



CENTRE FOR RESEARCH
ANNA UNIVERSITY
CHENNAI - 600 025



Dr. R. JAYAVEL
DIRECTOR

Telephone : +91-44-2235 7366/2235 0361
Fax : +91-44-2220 1213
Email : dirresearch@annauniv.edu
dirresearch@gmail.com



Date : 13.05.2016

Lr. No: SUPR/27th/DB

To
Dr. Venkatesh C
Professor
Department of Electronics and Communication Engineering
Sengunthar Engineering College,
Tiruchengode - 637205

Sir/Madam,

Sub : Ph.D./M.S. (By Research) Programme - Supervisor Recognition - Orders - Issued.
Ref : Your application for Supervisor Recognition.

I am by direction to inform that you are recognized as a Supervisor (Ref.No: 2740091) for guiding Ph.D. and M.S. (By Research) scholars of this University under the faculty of **Information and Communication Engineering**.

Area of Specialization: **"Communication Systems, Wireless Sensor Networks, Soft Computing"**

The functions and responsibilities of the supervisor are described under clause (7) of the Ph.D./M.S. (By Research) regulations of this University and applicable as and when amendments are made to the Regulations from time to time.

Supervisors working in the recognized R&D Centre of Industries/non-recognized research Departments of Engineering College/Architecture Schools situated within Tamil Nadu shall function only as Joint Supervisor.

I request you to adhere strictly the regulations (available in <https://cfr.annauniv.edu/research/instructions.php>) when you start guiding scholars.

In all future correspondence quote **2740091** for reference.


DIRECTOR

Copy to:

The Head
Department of Electronics and Communication Engineering
Sengunthar Engineering College,
Tiruchengode - 637205

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ANNA UNIVERSITY, CHENNAI



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Minutes of the First Doctoral
Committee Meeting



Minutes of the DC/MC
Meeting for Confirmation



Minutes of the Synopsis DC
Meeting & Examiner's Panel



Minutes for Thesis
Resubmission



Panel of Subject Experts for
Viva-Voce Examination



Ph.D/M.S(Research) Public
Viva-Voce Notification



Name : VENKATESH C

Old / New Reco. No. : 704029 / 2740091

Faculty : Information and Communication
Engineering

Region : Anna University-CHENNAI

Mobile : 9842755552

Email : prof.c.venkatesh@gmail.com

Proceedings for Viva-Voce
Examination



Claim form and Account
Particulars Submission



Synopsis / Thesis Status



Office Address :
Sengunthar Engineering College
Tiruchengode
Namakkal
637205

Yearly Progress Report
Approval



Document Despatched
Status



Jan 2021 - Dec 2021

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NOTE :

SCHOLAR DETAILS

S.NO	REGNO	NAME	DEGREE	FACULTY	REG YEAR	REG SESS	SUPERVISOR	STATUS
1	18133691191	Sivasankaran P	Ph.D.	Elec	2018	JAN	Supervisor	Confirmation completed
2	18144691526	Arunkumar M	Ph.D.	Ice	2018	JAN	Supervisor	Confirmation completed
3	18244691132	Inbavalli V P	Ph.D.	Ice	2018	JAN	Supervisor	Confirmation completed
4	20143691108	Mahendran S	Ph.D.	Elec	2020	JAN	Supervisor	Course Work

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[Home](#)

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ANNA UNIVERSITY, CHENNAI-600 025



AR11 - Dt. 10-12-2019 13:09:04

Registration No.: 18133691191

SEMESTER PROGRESS REPORT July - December 2019

1. Particulars of Research Scholar

Name : Sivasankaran P
Faculty : Electrical Engineering
Degree : Ph.D.
Email : sivaarm05@gmail.com
Contact No. : 9789689096
Designation & Institution where employed (if applicable) : Assistant Professor Electronics And Communication Engineering, sengunthar engineering college, NAMAKKAL, TAMILNADU 637205



2. Registration Details

(a) Category of registration : Part-Time
(b) Month & Year of Admission : JAN & 2018
(c) Whether provisional registration confirmed? : Yes / No
If yes, give reference No. and date : 18133691191 / 10-12-2019
3. Name of the Department / Centre where the research is conducted : Department of Electronics & Communication Engineering

4. Particulars of the Supervisor / Joint Supervisor / Supervisor In-Charge / Research Co-Ordinator

SUPERVISOR DETAILS:

Name / Reference No : Dr. Venkatesh C / 2740091
Designation : Professor
Department : Department of Electronics & Communication Engineering
Address : Sengunthar Engineering College, Tiruchengode., Namakkal
Email / Mobile : prof.c.venkatesh@gmail.com / 9842755552
Institute Code : 4730007-Electronics and Communication Engineering
Sengunthar Engineering College, Tiruchengode

JOINT SUPERVISOR / SUPERVISOR IN-CHARGE DETAILS:

Joint Supervisor / Supervisor In-Charge : Not Applicable

5. Tentative title of the Research work : SMART MIND READING THROUGH INTELLIGENCE TECHNIQUES

6. Duration of research outside the University (if applicable) :

7. Break of study period (if applicable) :





AR13 - Dt: 04-12-2020 07:46:51

Registration No.: 18144691526

YEARLY PROGRESS REPORT January 2020 - December 2020

1. Particulars of Research Scholar

Name : Arunkumar M
Faculty : Information and Communication Engineering
Degree : Ph.D.
Email : arunkumar2908@gmail.com
Contact No. : 9894093603
Designation & Institution where employed (if applicable) : Assistant Professor, Electronics And Communication Engineering, Sengunthar Engineering College, TAMILNADU 637205



2. Registration Details

(a) Category of registration : Part-Time
(b) Month & Year of Admission : JAN & 2018
(c) Whether provisional registration confirmed? : Yes / ~~No~~
If yes, give reference No. and date : 18144691526/PN-D/AR13 .B 18.3.2020

3. Name of the Department / Centre where the research is conducted : Department of Electronics and Communication Engineering

4. Particulars of the Supervisor / Joint Supervisor / Supervisor In-Charge /

Research Co-Ordinator

SUPERVISOR DETAILS:

