE Department, SRK Institute of Technology, Enikepadu, Vijayawada, India

\*\*Assistant Professor, ECE Department, SRK Institute of Technology, Enikepadu, Vijayawada, India

**ABSTRACT**

As the technology advances in day to day life, the process of illegal data copies are producing by miscreants with ease. Various techniques are introducing to protect the copy right data from the miscreants. One such technique is digital watermarking, where the data is kept secret using invisible watermarking. In this study, method of watermarking on digital images used to kept copy right data of iris for authentication. The iris biometric system is constructing on the following basis, the iris template is generated through normalisation process or converting the iris image into polar form from spatial form and converted to binary image using xor bit process. Then the watermarking process using SVD and DWT combination to protect the data that is copy right one which is a binary image from various attacks. The extracted iris binary template will under goes MULTI SVM process with RBF kernel function with an accuracy of 98.75%.

**INTRODUCTION**

The rapid growth in technology in late 20<sup>th</sup> century brings a lot of variety commercial interests of economic development globally through world wide web (WWW) brings OWNERSHIP right because of copying or replicating the tools.

**SYSTEM DESIGN**

**Image Acquisition**

We obtained a secured iris database with password protected from Department of Informatica UBI. For completion the project these have helped on all aspects by providing filtered or low noised images which gives a possible best outcome.

**Normalization**

Once the iris region is segmented, the next stage is to normalize this part, to enable generation of the iris code and their comparisons. Since variations in the eye, like optical size of the iris, position of pupil in the iris, and the iris orientation change person to person, it is required to normalize the iris image, so that the representation is common to all, with similar dimensions.

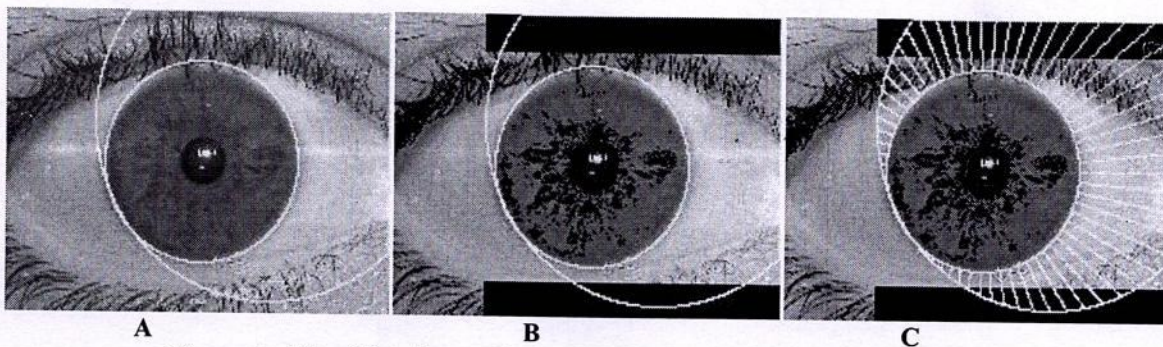
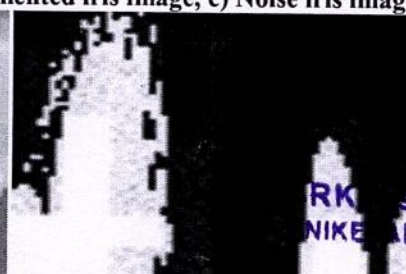


Figure 1: a) Pupil iris image, b) Segmented iris image, c) Noise iris image,



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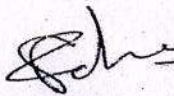
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Volume No.04, Issue No.52

**CERTIFICATE**

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Hyderabad, INDIA.  
17<sup>th</sup>-December, 2015

  
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5. Date & Duration of the Program : NOV - DEC 2015
6. Associating Professional Body / Agency : ITRGECE
7. Financial support particulars :
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# Native Prediction Based Disctint Enlargement Reversible Watermarking

<sup>1</sup>R.Ramya, <sup>2</sup>Y.Rakesh

<sup>1</sup>M.Tech Student, <sup>2</sup>Assistant Professor

<sup>1,2</sup>Department of Electronics and Communication Engineering,  
<sup>1,2</sup>S.R.K Institute of Technology, Vijayawada, India.

**Abstract:** Watermarking is a method of embedding useful information into a digital work for the purpose of content authentication, broadcast monitoring, copy control etc. In some applications, especially in the medical, military and legal domains even the imperceptible distortion introduced by watermarking is not acceptable. This led to the interest in reversible watermarking. Reversible Watermarking provided valuable solution to this problem based on its application scenario. There still exist a large number of problems in the conventional schemes. Here we proposed areversible watermarking method based on native prediction. In native prediction based disctint enlargement based reversible watermarking for each pixel a predictor is computed on a square block. Predictors such as Median edge detector, Gradient adjusted predictor, simple rhombus are used for predicting the edges. Experimental results are provided.

**Keywords:** Reversible watermarking, Distinct Enlargement, Adaptive Predictors, Native Prediction.

## I. Introduction

Nowadays computer networks and multimedia technologies are omnipresent, and the transfer of electronic documents via these networks becomes inevitable. Digital watermarking is an effective copyright protection method. In a watermarking system the primary goal is to achieve a high level of robustness. Generally digital image watermarking has certain requirements; the most important is

robustness and invisibility. Some information that the embedded watermarks like (Signature, Logo, ID number, etc) cannot be removed by attacks. Watermarking is widely used for copyright protection, broadcast monitoring and source tracking, etc [1]. In the recent years copyright protection of digital content became a serious problem due to rapid development in technology. Digital watermarking is defined as the process of altering a work, in order to embed information about that work[2]. In simple terms, it is the process of embedding information into a digital image, in a way to remove the digital watermarking in two way of groups spatial domain and frequency domain. As a special subset of fragile watermarking, reversible watermarking has drawn lots of attention recently. Reversible watermark, (which is also called lossless watermark, invertible watermark, erasable watermark), has an additional advantage such that when watermarked content has been detected to be authentic, one can remove the watermark to retrieve the original, UN watermarked content. Such reversibility to get back UN watermarked content is highly desired insensitive imagery, such as military data and medical data. In this paper, we present a reversible watermarking method of digital images. Our method can be applied to digital audio and video as well. Compared with other reversible watermarking methods, our method employs an native prediction based reversible watermarking algorithm. The embedding algorithm starts with a reversible color conversion. Reversible watermark is a special subset of fragile watermark. Like all fragile watermarks, it can be used for digital content



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- 6. Associating Professional Body / Agency : University College of Engg
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on 23<sup>rd</sup> and 24<sup>th</sup> July 2015 under TEQIP - II organised by the Department of  
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4. Conference / Publication / Membership Fee / Workshop / FDP / Seminar / Training / Industrial Visit / Tours With details : PIR sensor based robot with HMM application
5. Date & Duration of the Program : MAY 2016
6. Associating Professional Body / Agency : IIGRD
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## PIR Sensor Based Robot With HMH Applications

Kankata Venkateswara Rao<sup>#1</sup>, Ponnuru Koteswara Rao<sup>#2</sup>, B Ravi<sup>#3</sup>

<sup>#1,2,3</sup> Assistant Professor, Dept. of ECE, SRK Institute of Technology, Enikepadu, Vijayawada

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**Abstract:** Until now we have come across many types of sensors which are being employed in almost all the fields separately (viz., entertainment, safety). To witness the world that a single sensor can be used in multiple applications namely security, safety, user-friendly, rescue which is called PIR (Passive Infrared) sensor which detects the reflected Infrared rays from Humans as the temperature of Humans is different. So when temperature is detected then a buzzer, LCD, GSM, Virtual Keyboard are activated depending on the applications. Here we have three applications using PIR sensors like HMH (Home, Military and Hotel) where at home it is used for detecting humans and then switch ON the lights & fans. In Military applications the robot is used at borders to detect enemies and then warn us about enemies using buzzer & send a message to us using GSM. In Hotels it is used as a steward to carry the things and then go and detect customers and give the thing present on it, and when it is taken from it again it goes back to its position. A menu card will be present on it with items having a defined numbers and customers just need to press the number using virtual keyboard and it will be displayed on LCD and then it goes back to its position and then next order will be taken. User friendly applications are like keeping things on it and then sending to the persons present somewhere in the home or any other work place. This application can be used during disasters like earth quakes, cyclones to rescue humans who are trapped under destroyed buildings.