Name / Reference No. : Dr. Venkatesh C / 2740091
Designation : Professor
Department : Department of Electronics and Communication Engineering
Address : Sengunthar Engineering College, Tiruchengode, Namakkal
Email / Mobile. : prof.c.venkatesh@gmail.com / 9842755552
Institute Code : 4730007-Electronics and Communication Engineering
Sengunthar Engineering College, Tiruchengode

JOINT SUPERVISOR / SUPERVISOR IN-CHARGE DETAILS:

Joint Supervisor / Supervisor In-Charge : Not Applicable

5. Tentative title of the Research work: Application of IoT Concepts in Automation.

6. Duration of research outside the University (if applicable) :

7. Break of study period (if applicable) :





CENTRE FOR RESEARCH

ANNA UNIVERSITY, CHENNAI-600 025



AR13 - Dt: 10-12-2019 17:44:59



Registration No.: 18244691132

SEMESTER PROGRESS REPORT July - December 2019

1. Particulars of Research Scholar

Name : Inbavalli V P
 Faculty : Information and Communication Engineering
 Degree : Ph.D.
 Email : inbavalli@gmail.com
 Contact No. : 8072790817
 Designation & Institution where employed (if applicable) : , , , , 0



2. Registration Details

(a) Category of registration : Full-Time
 (b) Month & Year of Admission : JAN & 2018
 (c) Whether provisional registration confirmed? : Yes / No
 If yes, give reference No. and date : LY. No. 18244691132 / Ph.D. / AR13

3. Name of the Department / Centre where the research is conducted : Department of Electronics & Communication Engineering
 Sengunthar Engineering College, Tiruchengode

4. Particulars of the Supervisor / Joint Supervisor / Supervisor In-Charge / Research Co-Ordinator

SUPERVISOR DETAILS:

Name / Reference No. : Dr. Venkatesh C / 2740091
 Designation : Professor
 Department : Department of Electronics & Communication Engineering
 Address : Sengunthar Engineering College, Tiruchengode, Namakkal
 Email / Mobile. : prof.c.venkatesh@gmail.com / 984275552
 Institute Code : 4730007-Electronics and Communication Engineering
 Sengunthar Engineering College, Tiruchengode

JOINT SUPERVISOR / SUPERVISOR IN-CHARGE DETAILS:

Joint Supervisor / Supervisor In-Charge : Not Applicable

5. Tentative title of the Research work: Frequency Selective Surface to Control the Propagation of Multiple Electromagnetic Communication Bands

6. Duration of research outside the University (if applicable) :

7. Break of study period (if applicable) :



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ANNA UNIVERSITY, CHENNAI-600 025



AR11 - Dt: 10-12-2020 09:30:10

Registration No.: 20143691108

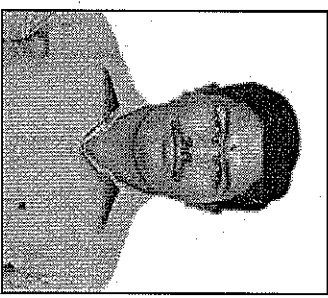
YEARLY PROGRESS REPORT January 2020 - December 2020

1. Particulars of Research Scholar

Name : Mahendran S
Faculty : Electrical Engineering
Degree : Ph.D.
Email : mahendran207@gmail.com
Contact No. : 99422994499

Designation & Institution where employed (if applicable)

Assistant Professor/ECE,
BUIDERS ENGIN COLLEGE,
KANNANUR - 638105.



2. Registration Details

(a) Category of registration : Part-Time
(b) Month & Year of Admission : JAN & 2020
(c) Whether provisional registration confirmed? : Yes / No
If yes, give reference No. and date :

3. Name of the Department / Centre where the research is conducted : Department of Electronics and Communication Engineering

4. Particulars of the Supervisor / Joint Supervisor / Supervisor In-Charge / Research Co-Ordinator SUPERVISOR DETAILS:

Name / Reference No. : Dr. Venkatesh C / 2740091
Designation : Professor
Address : Department of Electronics and Communication Engineering
Sengunthar Engineering College, Tiruchengode,, Namakkal
Email / Mobile : prof.c.venkatesh@gmail.com / 9842755552
Institute Code : 4730007-Electronics and Communication Engineering
Sengunthar Engineering College, Tiruchengode

JOINT SUPERVISOR / SUPERVISOR IN-CHARGE DETAILS:

Joint Supervisor / Supervisor In-Charge : Not Applicable

5. Tentative title of the Research work: AN ADAPTIVE METHOD FOR ENERGY MANAGEMENT IN SMART GRID ENVIRONMENT

6. Duration of research outside the University (if applicable) : -

7. Break of study period (if applicable) : -



8. Details of research progress :

Registration No.: 20143691108

Details	Yes/No	Count	Details	Yes/No	Count
No. of course works completed	NA	Nil	Attended seminar/conference (if yes, No. of seminar/conference attended)	Yes	4
Seminar presentation, if yes, No. of presentation	No		Papers published (if yes, No. of papers published)	No	

A typed report on the work carried out during this period (atleast 300 words) duly signed by the scholar and counter signed by the Supervisor and Joint Supervisor (if applicable) is enclosed.

[Signature]
S. MATHESWARAN
 Signature of the Scholar with Date
 (Name in Capitals)

[Signature]
S.A. VISAYAKUMAR
 Signature of the HOD of the Scholar *
 (Name with Seal)
 (* applicable for P.T. research scholars. If Scholar and Supervisor are from different Department/Institution)
 Co-Ordinator's Engineering College
 Nathakadalpur, Kanyakum-629 108.
 Tripur, Dt. Tamilnadu, India.

REMARKS OF THE SUPERVISOR(S)	
i	Work Progress Satisfactory
ii	If the progress is not satisfactory provide appropriate comments/explanation (if needed, attach additional sheet) —
iii	Attendance Satisfactory / Not-Satisfactory
iv	Expected time of completion APR-2025

REMARKS OF THE HOD / DIRECTOR OF THE CENTRE OF THE SUPERVISOR	
i	Any Remarks (please specify) —
	Signature of the HOD / Director of the Centre of the Supervisor * <i>[Signature]</i> Dr. C. Arthi, M.E., Ph.D. Head of the Department

Certify that the research articles published / to be published in journals are the original Department of School Colleges, no part of the research paper(s) is copied from any thesis or research articles already published in any journals, fully aware that the act of plagiarism will lead to cancel of registration and other disciplinary actions per Rules and Regulations of Anna University.