### I. INTRODUCTION

A passive infrared (PIR) sensor measures infrared light emitted from objects that generate heat, and therefore infrared radiation, in its field of view. Crystalline material at the centre of a rectangle on the face of the sensor detects the infrared radiation. The sensor is actually split into two halves so as to detect not the radiation itself, but the change in condition that occurs when a target enters its field. These changes in the amount of infrared radiation on the element in turn change the voltages generated, which are measured by an on-board amplifier. When motion is detected the PIR sensor outputs a high signal on its output pin, which can either be read by an MCU or drive a transistor to switch a higher current load.

What is actually detected is the broken field for a "normal" temperature. The field does not have to be broken by an object with a different temperature in order to register change, as highly sensitive sensors will activate from the movement alone. Designed for use at ambient temperatures of 15°C to 20°C, at higher temperatures the field of view narrows, and if below 15°C, the field of view widens and small or distant objects can activate the sensor.

All objects with a temperature above absolute zero emit heat energy in the form of radiation. Usually this radiation is invisible to the human eye because it radiates at infrared wavelengths, but it can be detected by electronic devices designed for such a purpose. The term *passive* in this instance refers to the fact that PIR devices do not generate or radiate any energy for detection purposes. They work entirely by detecting the energy given off by other objects. PIR sensors don't detect or measure "heat"; instead they detect the infrared radiation emitted or reflected from an object. A PIR-based motion detector is used to sense movement of people, animals, or other objects. They are commonly used in burglar alarms and automatically-activated lighting systems. They are commonly called simply "PIR", or sometimes "PID", for "passive infrared detector". An individual PIR sensor detects changes in the amount of infrared radiation impinging upon it, which varies depending on the temperature and surface characteristics of the objects in front of the sensor. When an object, such as a human, passes in front of the background, such as a wall, the temperature at that point in the sensor's field of view will rise from room temperature to body and then back again. The sensor converts the resulting change in the incoming infrared radiation into a change in the output voltage, and this triggers the detection.

  
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ITERA (Implementation of effective code conversion using Reversible logic gates)
5. Date & Duration of the Program : MAY 2016
6. Associating Professional Body / Agency : ITERA
7. Financial support particulars :
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## Implementation of Effective Code Converters using Reversible Logic Gates

Ponnuru Koteswara Rao<sup>#1</sup>, P Raveendra<sup>#2</sup>, Kankata Venkateswara Rao<sup>#3</sup>

<sup>#1,2,3</sup> Assistant Professor, SRK Institute of Technology, Enikepadu, Vijayawada

### ABSTRACT

The development in the field of nanometer technology leads to minimize the power consumption of logic circuits. Reversible logic design has been one of the promising technologies gaining greater interest due to less dissipation of heat and low power consumption. In the digital design, the code converters are widely used process. So, the reversible logic gates and reversible circuits for realizing code converters like as Binary to Gray code, Gray to Binary code, BCD to Excess 3 code, Excess 3 to BCD codes using reversible logic gates is proposed. Designing of reversible logic circuit is challenging task, since not enough number of gates are available for design. Reversible processor design needs its building blocks should be reversible in this view the designing of reversible code converters became essential one. In the digital domain, data or information is represented by a combination of 0's and 1's. A code is basically the pattern of these 0's and 1's used to represent the data. Code converters are a class of combinational digital circuits that are used to convert one type of code in to another. The proposed design leads to the reduction of power consumption compared with conventional logic circuits.

**Keywords:** Reversible logic, efficient code converters, low power logic gates & VLSI design.

### I. INTRODUCTION

Reversible computing is a model of computing where the computational process to some extent is reversible, i.e., time invertible. A necessary condition for reversibility of a computational model is that the relation of the mapping states of transition functions to their successors should at all times be one-to-one. Reversible computing is generally considered an unconventional form of computing. There are two major, closely related, types of reversibility that are of particular interest for this purpose: physical reversibility and logical reversibility. A process is said to be physically reversible if it results in no increase in physical entropy; it is isentropic.

These circuits are also referred to as charge recovery logic or adiabatic computing. Although in practice no stationary physical process can be exactly physically reversible or isentropic, there is no known limit to the closeness with which we can approach perfect reversibility, in systems that are sufficiently well-isolated from interactions with unknown external environments, when the laws of physics describing the system's evolution are precisely known. Probably the largest motivation for the study of technologies aimed at actually implementing reversible computing is that they offer what is predicted to be the only potential way to improve the energy efficiency of computers beyond the fundamental von Neumann-Landauer limit of  $kT \ln 2$  energy dissipated per irreversible bit operation.

As was first argued by Rolf Landauer of IBM, in order for a computational process to be physically

reversible, it must also be logically reversible. Landauer's principle is the loosely formulated notion that the erasure of  $n$  bits of information must always incur a cost of  $n k T \ln 2$  in thermodynamic entropy. A discrete, deterministic computational process is said to be logically reversible if the transition function that maps old computational states to new ones is a one-to-one function; i.e. the output logical states uniquely defines the input logical states of the computational operation. For computational processes that are nondeterministic (in the sense of being probabilistic or random), the relation between old and new states is not a single-valued function, and the requirement needed to obtain physical reversibility becomes a slightly weaker condition, namely that the size of a given ensemble of possible initial computational states does not decrease, on average, as the computation proceeds forwards.

The reversibility of physics and reversible computing Landauer's principle (and indeed, the second law of thermodynamics itself) can also be understood to be a direct logical consequence of the underlying reversibility of physics, as is reflected in the general Hamiltonian formulation of mechanics and in the unitary time-evolution operator of quantum mechanics more specifically.

In the context of reversible physics, the phenomenon of entropy increase (and the observed arrow of time) can be understood to be consequences of the fact that our evolved predictive capabilities are rather limited, and cannot keep perfect track of the exact reversible evolution of complex physical systems, especially



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IRITCC (Implementation of OFDM System for Image transmission)
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# Implementation of OFDM System For Image Transmission

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**Abstract**— Orthogonal frequency division multiplexing (OFDM) is a special case of frequency division multiplexing where a single data stream is transmitted over several lower rate subcarriers, which are placed orthogonal to each other. Now a day's OFDM is becoming the chosen modulation technique for wireless communications. It provides large data rates with optimum bit error rate and enough robustness to radio channel impairments. In this paper, we analyze the performance of OFDM system using MATLAB simulation. Here image is transmitted using M-ary PSK. Magnitude and phase characteristics of input and output data are calculated.

**Keywords**- OFDM, M-ary PSK, MATLAB

\*\*\*\*\*

## I. INTRODUCTION

In order to avoid inter-symbol interference (ISI) in a single carrier communication system, the symbol period must be much greater than the delay time. As data rate is inversely proportional to symbol period, having long symbol periods means low data rate and communication inefficiency. In a multicarrier system such as FDM (Frequency Division Multiplexing), the total available bandwidth in the spectrum is divided into sub-bands for multiple carriers to transmit in parallel. An overall high data rate is achieved by placing carriers closely in the spectrum. But, inter-carrier interference (ICI) will occur due to lack of spacing to separate the carriers. So to avoid inter-carrier interference, guard bands are placed in between any adjacent carriers, which results in lowered data rate.

OFDM (Orthogonal Frequency Division Multiplexing) is a multicarrier digital communication scheme which can solve both issues [2]. It can combine a large number of low data rate carriers to construct a composite high data rate communication system. Lower data rates of each carrier imply a long symbol period, which greatly diminishes inter-symbol interference.

In this paper, the concept and feasibility of an OFDM system are demonstrated, and how its performance is changed by varying some of its major parameters is investigated. These objectives are met by developing a MATLAB program to simulate a basic OFDM system [1].

## II. BACKGROUND

### A. OFDM basics

Information is expressed in the form of bits in digital communications. The term symbol is referred as a collection, in various sizes, of bits. Using M-PSK, QAM etc, OFDM data are generated by taking symbols in the spectral space and convert the spectra to time domain by taking the Inverse Discrete Fourier Transform (IDFT). As Inverse Fast Fourier Transform (IFFT) is more cost effective to implement, it is usually used instead. Once the OFDM data are modulated to time signal, in order to fully occupy the available frequency

bandwidth all carriers are transmitted in parallel [1]. In order for the received signal to be in sync with the receiver, OFDM symbols are divided into frames during modulation, so that the data will be modulated frame by frame. Even though long symbol periods diminish the probability of having Inter-symbol interference, they could not eliminate it. A cyclic extension is added to each symbol period to make ISI nearly eliminated. An exact copy of a fraction of the cycle, which is typically 25% of the cycle is taken from the end and is added to the front. Thus the demodulator can capture the symbol period with an uncertainty of up to the length of a cyclic extension and still obtain the correct information for the entire symbol period.

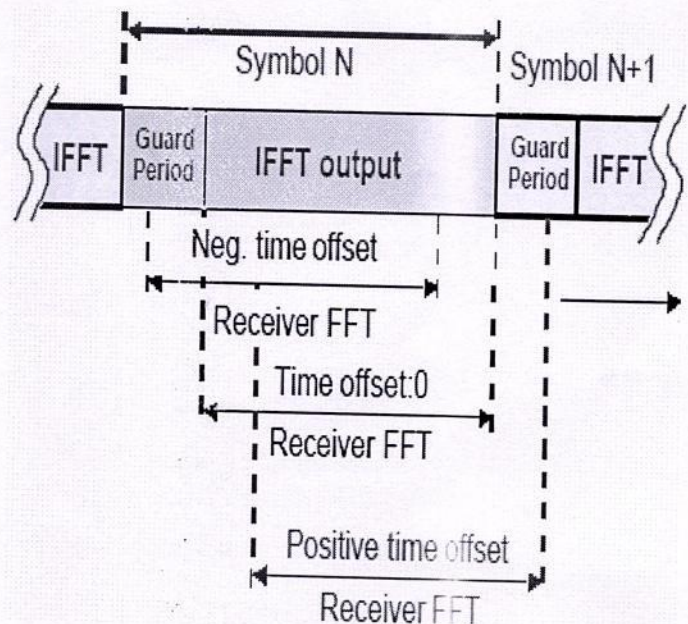


Fig 1: cyclic extension tolerance

As shown in the figure 1, a guard is the amount of uncertainty allowed for the receiver to capture the starting point of a symbol period, such that the result of FFT still has the correct information.




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## Random Number Generator Using Seven Segment Display In Labview

D. Bhavana<sup>1</sup>, D. Ravi Tej<sup>2</sup>, Jayasri. Mekala<sup>3</sup>, D. S. S. L. Saranya<sup>3</sup>, M. Raghavendra<sup>3</sup>, N. Adithya<sup>3</sup>

Asst. Professor, KLUiversity<sup>1</sup>, Asst. Professor SRK Institute of Technology<sup>2</sup>, Graduate students of KL University.

### ABSTRACT

Random number generator [RNG] is use to generate random numbers between any given limit, RNG's are two kinds 1.True random number and 2.pseudom numbers. True random numbers are not predictable by any mathematical formula because they are mainly depends on the atmospheric noise, coming to the pseudo numbers are mainly used in most of computers, this randomness can be predictable by using mathematical formula and it is fine many purposes, but it may not be random in the way you expect if you are used to dice rolls and lottery drawings. In this mini project we are doing RNG [pseudo numbers] by using NI labview software and generating random numbers by pressing push button and coming output we are displaying on seven segment display. In the labview it easy to generate a random number by using different block's and main advantage of the labview is there is no need of any programming languages like[c,c++,java,matlab].Main function of this project is used for gaming and priority number generation and etc. A sequence of uniform random numbers, which is generated within the computer in a deterministic manner, is often referred to as a pseudo-random number sequence.[1]

### I. INTRODUCTION:

In our daily life as we know that the random numbers play a very prominent role. In ancient days also there are many of these applications like throwing a dice, playing cards, and many more applications have come into notice and some of them are generating data encryption keys, simulating and modelling complex phenomena and for selecting random samples from larger data sets. Random numbers are a valuable component in diverse applications that range from simulations<sup>1</sup>over gambling to cryptography [2].With the advent of computers; programmers recognized the need for a means of introducing randomness into a computer program. However, surprising as it may seem, it is difficult to get a computer to do something by chance. A computer follows its instructions blindly and is therefore completely predictable. There are 2 types of random generators 1.Pseudo Random generator (PRNG) 2.True Random Generator (TRG). In today's world security is of prime importance and hence cryptography plays an important role in computer and networking security. Cryptographically secure random number generators are essential for this purpose. The versatility of this project in many fields urged and motivated us to select the same. Random numbers are a vital ingredient in many applications ranging, to name some examples, from computational methods such as Monte Carlo [5] simulations and programming, over to the large field of cryptography for generating of crypto code or masking messages,

as far as to commercial applications like lottery games and slot machines. Recently the range of applications requiring random numbers was extended with the development of quantum cryptography and quantum information processing [3].

#### a) Why Labview:

Labview is a programming language developed by the National instruments in mid 80's by Jeff Kodosky. VI stands for Virtual Instrument is used in programmer. The programmer uses the Labview programming environment to make the user interface by dragging and dropping objects and according to the desired levels, we can arrange them. Herein LabView programs no lines of codes are written, the functionality of the program is provided by the diagram, that is main advantage of using LabView and any one can understand the overview of the entire program by seeing the block diagram which is in the control panel.

Another major advantage of using labView is that is closely supporting the multitude of processing cards available from National Instruments. The cards are so tightly coupled to the LabView system is common in collecting data within a few hours of receiving the data in the mail.