[Signature]
S. MATHESWARAN
 Signature of the Scholar
 (Name in Capitals)

[Signature]
Dr. C. Venkatesh M.E., Ph.D.
 Signature of the Supervisor
 Professor

Note:
 *The Signature of the Head of the Department or Director of the Centre of the Supervisor Department If the Supervisor is not from a recognised research Centre of Anna University, Joint **Senguntur Engineering College** Charge/s/Research Co-Ordinator's Head of the Department has to approve. Fallir **TRUCHENGOODE 639 205** progress report.



ENROLMENT FORM / REGISTRATION RENEWAL FORM

January 2021 - June 2021

Name in Block Letters	:	Mahendran S
Registration No	:	20143691108
Month & Year of admission	:	JAN & 2020
Faculty	:	Electrical Engineering
Name of the Supervisor	:	Dr. Venkatesh C
Department of the Supervisor	:	Department of Electronics and Communication Engineering
Name of the Joint Supervisor (if applicable)	:	Dr. -
Department of the Joint Supervisor	:	-
Category of Registration	:	Part-Time
Number of Courses completed	:	1
No. of Courses registered in this semester	:	04.
Date of Confirmation	:	-

DECLARATION

I, S. MAHENDRAN is doing Ph.D. Programme.

1. As a Full - time scholar, I state that I am not employed anywhere* / I have submitted NoC from my employer*
2. As a Full - time scholar working in a project, I state that I am still employed in the project
3. As a Part time scholar, I am working as Assistant Professor / ECE at Basilders Engg. College, Kambayam.
4. As a part time scholar, I am still working in the same college as mentioned in my application form* / the change of working place has been intimated to the office of the Director (Research)*

(* Strike out whichever is not applicable)

Date : 10.12.2020

Place : KANNARAyam.

DR.C. Venkatesh, M.E., Ph.D.,
Professor

Signature of the Supervisor
(Name with Seal)

Dept. of ECE
Sengunthar Engineering College
TIRUCHENGODE - 637 205.

DR. N. Ravitharan, M.E., Ph.D.,
Supervisor*

S. MAHENDRAN
Signature of the Scholar
(Name in Capitals)

DR. N. Ravitharan, M.E., Ph.D.,
Head of the Department
Department of ECE,
Sengunthar Engineering College

Date: 10-12-2020
Tiruchengode-1037205/4

COURSE WORK REGISTRATION FORM

January 2021 - June 2021

I. DETAILS OF THE SCHOLAR

1. Name of the Scholar / Registration No. : Mahendran S / 20143691108
2. Address of the scholar : SOSamiyappan, 13/48 D Paranjervazhi, Paranjervazhi Post
Tamilnadu 638701
3. Email / Contact No. : mahendran207@gmail.com / 9942294499
4. Department and College in which the scholar is doing research : Department of ECE,
Sengunthar Engineering College
Tiruchengode.
5. Category of registration : Part-Time

II. COURSE WORK REGISTERED IN THE CURRENT SEMESTER

Sl.No	Course code	Title of the course work	No of Credits	Core Course / Elective/ Special Elective	Signature, Name, Designation and Address of the Course Instructor
1	19PEET105	Machine Learning Techniquls.	03.	Core Course	<i>[Signature]</i> DR.M. SAKTHIVE Asp. Lectr / Sec.
2	19PEET203	Internet of Things.	03.	Core Course	<i>[Signature]</i> DR. P. VENKATESH Prof. / Lectr / Sec.
3	19PEEP206	Real Time systems.	03.	Elective	<i>[Signature]</i> DR. VENKATESH Prof. / Lectr / Sec.
4	19PEEP307	Embedded Software Development	03.	Elective	<i>[Signature]</i> DR.M. SAKTHIVE KSP / Lectr / Sec
5					
6					

[Signature]
S. MAHENDRAN
Signature of the Scholar
(Name in Capitals)

Recommended/Not Recommended and Forwarded

[Signature]
Signature of the Supervisor
(Name with Seal)

Dr. C. Venkatesh, M.E., Ph.D.,
Professor
Dept. of ECE
Sengunthar Engineering College
TIRUCHENGODE - 637 205.

[Signature]
10/12/20
Dr. C. ADITHYAN, M.E., Ph.D.,
Head of the Department
Department of ECE,
Sengunthar Engineering College
Tiruchengode - 637 205.

Note:

Research scholars should take PG Level course works only. Refer Clause 13.1 of Ph.D. Regulation carefully.

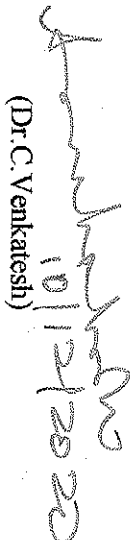


Progress Report (January – December 2020)

Name : MAHENDRAN S
Registration Number : 20143691108
Faculty : Electrical Engineering
Course : Ph.D. – Part Time
Session : Jan 2020
Period of report : January – December 2020
Supervisor Name and Address : Dr.C.Venkatesh,
Professor, Dept. of ECE,
Sengunthar Engineering College, Tiruchengode.

- Appearing for the following course-work exams on forthcoming ODD Sem, 2021.
 - 1) 19PCT105- Machine Learning Techniques
 - 2) 19PCT203- Internet of Things
 - 3) 19PCP206- Real Time Systems
 - 4) 19PCP307- Embedded Software Development
- Participated STTP on “Solar PV Technology: Envisaged Future Challenges and Mitigation Methods for High Photovoltaic Penetration” organized by Department of EEE, Paavai Engineering college, Namakkal, during 23 - 28, November 2020.
- Participated webinar series on “Recent Trends in Embedded Systems and Computational Intelligence” organized by IE(I) Erode Local Centre in association with Kongu Engineering College, Bannari Amman Institute of Technology and Sengunthar Engineering College from 14 to 18 September 2020.
- Participated FDP on “ DoE for Researchers” organized by faculty training centre & Department of Mechanical Engineering, Government college of Technology, Coimbatore from 27& 28 May 2020.
- Participated FDP on “Python Programming” organized by Department of CSE, K L Deemed to be University Hyderabad off Campus from 15 to 18 July 2020.


(Mahendran S)
Signature of the Candidate


(Dr. C. Venkatesh)
Signature of the Supervisor
Dr. C. Venkatesh, M.E., Ph.D.,
Professor
Dept. of ECE
Sengunthar Engineering College
TIRUCHENGODE - 637 205.



SENGUNTHAR ENGINEERING COLLEGE (AUTONOMOUS)

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TIRUCHENGODE - 637 205 NAMAKKAL (DT) TAMILNADU



SEMESTER I

19PCT105

MACHINE LEARNING TECHNIQUES

L T P C
3 0 0 3

OBJECTIVES

- To introduce students to the basic concepts and techniques of Machine Learning.
- To have a thorough understanding of the Supervised and Unsupervised learning techniques
- To study the various probability based learning techniques
- To understand graphical models of machine learning algorithms

UNIT I INTRODUCTION

9

Learning – Types of Machine Learning – Supervised Learning – The Brain and the Neuron – Design a Learning System – Perspectives and Issues in Machine Learning – Concept Learning Task – Concept Learning as Search – Finding a Maximally Specific Hypothesis – Version Spaces and the Candidate Elimination Algorithm – Linear Discriminants – Perceptron – Linear Separability – Linear Regression.

UNIT II LINEAR MODELS

9

Multi-layer Perceptron – Going Forwards – Going Backwards: Back Propagation Error – Multi-layer Perceptron in Practice – Examples of using the MLP – Overview – Deriving Back-Propagation – Radial Basis Functions and Splines – Concepts – RBF Network – Curse of Dimensionality – Interpolations and Basis Functions – Support Vector Machines.

UNIT III TREE AND PROBABILISTIC MODELS

9

Learning with Trees – Decision Trees – Constructing Decision Trees – Classification and Regression Trees – Ensemble Learning – Boosting – Bagging – Different ways to Combine Classifiers – Probability and Learning – Data into Probabilities – Basic Statistics – Gaussian Mixture Models – Nearest Neighbor Methods – Unsupervised Learning – K means Algorithms – Vector Quantization – Self Organizing Feature Map.

UNIT IV DIMENSIONALITY REDUCTION AND EVOLUTIONARY MODELS

9

Dimensionality Reduction – Linear Discriminant Analysis – Principal Component Analysis – Factor Analysis –Independent Component Analysis – Locally Linear Embedding – Isomap – Least Squares Optimization – Evolutionary Learning – Genetic algorithms – Genetic Offspring: - Genetic Operators – Using Genetic Algorithms – Reinforcement Learning – Overview – Getting Lost Example – Markov Decision Process.



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UNIT V GRAPHICAL MODELS

9

Markov Chain Monte Carlo Methods – Sampling – Proposal Distribution – Markov Chain MonteCarlo – Graphical Models – Bayesian Networks – Markov Random Fields – Hidden Markov Models – Tracking Methods

TOTAL: 45 PERIODS

OUTCOMES

Upon completion of this course, the students should be able to:

- Distinguish between, supervised, unsupervised and semi-supervised learning
- Apply the appropriate machine learning strategy for any given problem
- Suggest supervised, unsupervised or semi-supervised learning algorithms for any given problem
- Design systems that uses the appropriate graph models of machine learning
- Modify existing machine learning algorithms to improve classification efficiency

TEXT BOOKS

1. Ethem Alpaydin, —Introduction to Machine Learning 3e (Adaptive Computation and Machine Learning Series)II, Third Edition, MIT Press, 2014.
2. Jason Bell, —Machine learning – Hands on for Developers and Technical ProfessionalsII, First Edition, Wiley, 2014.

REFERENCES

1. Peter Flach, —Machine Learning: The Art and Science of Algorithms that Make Sense of DataII, First Edition, Cambridge University Press, 2012.
2. Stephen Marsland, —Machine Learning – An Algorithmic PerspectiveII, Second Edition, Chapman and Hall/CRC Machine Learning and Pattern Recognition Series, 2014.

E-RESOURCES

1. <http://faculty.ucmerced.edu/mcarreira-peripinan/teaching/CSE176/lecturenotes.pdf>
2. <http://www.cs.cmu.edu/~yandong/ml/notes.html>

Handwritten signature of the Supervisor

Dr. C. Venkatesh, M.E., Ph.D.,
Professor
Dept. of ECE
Sengunthar Engineering College
TIRUCHENGODE - 637 205.
Signature of the Supervisor





SENGUNTHAR ENGINEERING COLLEGE (AUTONOMOUS)

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19PCT203

SEMESTER II
INTERNET OF THINGS

L T P C
3 0 0 3

OBJECTIVES

- To understand the fundamentals of Internet of Things
- To learn about the basics of IOT protocols
- To build a small low cost embedded system using Raspberry Pi.
- To apply the concept of Internet of Things in the real world scenario.

UNIT I INTRODUCTION TO IOT

9

Internet of Things - Physical Design- Logical Design- IoT Enabling Technologies - IoT Levels & Deployment Templates - Domain Specific IOTs - IoT and M2M - IoT System Management with NETCONF-YANG- IoT Platforms Design Methodology.

UNIT II IOT ARCHITECTURE

9

M2M high-level ETSI architecture - IETF architecture for IoT - OGC architecture - IoT reference model - Domain model - information model - functional model - communication model - IoT reference architecture.

UNIT III IOT PROTOCOLS

9

Protocol Standardization for IoT – Efforts – M2M and WSN Protocols – SCADA and RFID Protocols – Unified Data Standards – Protocols – IEEE 802.15.4 – BACNet Protocol – Modbus– Zigbee Architecture – Network layer – 6LoWPAN - CoAP– Security.

UNIT IV BUILDING IOT WITH RASPBERRY PI & ARDUINO

9

Building IOT with RASPBERRY PI- IoT Systems - Logical Design using Python – IoT Physical Devices & Endpoints - IoT Device -Building blocks -Raspberry Pi -Board - Linux on Raspberry Pi - Raspberry Pi Interfaces -Programming Raspberry Pi with Python - Other IoT Platforms - Arduino.