For the above mentioned reasons, Labview has become one of the most popular collection systems of the desired data. In LabView we can analyze the signals, signals can be transmitted, signals can be received and user interfaces can be



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# Improved Orthogonal Space-Time Block Code for Nine Transmit antenna

N.S.Murthy \*      Dr.S.Sri Gowri\*\*      Dr.B.Prabhakara Rao\*\*\*  
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\*\*\* Professor, ECE Dept, JNTUK, Kakinada, INDIA

**Abstract:** Orthogonal designs using Space-time block codes has significant role to achieve maximum code rate, bandwidth efficiency. Alamouti Proposed two transmit antennas diversity Scheme with full code rate. V. Tarokh, H. Jafarkhani, and A. R. Calderbank has proposed three and four transmit antennas with code rates of 1/4. Complex orthogonal designs of space-time block codes for five, six, seven and eight transmit antennas with code rates 2/3, 2/3, 5/8, and 5/8 [3] were proposed recently. Tarokh, Jafarkhani and Calderbank for nine transmit antennas, which transmits 16 information symbols in 32 timeslots and hence having code rate 1/2. In this paper we achieved new matrix of Complex orthogonal STBC for Nine Transmit Antenna with code rate of 0.51

**Index Terms –** Diversity, (generalized) complex orthogonal designs, space –time block codes.

## I. COMPLEX ORTHOGONAL DESIGNS

**Definition 1:** A generalized complex orthogonal design (GCOD) in variables  $x_1, x_2, \dots, x_k$  is a  $p \times n$  matrix  $G$  such that: the entries of  $G$  are complex linear combinations of  $x_1, x_2, \dots, x_k$  and their complex conjugates  $x_1^*, x_2^*, \dots, x_k^*$

$G^H G = D$ , where  $G^H$  is the complex conjugate and transpose of  $G$ , and  $D$  is an  $n \times n$  diagonal matrix with the  $(i, i)$  th diagonal element of the form  $l_{i,1}|x_1|^2 + l_{i,2}|x_2|^2 + l_{i,3}|x_3|^2 + \dots + l_{i,k}|x_k|^2$  where all the coefficients  $l_{i,1}, l_{i,2}, l_{i,3}, \dots, l_{i,k}$  are strictly positive numbers.

The rate of  $G$  is defined as  $R = k/p$ . If  $G^H G = (|x_1|^2 + |x_2|^2 + \dots + |x_k|^2) I_{nn}$  Then  $G$  is called a complex orthogonal design (COD).

The first space-time block code from complex orthogonal design was proposed in Alamouti [2] for two transmit-antennas. It is the following  $2 \times 2$  COD in variables  $x_1$  and  $x_2$

$$G_2 = \begin{pmatrix} x_1 & x_2 \\ -x_2^* & x_1^* \end{pmatrix}$$

Clearly, the rate of  $G_2$  achieves the maximum rate 1. For space-time block codes from (generalized) complex orthogonal designs, rate 1 is achievable only for two transmit antennas.

For  $n = 3$  and  $n = 4$  transmit antennas, there are complex orthogonal designs of rate  $R = 1/4$  [1] for example,

$$G_3 = \begin{pmatrix} x_1 & x_2 & x_3 \\ -x_2^* & x_1^* & 0 \\ x_3^* & 0 & -x_1^* \\ 0 & x_3^* & -x_2^* \end{pmatrix}$$

$$G_4 = \begin{pmatrix} x_1 & x_2 & x_3 & 0 \\ -x_2^* & x_1^* & 0 & x_3 \\ x_3^* & 0 & -x_1^* & x_2 \\ 0 & x_3^* & -x_2^* & -x_1 \end{pmatrix}$$

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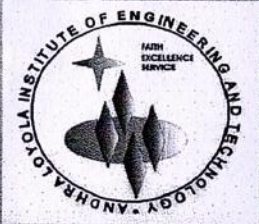
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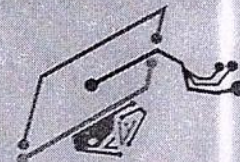
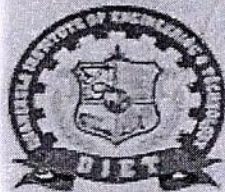
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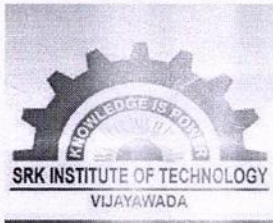
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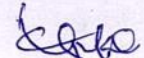
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## Implementation of Effective Code Converters using Reversible Logic Gates

Ponnuru Koteswara Rao<sup>#1</sup>, P Raveendra<sup>#2</sup>, Kankata Venkateswara Rao<sup>#3</sup>

<sup>#1,2,3</sup> Assistant Professor, SRK Institute of Technology, Enikepadu, Vijayawada

### ABSTRACT

The development in the field of nanometer technology leads to minimize the power consumption of logic circuits. Reversible logic design has been one of the promising technologies gaining greater interest due to less dissipation of heat and low power consumption. In the digital design, the code converters are widely used process. So, the reversible logic gates and reversible circuits for realizing code converters like as Binary to Gray code, Gray to Binary code, BCD to Excess 3 code, Excess 3 to BCD codes using reversible logic gates is proposed. Designing of reversible logic circuit is challenging task, since not enough number of gates are available for design. Reversible processor design needs its building blocks should be reversible in this view the designing of reversible code converters became essential one. In the digital domain, data or information is represented by a combination of 0's and 1's. A code is basically the pattern of these 0's and 1's used to represent the data. Code converters are a class of combinational digital circuits that are used to convert one type of code in to another. The proposed design leads to the reduction of power consumption compared with conventional logic circuits.

**Keywords:** Reversible logic, efficient code converters, low power logic gates & VLSI design.

### I. INTRODUCTION

Reversible computing is a model of computing where the computational process to some extent is reversible, i.e., time invertible. A necessary condition for reversibility of a computational model is that the relation of the mapping states of transition functions to their successors should at all times be one-to-one. Reversible computing is generally considered an unconventional form of computing. There are two major, closely related, types of reversibility that are of particular interest for this purpose: physical reversibility and logical reversibility. A process is said to be physically reversible if it results in no increase in physical entropy; it is isentropic.

These circuits are also referred to as charge recovery logic or adiabatic computing. Although in practice no stationary physical process can be exactly physically reversible or isentropic, there is no known limit to the closeness with which we can approach perfect reversibility, in systems that are sufficiently well-isolated from interactions with unknown external environments, when the laws of physics describing the system's evolution are precisely known. Probably the largest motivation for the study of technologies aimed at actually implementing reversible computing is that they offer what is predicted to be the only potential way to improve the energy efficiency of computers beyond the fundamental von Neumann-Landauer limit of  $kT \ln$  energy dissipated per irreversible bit operation.

As was first argued by Rolf Landauer of IBM, in order for a computational process to be physically

reversible, it must also be logically reversible. Landauer's principle is the loosely formulated notion that the erasure of  $n$  bits of information must always incur a cost of  $nk \ln$  in thermodynamic entropy. A discrete, deterministic computational process is said to be logically reversible if the transition function that maps old computational states to new ones is a one-to-one function; i.e. the output logical states uniquely defines the input logical states of the computational operation. For computational processes that are nondeterministic (in the sense of being probabilistic or random), the relation between old and new states is not a single-valued function, and the requirement needed to obtain physical reversibility becomes a slightly weaker condition, namely that the size of a given ensemble of possible initial computational states does not decrease, on average, as the computation proceeds forwards.