UNIT V CASE STUDIES AND REAL-WORLD APPLICATIONS

9

Real world design constraints - Applications - Asset management, Industrial automation, smart grid, Commercial building automation, Smart cities - participatory sensing - Data Analytics for IoT– Software & Management Tools for IoT Cloud Storage Models & Communication APIs – Cloud for IoT - Amazon Web Services for IoT.

TOTAL : 45 PERIODS



ESTD 2001

SENGUNTHAR ENGINEERING COLLEGE

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OUTCOMES

Upon completion of this course, the students should be able to:

- Analyze various protocols for IoT
- Develop web services to access/control IoT devices.
- Design a portable IoT using Raspberry Pi
- Deploy an IoT application and connect to the cloud.
- Analyze applications of IoT in real time scenario

TEXT BOOKS

1. Arshdeep Bahga, Vijay Madiseti, —Internet of Things – A hands-on approachll, Universities Press, 2015
2. Dieter Uckelmann, Mark Harrison, Michahelles, Florian (Eds), —Architecting the Internet of Thingsll, Springer, 2011.

REFERENCES

1. Honbo Zhou, —The Internet of Things in the Cloud: A Middleware Perspective, CRC Press, 2012.
2. Jan Ho" ller, Vlasios Tsiatsis , Catherine Mulligan, Stamatis , Karnouskos, Stefan Avesand. David Boyle, "From Machine-to-Machine to the Internet of Things - Introduction to a New Age of Intelligence", Elsevier, 2014.

E-RESOURCES

1. <https://cse-notes.com/2018/01/cp5292-internet-of-things.html>
2. <https://lecturenotes.in/subject/370/internet-of-things-iot>

Handwritten signature

Dr. C. Venkatesh, M.E., Ph.D.,

Professor

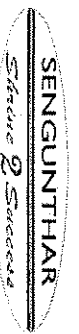
Dept. of ECE

Sengunthar Engineering College

TIRUCHENGODE - 637 205.

Signature of the supervisor.

*Dr. Venkatesh Venkatesh
(S. MAHENDRAN)
Signature of the
supervisor.*





SENGUNTHAR ENGINEERING COLLEGE (AUTONOMOUS)

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19PCP206

SEMESTER II
REAL TIME SYSTEMS

LTPC
3003

OBJECTIVES

- To learn real time operating system concepts, the associated issues & Techniques.
- To understand design and synchronization problems in Real Time System.
- To explore the concepts of real time databases.
- To understand the evaluation techniques present in Real Time System.

UNIT I REAL TIME SYSTEM AND SCHEDULING

9

Introduction— Structure of a Real Time System –Task classes – Performance Measures for Real Time Systems – Estimating Program Run Times – Issues in Real Time Computing – Task Assignment and Scheduling – Classical uniprocessor scheduling algorithms –Fault Tolerant Scheduling.

UNIT II SOFTWARE REQUIREMENTS ENGINEERING

9

Requirements engineering process – types of requirements – requirements specification for real time systems – Formal methods in software specification – structured Analysis and Design – object oriented analysis and design and unified modelling language – organizing the requirements document – organizing and writing documents – requirements validation and revision.

UNIT III INTERTASK COMMUNICATION AND MEMORY MANAGEMENT

9

Buffering data – Time relative Buffering- Ring Buffers – Mailboxes – Queues – Critical regions – Semaphores – other Synchronization mechanisms – deadlock – priority inversion – process stack management – run time ring buffer – maximum stack size – multiple stack arrangement – memory management in task control block - swapping – overlays – Block page management – replacement algorithms – memory locking – working sets – real time garbage collection – contiguous file systems.

UNIT IV REAL TIME DATABASES

9

Real time Databases – Basic Definition, Real time Vs General Purpose Databases, Main Memory Databases, Transaction priorities, Transaction Aborts, Concurrency control issues, Disk Scheduling Algorithms, Two-phase Approach to improve Predictability – Maintaining Serialization Consistency – Databases for Hard Real Time Systems.



UNIT V EVALUATION TECHNIQUES AND CLOCK SYNCHRONIZATION 9

Reliability Evaluation Techniques – Obtaining parameter values, Reliability models for Hardware Redundancy–Software error models. Clock Synchronization–Clock, A Nonfault-Tolerant Synchronization Algorithm – Impact of faults – Fault Tolerant Synchronization in Hardware – Fault Tolerant Synchronization in software.

TOTAL : 45 PERIODS

OUTCOMES

Upon completion of this course, the students should be able to

- Apply principles of real time system design techniques to develop real time applications.
- Make use of database in real time applications.
- Make use of architectures and behaviour of real time operating systems.
- Apply evaluation techniques in application.

TEXT BOOKS

1. C.M. Krishna, Kang G. Shin, "Real-Time Systems", McGraw-Hill International Editions, 1997
2. Philip.A.Laplante, "Real Time System Design and Analysis", Prentice Hall of India, 3rd Edition, 2004

REFERENCES

1. Rajib Mall, "Real-time systems: theory and practice", Pearson Education, 2009
2. R.J.A Buhur, D.L Bailey, "An Introduction to Real-Time Systems", Prentice Hall International, 1999

E-RESOURCES

1. <https://lecturenotes.in/notes/73-notes-for-real-time-systems-rt-s-by-lopamudra-mishra>
2. <https://lecturenotes.in/subject/63/real-time-systems-rt-s>

[Handwritten Signature]
 10/12/2022

DR. C. Venkatesh, M.E., Ph.D.,
 Professor
 Dept. of ECE
 Sengunthar Engineering College
 TIRUCHENGODE - 637 205.

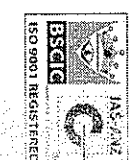
[Handwritten Signature]
 Signature of the
 Supervisor

[Handwritten Signature]
 Signature of the Supervisor.



SENGUNTHAR ENGINEERING COLLEGE (AUTONOMOUS)

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TIRUCHENGODE - 637 205 NAMAKKAL (Dt) TAMILNADU

OUTCOMES:

Upon completion of the course, the students should be able to

- Understand different architectures of embedded processor, microcontroller and peripheral devices. Interface memory and peripherals with embedded systems.
- Work with embedded network environment.
- Understand challenges in Real time operating systems.
- Design and analyze applications on embedded systems.

TEXT BOOKS:

1. Adrian McEwen, Hakim Cassimally, "Designing the Internet of Things" Wiley Publication, First edition, 2013
2. Andrew N Sloss, D. Symes, C. Wright, Arm system developers guide, MorganKauffman/Elsevier, 2006.

REFERENCES:

1. ArshdeepBahga, Vijay Madiseti, " Internet of Things: A Hands-on-Approach" VPT First Edition, 2014
2. C.M.Krishna andK. G. Shin, -Real-TimeSystemsII, McGraw-Hill, 1997.

E-RESOURCES:

1. <https://nptel.ac.in/courses/108/105/108105057/>
2. https://onlinecourses.nptel.ac.in/noc20_cs14/preview

Dr. Venkatesh, M.E., Ph.D.
10/10/2020

Dr. C. Venkatesh, M.E., Ph.D.,

Professor

Dept. of ECE

Sengunthar Engineering College
TIRUCHENGODE - 637 205.

Dr. Venkatesh, M.E., Ph.D.
(S. MATHANARAJ)
S. Signature of the
Scholar

S. Signature of the Supervisor.



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19PCPC307

EMBEDDED SOFTWARE DEVELOPMENT

L T P C

3 0 0 3

OBJECTIVES:

- To understand the architecture of embedded processor, microcontroller and peripheral devices.
- To interface memory and peripherals with embedded systems.
- To study the embedded network environment.
- To understand challenges in Real time operating systems.
- To study, analyze and design applications on embedded systems.

UNIT I EMBEDDED PROCESSORS

9

Embedded Computers - Characteristics of Embedded Computing Applications - Challenges in Embedded Computing System Design - Embedded System Design Process- Formalism for System Design - Structural Description - Behavioral Description - ARM Processor - Intel ATOM Processor.

UNIT II EMBEDDED COMPUTING PLATFORM

9

CPU Bus Configuration - Memory Devices and Interfacing - Input/output Devices and Interfacing - System Design - Development and Debugging – Emulator – Simulator - JTAG Design Example – Alarm Clock - Analysis and Optimization of Performance - Power and Program Size.

UNIT III EMBEDDED NETWORK ENVIRONMENT

9

Distributed Embedded Architecture - Hardware And Software Architectures - Networks for Embedded Systems - I2C - CAN Bus - SHARC Link Supports – Ethernet – Myrinet – Internet - Network-based Design - Communication Analysis - System Performance Analysis - Hardware Platform Design - Allocation and Scheduling - Design Example - Elevator Controller.

UNIT IV REAL-TIME CHARACTERISTICS

9

Clock Driven Approach - Weighted Round Robin Approach - Priority Driven Approach - Dynamic versus Static Systems - Effective Release Times and Deadlines - Optimality of the Earliest Deadline First (EDF) Algorithm - Challenges in Validating Timing Constraints in Priority Driven Systems - Off-Line versus On-Line Scheduling.

UNIT V SYSTEM DESIGN TECHNIQUES

9

Design Methodologies - Requirement Analysis – Specification - System Analysis and Architecture Design - Quality Assurance - Design Examples - Telephone PBX - Ink jet printer - Personal Digital Assistants - Set-Top Boxes.

TOTAL: 45 PERIODS



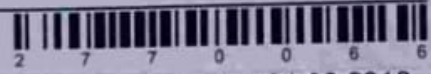
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Dr. R. JAYAVEL
DIRECTOR

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Fax : +91-44-2220 1213
Email : dirresearch@annauniv.edu
dirresearch@gmail.com



Date : 31.03.2016

Lr. No: SUPR/27th/DB

To
Dr. Palanisamy K L
Professor
Department of Physics
Sengunthar Engineering College,
Tiruchengode - 637205

Sir/Madam,

Sub : Ph.D./M.S. (By Research) Programme - Supervisor Recognition - Orders - Issued.
Ref : Your application for Supervisor Recognition.

I am by direction to inform that you are recognized as a Supervisor (**Ref.No: 2770066**) for guiding Ph.D. and M.S. (By Research) scholars of this University under the faculty of **Science and Humanities**.

Area of Specialization: "**Physics, Nanomaterials**"

The functions and responsibilities of the supervisor are described under clause (7) of the Ph.D./M.S. (By Research) regulations of this University and applicable as and when amendments are made to the Regulations from time to time.

Supervisors working in the recognized R&D Centre of Industries/non-recognized research Departments of Engineering College/Architecture Schools situated within Tamil Nadu shall function only as Joint Supervisor.

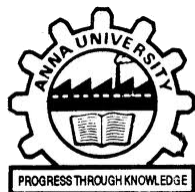
I request you to adhere strictly the regulations (available in <https://cfr.annauniv.edu/research/instructions.php>) when you start guiding scholars.

In all future correspondence quote **2770066** for reference.


DIRECTOR

Copy to:

The Head
Department of Physics
Sengunthar Engineering College,
Tiruchengode - 637205



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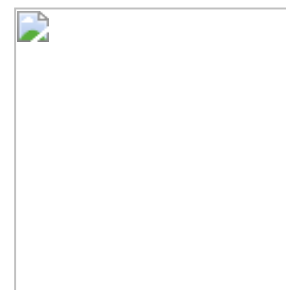
Minutes of the First Doctoral Committee Meeting



Minutes of the DC/MC Meeting for Confirmation



Minutes of the Synopsis DC Meeting & Examiner's Panel



Minutes for Thesis Resubmission



Panel of Subject Experts for Viva-Voce Examination



Ph.D/M.S(Research) Public Viva-Voce Notification



Name : PALANISAMY K L

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Proceedings for Viva-Voce Examination



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Synopsis / Thesis Status



Yearly Progress Report Approval



Jan 2021 - Dec 2021

Document Despatched Status



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dirresearch@gmail.com



Date : 13.05.2016

Lr. No: SUPR/27th/DB

To
Dr. Sujatha B
Professor
Department of Computer Science and Engineering
Sengunthar Engineering College,
Tiruchengode - 637205

Sir/Madam,

Sub : Ph.D./M.S. (By Research) Programme - Supervisor Recognition - Orders - Issued.
Ref : Your application for Supervisor Recognition.

I am by direction to inform that you are recognized as a Supervisor (Ref.No: 2740126) for guiding Ph.D. and M.S. (By Research) scholars of this University under the faculty of **Information and Communication Engineering**.