The reversibility of physics and reversible computing Landauer's principle (and indeed, the second law of thermodynamics itself) can also be understood to be a direct logical consequence of the underlying reversibility of physics, as is reflected in the general Hamiltonian formulation of mechanics and in the unitary time-evolution operator of quantum mechanics more specifically.

In the context of reversible physics, the phenomenon of entropy increase (and the observed arrow of time) can be understood to be consequences of the fact that our evolved predictive capabilities are rather limited, and cannot keep perfect track of the exact reversible evolution of complex physical systems, especially



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5. Date & Duration of the Program : 28/12/15 - 8/1/16 (2 weeks)
6. Associating Professional Body / Agency :
7. Financial support particulars :
  - i. Registration Charges : 300/-
  - ii. Travelling Allowances :
  - iii. Membership Fee :
  - iv. Others (if any) :

Date: 26/12/15

fuels  
Signature of the Staff Member

1. Recommendations of the HOD : D. N. S. Prasad
2. Recommendations of the Principal : I. Lakshmi \*Sanctioned / Not Sanctioned ✓

Account Department

Accountant: [Signature]

Date: 28.12.15

VOUCHER

Date 28/12/15

SRK INSTITUTE OF TECHNOLOGY

ENIKEPADU, VIJAYAWADA - 521 108. Ph. : 2843839

Name of A/c Faculty development program

Paid to P. Nageswara rao (CSE) Cash/Cheque 300

the Sum of Rupees Three hundred rupees only

Towards FDP

Prepared by

Approved by

Audited by

₹ 300/-

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**ELECTRONICS & ICT ACADEMY AND  
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING  
NATIONAL INSTITUTE OF TECHNOLOGY WARANGAL  
Telangana State, India.**



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This is to certify that Asst Prof. Nageswara Rao Puli  
from SRK Institute of Technology, Vijayawada  
has participated in DietY, MCIT Sponsored Faculty Development Programme (FDP) on

**SOFTWARE ENGINEERING**

STP

Organized by the Electronics & ICT Academy, Department of Computer Science & Engineering  
National Institute of Technology, Warangal and Infosys Limited Bangalore  
from 28<sup>th</sup> December, 2015 to 8<sup>th</sup> January, 2016

Participant obtained B grade in the tests.

*Ch. Sudhakar*  
Prof. Ch. Sudhakar  
Head, CSE.

*[Signature]*

*DVLN Somayajulu*  
Prof. DVLN Somayajulu  
Coordinator and Chief Investigator  
E & ICT Academy, NITW

*T. Srinivasa Rao*  
Prof. T. Srinivasa Rao  
Director

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## Financial Support Request Letter

1. Name of the Staff Member :  Dr./Mr./Ms. D. Hanitha
2. Designation : Professor
3. Department : C&E
4. Conference / Publication / Membership Fee / Workshop / FDP / Seminar / Training / Industrial Visit / Tours With details :   
Machine Learning
5. Date & Duration of the Program : 16/11/2015 - 27/11/2015 (2 weeks)
6. Associating Professional Body / Agency : -
7. Financial support particulars :
  - i. Registration Charges : 500/-
  - ii. Travelling Allowances :
  - iii. Membership Fee :
  - iv. Others (if any) :

Date: 16.11.15

Date  
Signature of the Staff Member

1. Recommendations of the HOD : Date
2. Recommendations of the Principal : T. Lakshay \*Sanctioned / Not Sanctioned

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Accountant: [Signature]

Date: 16.11.15

No. 14

VOUCHER

Date 15/11/15

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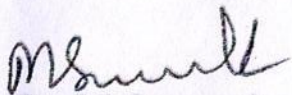
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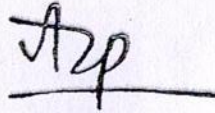
held during November 16<sup>th</sup>-27<sup>th</sup>, 2015

STP

S. G. H. S. L.  
Resource Person

  
Dr. M. Suneetha  
Program Convenor

  
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Dr. A. V. Ratna Prasad  
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1. Name of the Staff Member : Dr./Mr./Ms. Ch. Praneeth
2. Designation : Asst. Prof
3. Department : C&E
4. Conference / Publication / Membership Fee / Workshop / FDP / Seminar / Training / Industrial Visit / Tours With details : Machine Learning
5. Date & Duration of the Program : 16/11/15 - 27/11/15 (2 weeks)
6. Associating Professional Body / Agency : -
7. Financial support particulars :
  - i. Registration Charges : 500/-
  - ii. Travelling Allowances :
  - iii. Membership Fee :
  - iv. Others (if any) :

Date: 14.11.15

Signature of the Staff Member

1. Recommendations of the HOD : D. S. S. S.
2. Recommendations of the Principal : T. S. S. S. \*Sanctioned / Not Sanctioned

Account Department

Accountant: [Signature]

Date: 16.11.15

15-16

No. 13

**VOUCHER**

Date: 6/11/05

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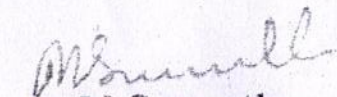
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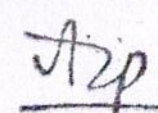
held during November 16<sup>th</sup>-27<sup>th</sup>, 2015

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Dr. M. Suneetha  
Program Convenor

  
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2. Designation : Asst. professor
3. Department : CSE
4. Conference / Publication / Membership Fee / Workshop / FDP / Seminar / Training / Industrial Visit / Tours With details : pervasive And mobile computing.
5. Date & Duration of the Program : 24/11/15 - 3/12/15
6. Associating Professional Body / Agency :
7. Financial support particulars :
  - i. Registration Charges : 500/-
  - ii. Travelling Allowances :
  - iii. Membership Fee :
  - iv. Others (if any) :

Date: 21.11.15

Signature of the Staff Member

1. Recommendations of the HOD : D. Sathya
2. Recommendations of the Principal : T. Lakshmi \*Sanctioned / Not Sanctioned

Account Department

Accountant: [Signature]

Date: 23.11.15



No. 12

**VOUCHER**

Date. 23/11/15

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STP

from *S.R.K. Institute of Technology, Vijayawada, A.P.*.....

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Organized by Electronics & ICT Academy, Department of Computer

Science and Engineering, Sponsored by DeitY,

MCIT, Govt. of India during 24<sup>th</sup> November - 3<sup>rd</sup>, December 2015.

He / She is awarded.....*A*.....grade in the test conducted.

*[Signature]*  
Dr. R.R. Rout  
Coordinator

*[Signature]*  
PRINCIPAL

*[Signature]*  
Dr. K. Ramesh  
Head CSE

*[Signature]*  
Prof. DVLN Somayajulu  
Chief Investigator, E & ICT Academy

*[Signature]*  
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2. Designation : Asst. professor.
3. Department : CSE
4. Conference / Publication / Membership Fee / Workshop / FDP / Seminar / Training / Industrial Visit / Tours With details : Network Analysis Using NS3 Tool for Design, Testing and Implementation.
5. Date & Duration of the Program : 27/11/15 - 28/11/15 (2Days)
6. Associating Professional Body / Agency :
7. Financial support particulars :
  - i. Registration Charges : 500/-
  - ii. Travelling Allowances :
  - iii. Membership Fee :
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Date: 25.11.15

(Signature)  
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1. Recommendations of the HOD : D. Nalini
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Date: 26.11.15

No. 10

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Date 26/11/15

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A National Level Workshop On

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Faculty/Student of SRK Institute of Technology has participated in DST Sponsored National Level Workshop On "Network Analysis Using NS3 Tool for Design, Testing and Implementation" organized by Department of Computer Science & Engineering, D.V.R & Dr.H.S MIC College of Technology on 27<sup>th</sup> & 28<sup>th</sup> Nov' 15.