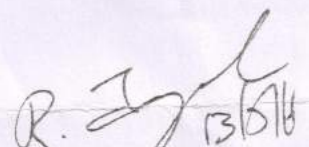
Area of Specialization: **"Data Mining, Cloud Computing, Networks, Image Processing"**

The functions and responsibilities of the supervisor are described under clause (7) of the Ph.D./M.S. (By Research) regulations of this University and applicable as and when amendments are made to the Regulations from time to time.

Supervisors working in the recognized R&D Centre of Industries/non-recognized research Departments of Engineering College/Architecture Schools situated within Tamil Nadu shall function only as Joint Supervisor.

I request you to adhere strictly the regulations (available in <https://cfr.annauniv.edu/research/instructions.php>) when you start guiding scholars.

In all future correspondence quote **2740126** for reference.


DIRECTOR

Copy to:

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Department of Computer Science and Engineering
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Panel of Subject Experts for Viva-Voce Examination



Ph.D/M.S(Research) Public Viva-Voce Notification



Name : SUJATHA B
Old / New Reco. No. : / 2740126
Faculty : Information and Communication Engineering
Region : Anna University-CHENNAI

- Proceedings for Viva-Voce
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Dr. R. JAYAVEL
DIRECTOR

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Date : 31.12.2016

Lr. No: SUPR/27th/DB

To
Dr. Uma Devi K
Professor
Department of Electrical and Electronics Engineering
Sengunthar Engineering College,
Tiruchengode-637205

Sir/Madam,

Sub : Ph.D./M.S. (By Research) Programme - Supervisor Recognition - Orders - Issued.
Ref : Your application for Supervisor Recognition.

I am by direction to inform that you are recognized as a Supervisor (Ref.No: 2830071) for guiding Ph.D. and M.S. (By Research) scholars of this University under the faculty of **Electrical Engineering**.

Area of Specialization: "**Brush less DC Machines, Finite Element Analysis, Exterior Rotor, Permanent Magnet**"

The functions and responsibilities of the supervisor are described under clause (7) of the Ph.D./M.S. (By Research) regulations of this University and applicable as and when amendments are made to the Regulations from time to time.

Supervisors working in the recognized R&D Centre of Industries/non-recognized research Departments of Engineering College/Architecture Schools situated within Tamil Nadu shall function only as Joint Supervisor.

I request you to adhere strictly the regulations (available in <https://cfr.annauniv.edu/research/instructions.php>) when you start guiding scholars.

In all future correspondence quote **2830071** for reference.

R. Jayavel
31/12/16
DIRECTOR

Copy to:

The Head
Department of Electrical and Electronics Engineering
Sengunthar Engineering College,
Tiruchengode-637205



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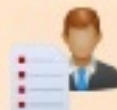
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Panel of Subject Experts for
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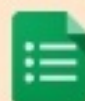
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Document Despatched
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Namakkal
637205



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Registration No.: 18244691384

SEMESTER PROGRESS REPORT July - December 2018

1. Particulars of Research Scholar

Name : Sathya S S
Faculty : Information and Communication Engineering
Degree : Ph.D.
Email : sathyaspace@yahoo.co.in
Contact No. : 9751347984
Designation & Institution where employed (if applicable) : Assistant Professor, Electronics And Communication Engineering, Dhanalakshmi srinivasan engineering college, PERAMBALUR, TAMILNADU 621212



2. Registration Details

(a) Category of registration : Part-Time
(b) Month & Year of Admission : JAN & 2018
(c) Whether provisional registration confirmed? : Yes / No
If yes, give reference No. and date : —

3. Name of the Department / Centre where the research is conducted : Department of Electronics & Communication Engineering

4. Particulars of the Supervisor / Joint Supervisor

SUPERVISOR DETAILS:

Name / Reference No. : Dr. Umadevi K / 2830071
Designation : Professor
Department : Department of Electronics & Communication Engineering
Address : Sengunthar Engineering college, Tiruchengode, Namakkal
Email / Mobile. : kindlyuma@gmail.com / 9443035709

JOINT SUPERVISOR DETAILS:

Joint Supervisor : Not Applicable

5. Tentative title of the Research work: AN POLYNOMIAL AND REFUGE KEY PREDISTRIBUTIONS FOR SECURE ROUTING IN WIRELESS MESH NETWORK

6. Duration of research outside the University (if applicable) :

7. Break of study period (if applicable) :



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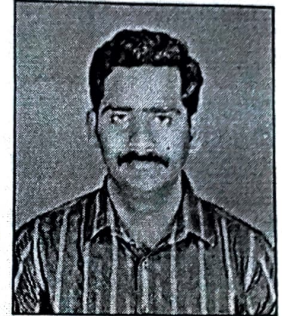
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Registration No.: 18144691155

SEMESTER PROGRESS REPORT July - December 2018

1. Particulars of Research Scholar

Name : Vijayakumar V
Faculty : Information and Communication Engineering
Degree : Ph.D.
Email : vksece2007@gmail.com
Contact No. : 9750082949
Designation & Institution where employed (if applicable) : Assistant Professor, Electronics And Communication Engineering, dhanalakshmi srinivasan engineering college, PERAMBALUR, TAMILNADU 621212



2. Registration Details

(a) Category of registration : Part-Time
(b) Month & Year of Admission : JAN & 2018
(c) Whether provisional registration confirmed? : Yes/ No
If yes, give reference No. and date : -

3. Name of the Department / Centre where the research is conducted : Department of Electronics and Communication Engineering

4. Particulars of the Supervisor / Joint Supervisor

SUPERVISOR DETAILS:

Name / Reference No. : Dr. Umadevi K / 2830071
Designation : Professor
Department : Department of Electronics and Communication Engineering
Address : Sengunthar Engineering college, Tiruchengode, Namakkal
Email / Mobile. : kindlyuma@gmail.com / 9443035709

JOINT SUPERVISOR DETAILS:

Joint Supervisor : Not Applicable

5. Tentative title of the Research work: MSP S: MULTILEVEL STARVATION BASED PRIVACY PRESERVING USING SECURE KEYWORD SEARCHABLE ENCRYPTION STANDARD IN CLOUD ENVIRONMENT