*Jayd*

Dr. A. Jayalakshmi  
Coordinator

*L.R.*

Dr. K. B. K. RAO  
Principal



Devineni Venkata Ramana & Dr Hima Sekhar  
**MIC College of Technology**

Kanchikacherla-521180, Krishna District, AP, [www.mictech.ac.in](http://www.mictech.ac.in)



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2. Designation : Asst. Prof.
3. Department : CSE
4. Conference / Publication / Membership Fee / Workshop / FDP / Seminar / Training / Industrial Visit / Tours With details : ✓ Network Analysis Using NS3 Tool for Design, Testing and Implementation
5. Date & Duration of the Program : 27/11/15 - 28/11/15 (2 Days)
6. Associating Professional Body / Agency : —
7. Financial support particulars :
  - i. Registration Charges : 300/-
  - ii. Travelling Allowances :
  - iii. Membership Fee :
  - iv. Others (if any) :

Date: 25.11.15

Radhika  
Signature of the Staff Member

1. Recommendations of the HOD : Duante
2. Recommendations of the Principal : I. Lakshy \*Sanctioned / Not Sanctioned ✓

Account Department

Accountant: [Signature]

Date: 26.11.15

No. 24

**VOUCHER**

Date 26/11/15

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Name of A/c..... Faculty development program

Paid to A. Radhika (CSE) Cash/Cheque..... 300

the Sum of Rupees..... Three hundred rupees only

Towards..... FDP

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**Department of Computer Science & Engineering**

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This is to certify that Dr./Mr./Ms. A. Radhika

Faculty/Student of SRK Institute of Technology has participated in DST Sponsored National Level Workshop On "Network Analysis Using NS3 Tool for Design, Testing and Implementation" organized by Department of Computer Science & Engineering, D.V.R & Dr.H.S MIC College of Technology on 27<sup>th</sup> & 28<sup>th</sup> Nov' 15.

Dr. A. Jayalakshmi  
Coordinator

Dr. K. B. K RAO  
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Devineni Venkata Ramana & Dr Hima Sekhar  
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## Financial Support Request Letter

1. Name of the Staff Member : Dr./Mr./Ms. Dr. D. Haritha
2. Designation : Professor
3. Department : CSE
4. Conference / Publication / Membership Fee / Workshop / FDP / Seminar / Training / Industrial Visit / Tours With details : In Enhanced Image retrieval Technique based on Edge Orientation Technique
5. Date & Duration of the Program : 02.1.16
6. Associating Professional Body / Agency :
7. Financial support particulars :
  - i. Registration Charges : Free
  - ii. Travelling Allowances :
  - iii. Membership Fee :
  - iv. Others (if any) :

Date: 02.1.16

Dr. Haritha  
Signature of the Staff Member

1. Recommendations of the HOD : Dr. Haritha
2. Recommendations of the Principal : I. C. S. S. S.  \*Sanctioned / Not Sanctioned

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Accountant: [Signature]

Date: 02.1.16

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One thousand rupees only.

Towards.....

Paper publications

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## An Enhanced Image retrieval Technique based on Edge-Orientation Technique

Ch.Sushmitha<sup>1</sup>, Dr. D. Haritha<sup>2</sup>

<sup>1</sup>M.Tech Student, Dept of CSE, SRK Institute of Technology, Vijayawada, AP, India.

E-mail: [susmithachirumamilla9@gmail.com](mailto:susmithachirumamilla9@gmail.com)

<sup>2</sup>HOD, Dept of CSE, SRK Institute of Technology, Vijayawada, AP, India.

Email: [haritha@rediffmail.com](mailto:haritha@rediffmail.com)

### Abstract

With the tremendous development in Networking and Multimedia technologies, Image Retrieval plays significant role and is used for browsing, searching and retrieving images from a large database of digital images. Image Retrieval techniques utilize annotation methods of adding metadata such as captioning, keywords or descriptions to the images. The manual image annotation is much time consuming laborious and expensive. As the data bases size increases, annotation becomes a tedious task. Thus automatic image annotation has drawn the attention of the researchers in recent years. The increase in social web application and the semantic web drawn attention of researchers in the development of several web-based image retrieval tools. This paper presents an easy, efficient image retrieval approach using a new image feature descriptor called Micro-Structure Descriptor (MSD). The microstructures are defined based on an edge orientation similarly while the MSD is built based on the underlying colors in micro-structures with similar edge orientation. In this method of Image retrieval the MSD extracts features by simulating human's early visual processing by effectively integrating color, texture, color lay out information and shape. The proposed MSD algorithm has high indexing performance and low dimensionality as it has only 72 dimensions for full color images. The technique is examined on Corel datasets with natural images; the results demonstrate that this image retrieval method is much more efficient and effective than representative feature descriptors, such as Gabor features and Multi Texton Histograms.

*Index Terms*— Image retrieval, Edge orientation Micro-Structure Descriptor

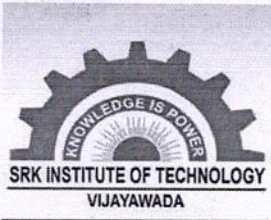
### 1. INTRODUCTION

Image Identification is an application area where the techniques of Image Retrieval are used. Image identification or copy detection is given a query image, finding the original source from where it possibly derives, together with its relevant metadata. The metadata associated can be context, keywords, titles, authors and copyright information, etc. The document is identified based on its context, and the lack of metadata reduces its usefulness to a great extent. This necessitates devising reliable ways of retrieving all the

information related to a document, when only the visual evidence is available. Organizations like museums, archives and news agencies, are often asked to perform the identification of images from newspaper clippings, articles, books, published papers, thesis and, where the references are missing, to summary, outdated or incorrect. One of the most prominent applications of image identification is the tracking of the documents containing images, either to fetch the historic significance of a given document, or to enforce the copyright. Another way of the handling this situation is separating the image and its metadata, within the boundaries of an organization, at one of the steps of a complex workflow. In this case, images with lacking quality or incorrect metadata will be identified and rectified. Geometric transforms like translations, rotations and scale changes can be used. Sometimes, trapezoidal and spherical distortions resulting from the photographic reproduction may be present.

Photometric and colorimetric transforms are used to change brightness, contrast, saturation, color, and occlusion effects. The image may be cropped image or may contain labels, stamps, annotations, censor bars, etc. The image may contain compression artifacts, electronic noise from cameras and scanners. The acquisition of the image, intrinsic quantization effects of digitization, half toning methods used for printing and more patterns; as well as reprinting and rescanning operations may be a source of important distortion. The large variety of transformation types and intensities makes the task very challenging. Images and graphics provide significant amount of information and are widely used in human digital communication. With the rapid development of digital imaging techniques and internet facility, and availability of larger set of images to public, the demand for effective and efficient image indexing and retrieval methods is increasing at rapid rate. In pattern recognition and artificial intelligence areas, image retrieval has become one of the most popular topics. An image retrieval system is used for searching and retrieving images from a bulk volume of digital images.

Image retrieval methods can be based on text, content and semantics. Human visual perception can be visualized as a process of interactions among neurons, which selects preattentive properties like low level visual features rapidly and suppresses irrelevant properties. The close association of human visual attention system with low level visual features can be used for image retrieval and is an important and still



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1. Name of the Staff Member : Dr./Mr./Ms. ✓ A Radhika
2. Designation : Asst. Prof
3. Department : CSG
4. Conference / Publication / Membership Fee / Workshop / FDP / Seminar / Training / Industrial Visit / Tours With details : ✓ Detection and Prevention of Blackhole Attack, Wormhole Attack in MANET using ACG
5. Date & Duration of the Program : Jan 2016
6. Associating Professional Body / Agency : IJEAS
7. Financial support particulars :
  - i. Registration Charges : 1500
  - ii. Travelling Allowances :
  - iii. Membership Fee :
  - iv. Others (if any) :

*Radhika*

Date: 5-Jan 2016

Signature of the Staff Member

1. Recommendations of the HOD : *Dhanu*
2. Recommendations of the Principal : *I. Lakshmi* \*Sanctioned / Not Sanctioned ✓

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Accountant: *[Signature]*

Date: 6-1-16

No.

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Date: 6<sup>th</sup> Jan 2016

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Name of A/c..... Faculty Development Program.....

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the Sum of Rupees..... One Thousand five Hundred Rupees.....

Towards..... Publication.....

Prepared by

Approved by

Radhika

Audited by

*[Signature]*

₹ 1500/-

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# Detection and Prevention of Blackhole Attack, Wormhole Attack in MANET Using ACO

A. Radhika, Dr. D.Haritha

**Abstract**— (Mobile Adhoc network) is a infrastructure less network used for wireless communication. MANET can be built with the mobile nodes which can move anywhere at any time. This results into the dynamic topology of MANET. Each node is responsible for routing the message from one node to the other like a router, causes network more vulnerable to the different attacks. In this paper we will discuss Black Hole Attack a type of DOS attack and Worm Hole Attack. The emphasis of this paper is find detection method and prevention of these attacks in manets using Antnet Routing algorithm based on Ant Colony Optimization(ACO) framework.

**Index Terms**— DOS attack, Black hole attack,Worm hole attack

## I. INTRODUCTION

A mobile ad hoc network (MANET) is relatively new communication paradigm. MANET has received spectacular consideration because of their self-configuration and self-maintenance. Early research assumed a friendly and cooperative environment of wireless network. As a result they focused on problems such as wireless channel access and multi hop routing. But security has become a primary concern to provide protected communication between mobile nodes in a hostile environment.

Although mobile ad hoc networks have several advantages over wired networks, on the other side they pose a number of non-trivial challenges to the security design as they are more vulnerable than wired networks [1]. These challenges include open network architecture, shared wireless medium, demanding resource constraints, and, highly dynamic network topology.

In this paper, we have considered a fundamental security problem in MANET. To protect its basic functionality to deliver data bits from one node to another. Nodes help each other in conveying information to and fro and thereby creating a virtual set of connections between each other. Routing protocols play an very imperative role in the creation and maintenance of these connections.

In contrast to wired networks, each node in an ad-hoc networks acts like a router and forwards packets to other peer nodes. The wireless channel is accessible to both legitimate network users and malicious attackers. As a result, there is a blurry boundary separating the inside network from the outside world.

Many different types of routing protocols have been developed for ad hoc networks and have been classified into two main categories as Proactive (periodic) protocols and

Reactive (on-demand) protocols which has been clearly explained in [2] and [3]. Wireless ad hoc networks are vulnerable to various attacks. These include passive eavesdropping, active interfering, impersonation, and denial-of-service. A single solution cannot resolve all the different types of attacks in ad hoc networks. In this paper, we have designed a novel method to detect black hole attack: ACO, which isolates that malicious node from the network. We have complemented the reactive system on every node on the network. This agent stores the Destination sequence number of incoming route reply packets in the routing table and calculates the threshold value to evaluate the dynamic training data in every time interval as in [4]. Our solution makes the participating nodes realize that, one of their neighbors is malicious; the node thereafter is not allowed to participate in packet forwarding operation[5].

## II. ANTNET

AntNet is an instance of an ACO algorithm for distributed and adaptive routing in Communication networks. In distributed adaptive routing at each network node the routing policy is continually adapted to the variations in the input traffic patterns.

The basic principle of an ant routing algorithm is that ants deposit on the ground a pheromone, while they roam looking for food. Ants can also smell pheromone and tend to follow with higher probability those paths characterized by strong pheromone concentrations. The pheromone trails allow the ants to find their way to the food source (or back to the nest). The same pheromone trails can be used by another ants. This pheromone-trail-following behaviour gives raise to the emergence of the shortest path. An ant routing algorithm can be briefly described in the following way in Fig. 1

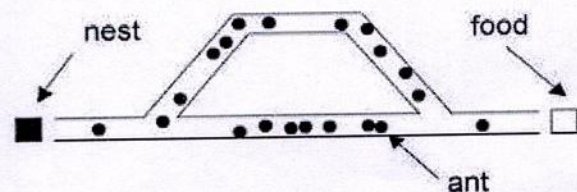
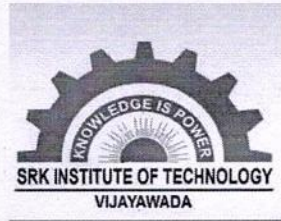


Fig 1 : Basic principle of ant routing paradigm.

From each network node, a number of discovery packets (forward ants) are sent towards the selected destination nodes. They propagate concurrently and independently. In each node routing tables consists of stochastic tables, used to select next hops according to weighted probabilities. These probabilities are calculated on the basis of the pheromone trails left by previous ants which is as shown below:



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3. Department : CSE
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6. Associating Professional Body / Agency : I J & S I T
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# Segmentation of MR images for Tumor extraction by using clustering algorithms

Shaik Salma Begum<sup>1</sup>, T.Venkata Mohana Rao<sup>2</sup>, P.Nageswara Rao<sup>3</sup>, G.Srikanth<sup>4</sup>

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<sup>2,3,4</sup> Assistant Professor, Dept. Computer Science & Engineering, SRK Institute of Technology

**Abstract**-Segmentation of the images is often required as a preliminary and indispensable stage in the computer aided medical image process particularly during the clinical analysis of magnetic resonance (MR) brain image. K-means, Fuzzy c-means (FCM) clustering algorithm has been used in medical image segmentations, but the disadvantage of the k-means algorithm is weak pixel assignment could occur if the pixel with the equal minimum Euclidean distance to two or more adjacent cluster and it may be assigned to the higher variance cluster leading to dead center problems. To overcome that problem, the soft membership based called the Fuzzy c-means (FCM) clustering algorithm is proposed. Fuzzy clustering using fuzzy c-means (FCM) algorithm proved to be superior over the other clustering approaches in terms of segmentation efficiency. But the disadvantage of the FCM algorithm is the large computational required for convergence and it is sensitive to noise because if not taking into account the spatial information. To overcome the above problem a modified FCM algorithm, for MRI brain image segmentation is presented in this paper. A comparative feature vector space is used for the segmentation technique. Comparative analysis in terms of segmentation efficiency and convergence rate is performed between the conventional FCM and the modified FCM. Experimental results show prior results for the modified FCM algorithm in terms of the performance measure.