6. Duration of research outside the University (if applicable) :

—

7. Break of study period (if applicable) :

—



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AR13 - Dt: 13-12-2018 14:29:05

Registration No.: 18134691183

SEMESTER PROGRESS REPORT July - December 2018

1. Particulars of Research Scholar

Name : Yogeshwaran A
Faculty : Information and Communication Engineering
Degree : Ph.D.
Email : er.yogesh85@gmail.com
Contact No. : 9944877208
Designation & Institution where employed (if applicable) : Assistant Professor, Electronics And Communication Engineering, Dhanalakshmi Srinivasan Engineering , TAMILNADU 621212



2. Registration Details

(a) Category of registration : Part-Time
(b) Month & Year of Admission : JAN & 2018
(c) Whether provisional registration confirmed? : Yes / No
If yes, give reference No. and date :

3. Name of the Department / Centre where the research is conducted : Department of Electronics and Communication Engineering

4. Particulars of the Supervisor / Joint Supervisor

SUPERVISOR DETAILS:

Name / Reference No. : Dr. Umadevi K / 2830071
Designation : Professor
Department : Department of Electronics and Communication Engineering
Address : Sengunthar Engineering College, Tiruchengode, Namakkal
Email / Mobile. : kindlyuma@gmail.com / 9443035709

JOINT SUPERVISOR DETAILS:

Joint Supervisor : Not Applicable

5. Tentative title of the Research work: DESIGN OF RECONFIGURABLE MICRO STRIP ANTENNA FOR RADAR APPLICATION

6. Duration of research outside the University (if applicable) : -

7. Break of study period (if applicable) : -



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AR15 - Dt: 17-12-2018 17:51:24



Registration No.: 17144697403

SEMESTER PROGRESS REPORT July - December 2018

1. Particulars of Research Scholar

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Faculty : Information and Communication Engineering
Degree : Ph.D.
Email : vijaypgpece@gmail.com
Contact No. : 8903674011
Designation & Institution where employed (if applicable) : Assistant Professor, Department of Electronics and Communication Engineering, Ambal Professional Group of Institutions, Palladam, Coimbatore, Tamilnadu 64166



2. Registration Details

(a) Category of registration : Part-Time
(b) Month & Year of Admission : JUL & 2017
(c) Whether provisional registration confirmed? : Yes / No ✓
If yes, give reference No. and date : —

3. Name of the Department / Centre where the research is conducted : Department of Electronics & Communication Engineering

4. Particulars of the Supervisor / Joint Supervisor

SUPERVISOR DETAILS:

Name / Reference No. : Dr. Umadevi K / 2830071
Designation : Professor
Department : Department of Electronics & Communication Engineering
Address : Sengunthar Engineering College, Tiruchengode, Namakkal
Email / Mobile. : kindlyuma@gmail.com / 9443035709

JOINT SUPERVISOR DETAILS:

Joint Supervisor : Not Applicable

5. Tentative title of the Research work: Performance analysis of MC-CDMA using MIMO in 5G Wireless Networks

6. Duration of research outside the University (if applicable) :

- Nil -

7. Break of study period (if applicable) :

- Nil -



CENTRE FOR RESEARCH

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Registration No.: 18144691366

AR13 - Dt: 31-05-2018 18:57:08

SEMESTER PROGRESS REPORT January - June 2018

1. Particulars of Research Scholar

Name : Venkateswaran N
Faculty : Information and Communication Engineering
Degree : Ph.D.
Email : venkywn@gmail.com
Contact No. : 9440188403
Designation & Institution where employed (if applicable) : Associate Professor, Computer Science And Engineering, Annapoorana Engineering college, SALEM, TAMILNADU 636308



2. Registration Details

(a) Category of registration : Part-Time
(b) Month & Year of Admission : JAN & 2018
(c) Whether provisional registration confirmed? : ~~Yes~~ / No ✓
If yes, give reference No. and date : NOT applicable

3. Name of the Department / Centre where the research is conducted : Department of Electronics & Communication Engineering

4. Particulars of the Supervisor / Joint Supervisor

SUPERVISOR DETAILS:

Name / Reference No. : Dr. Umadevi K / 2830071
Designation : Professor
Department : Department of Electronics & Communication Engineering
Address : Sengunthar Engineering College, Tiruchengode, Namakkal
Email / Mobile. : kindlyuma@gmail.com / 9443035709

JOINT SUPERVISOR DETAILS:

Joint Supervisor : Not Applicable

5. Tentative title of the Research work: Pattern Matching Inside the Context of Network Intrusion Detection Systems in Mobile AD HOC Network

6. Duration of research outside the University (if applicable) :

- NIL -

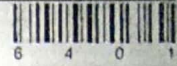
7. Break of study period (if applicable) :

- NIL -



Lr. No: SUPR/32nd/DB

File
28/5/19



Date : 24.05.2019

To

Dr. Ponmurugan P
Assistant Professor
Electrical and Electronics Engineering
Sri Krishna College of Technology
Coimbatore-641042

Sir/Madam,

Sub : Ph.D.Programme - Supervisor Recognition - Orders - Issued.
Ref : Your application for Supervisor Recognition.

I am by direction to inform that you are recognized as a Supervisor (Ref.No: 3330034) for guiding Ph.D. scholars of this University under the faculty of Electrical Engineering.

Area of Specialization: "Machine Design, Soft Computing, Control System"

The functions and responsibilities of the supervisor are described under clause (7) of the Ph.D.regulations of this University and applicable as and when amendments are made to the Regulations from time to time.

Supervisors working in the recognized R&D Centre of Industries/non-recognized research Departments of Engineering College/Architecture Schools situated within Tamil Nadu shall function only as Joint Supervisor.

I request you to adhere strictly the regulations (available in <https://cfr.annauniv.edu/research/instructions.php>) when you start guiding scholars.

In all future correspondence quote 3330034 for reference.

[Signature]
25/5/19
DIRECTOR

Copy to:

The Head
Electrical and Electronics Engineering
Sri Krishna College of Technology
Coimbatore-641042

R. E. [Signature]
24/5/19

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Ph.D./M.S(Research) Public
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Proceedings for Viva-Voce
Examination



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Particulars Submission



Synopsis / Thesis Status



Yearly Progress Report
Approval



Document Despatched
Status



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