**Index terms**-Clustering, MR brain tumor, k-means, Fuzzy C-means, modified FCM, image segmentation.

## 1. INTRODUCTION:

Segmentation of image plays a vital role in the field of biomedical applications. The technique of segmentation is widely used by the radiologists to segment the input medical image into meaningful regions. The various applications of this technique is to detect the tumor region by segmenting the abnormal MR input image. The size of the tumor region can be tracked using these techniques which aid the radiologists in treatment planning [1] the use of data compression technique without primitive techniques are based on manual segmentation which a time is consuming process besides being susceptible to human errors. Several automated techniques have been developed which removes the disadvantages of manual segmentation. Clustering is the one of the used image segmentation techniques. Which divide the patterns in such a way that samples of the equal group are more similar to one another than samples belonging to various groups [2]. There has been considerable interest recently in the use of fuzzy clustering methods, which gives more information from the methods, which retain more information from the original image than hard clustering methods. Fuzzy C-means algorithm is preferred because of additional flexibility which allows pixels to belong to multiple classes with varying degrees of membership. But the major operational complaint is that the FCM technique consumes more time

[3]. Several changes have been done on the present network to improve the performance.

Fuzzy c-means (FCM) clustering algorithm, an unsupervised clustering technique, has been successfully used for segmentation of image [18, 19]. Compared with hard c-means algorithm [20], FCM can preserve large information from the original image. The pixels on an image are highly correlated, i.e. the pixels in the immediate neighborhood possess nearly the equal feature data. Therefore, the spatial relationship of neighboring pixels is an important characteristic that can be of great aid in segmentation of images. However, the basic FCM does not take into account spatial information; this makes it very sensitive to noise.

In this work, the FCM algorithm is implemented using the data compression technique without including the weight factor in the cluster center updation criterion which further speeds up the process besides yielding considerable segmentation efficiency. The modified FCM algorithm is used for clustering abnormal MR brain images from four classes namely metastase, meningioma, glioma and astrocytoma. Textural features like correlation, contrast and entropy are extracted from the images and used for the clustering algorithm. The segmented outputs are analyzed based on the segmentation efficiency and convergence rate. A comparative analysis is performed with the conventional FCM algorithm to show the superior nature in terms of convergence rate. Experimental results show promising results for the modified FCM algorithm.

## 2. PROPOSED METHODOLOGY:

The technique for MR brain tumor image segmentation is shown in Fig 1.

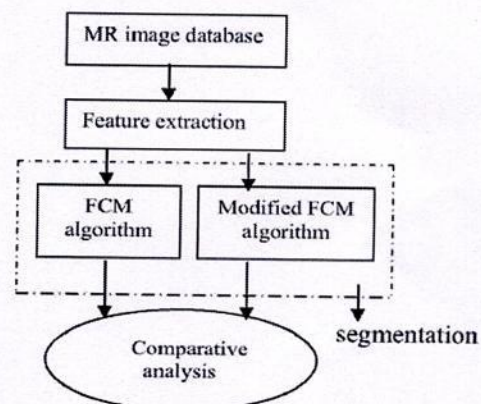
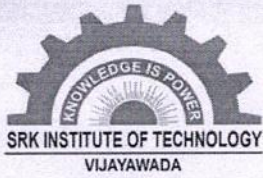


Fig 1: Proposed methodology



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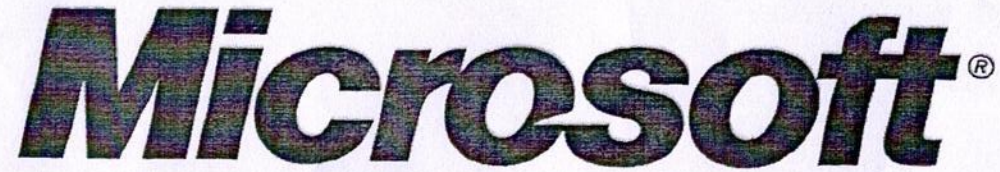
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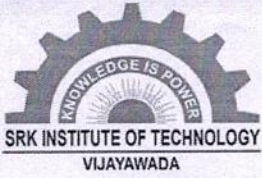
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# Scalable Approaches for Duplicate Detection and Deliver the Results in Quickly

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SRK Institute Of Technology, Enikepadu, Vijayawada, Krishna(Dt)

## ABSTRACT:

*If the intense issues are faced in number of applications with personal details management, client affiliation management, and data mining if the duplicate detection. It deals with the varied duplicate detection record techniques in each and every small and large datasets. Find the duplicity with low time of execution process. Additionally without disturbing the dataset quality, strategies like Progressive interference and Progressive Neighborhood are used. In progressive sorted neighborhood technique is additionally invoke as PSNM used of this model for locating or detection of the duplicate during in a parallel process. The progressive block algorithmic program works on the large datasets wherever finding duplication. needs the huge of time. These algorithms are used to enhance duplicate detection system and efficiency is doubled over the standard duplicate detection technique using this algorithmic program. Many different strategies of information analysis are studied here with varied approaches for duplicate detection.*

## 1. INTRODUCTION

Whenever the duplicates should be found from dataset we go for data processing. The information mining takes its design from Knowledge Discovery in database (KDD) within the field of computer science. Within the recent past, duplication is turning into a major threat in the majority the domains. Due to this Duplication the information received is additional and therefore memory limitation becomes arduous. Therefore admin finds it tough to manage the information sets. The duplicate detection processes are expensive. The common people keep dynamical their portfolio despite retailers giving several product catalogs. Thus there happens duplication in wide selection and every one the organizations cannot afford for the de-duplication method because it is expensive. The adaptive techniques improve the potency in detecting the duplication however these techniques cannot blank up to the level of progressive techniques. The Progressive techniques could method larger dataset briefly span of time and therefore the quality of knowledge is additionally good comparatively. The Progressive duplicate detection makes it completely different from the normal approach by yielding





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# Identification of Drug Targets from Integrated Database of Diabetes Mellitus Genes Using Protein-Protein Interactions

Duggineni Kalyani, Naresh Babu Muppalaneni, Ch Ambedkar and Kiran Kumar Reddi

**Abstract** In this paper, we looked at clustering coefficient, one of the statistics commonly used to study protein interaction networks. We have calculated clustering coefficient to identify the potential drug targets for Diabetes Mellitus (DM). An integrated database of DM genes has been developed by mining various repositories. Protein-protein interaction (PPI) network for the DM genes was constructed. Various centrality measures for the PPI network were calculated. In this study we considered the top 10 genes from the 15 centrality measures and further we calculated the clustering coefficient to find the potential drug targets.

## 1 Introduction

Diabetes mellitus is a metabolic disorder which is characterized by resistance to insulin and abnormalities in the hepatic cells in terms of glucose production [1]. It has been known to be a complex and multi factorial disease as it affects various other organ systems in the body like cardiovascular system, kidneys, lungs, eyes etc. [2-4].

Many online databases are available which consists of DM genes. But candidate genes identification is crucial. Drug-development strategies based on target-driven approaches is an efficient method to combat a certain disease was sought [5-7]. We have carried out the study to investigate the drug targets for Diabetes Mellitus.

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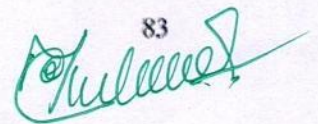
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Krishna University, Machilipatnam, India

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R. Bhramaramba and A.C. Sekhar (eds.), *Application of Computational Intelligence to Biology*, Springer Briefs in Forensic and Medical Bioinformatics, DOI 10.1007/978-981-10-0391-2\_8

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