Dr. K. RENGANATHAN

Objective	To pursue a challenging career in Engineering field, along with further enhancement of knowledge and skills towards Research & Development and Administration
Designation	Professor and Head, Department of Electronics and Instrumentation Engineering, Sri Sairam Engineering College, Chennai
Qualification	PhD, M.Tech, B.E
Area of Specialization	Industrial Fault Diagnosis and Fault Tolerant Control (Safety)
Qualification	**Doctor of Philosophy** *Fault diagnosis and Fault tolerant control* (2008-2012) SRM University, Kattankulathur, Kancheepuram District-603203, Tamilnadu, India. **Master of Technology** *Power Electronics* (2002-2004) Vellore Institute of Technology, Vellore, Tamilnadu-632014, India. *CGPA-8.33* **Bachelor of Engineering** *Instrumentation and Control* (1997-2001) Sathyabama Engineering College, Affiliated to University of Madras, Chennai, Tamilnadu-600119, India. *Percentage -73.8%*
Experience	**Teaching- 20 yrs, Industry/Polytechnic: NA**
Number of Workshops/ Conferences/ FDP/Online courses Attended/Completed	WORSHOPS-11 CONFERENCES- 14 FDP-05 ONLINE COURSE-12
Number of Workshops/ Conferences/ FDP Conducted/Delivered	WORSHOPS-05 CONFERENCES- 02 FDP-03
Publications	**Journals:** National: 02 International: 09 **Conferences:** National: 01 International: 16

Research Guidance:

Guided 35 UG projects till date

Obtained Guide ship in Anna University and currently a Recognized Supervisor in Faculty of EEE Reference No and Date : 21.03.21,29.05.2013

Guiding 5 Research Scholars in Anna University, Chennai and Co-guide for 1 Research Scholar under SRM University, Chennai

Acted as DC member for 8 PhD candidates and Currently DC member for 4 PhD candidates and acted as PhD Thesis examiner for one candidate

General:

Approved to serve as ABET Program Evaluator and successfully completed the training (PEV) at ABET Headquarters USA during May 2024

- **MoEs Institution Innovation council (IIC)-Member**
- **Defence Innovation (CDIIC)-Convener**
- **IEDC (Innovation and Entrepreneurship Development Centre)- Coordinator**

Appointed as Syllabus Sub Committee member for Anna University Reg2021 for the Departments of EIE and ICE

Acted as Session Chair in Many National / International Level Conferences / Symposiums

Acted as External examiner in numerous final year PG and UG project works

Regular question paper setter/auditor in Autonomous Engineering Institutions

Senior Active member of ISA, Membership No: 33138106, South India Section and Senior Active member of IEEE, Membership No: 92712198, Madras Section

Regular Reviewer for three International Journals- International Journal of ISA Transactions, Elsevier Publications; IEEE Systems, Man and Cybernetics Journal, and SAP Journal, USA

Achievements:

Instrumental in obtaining NBA certification and recertification for EIE department based on OBE during the years 2018-2021, 2022-2025.

IEDC Coordinator of College and have received a grant of Rs. 45 Lakhs for setting up IEDC Cell in the College

Principal investigator in receiving AICTE MODROBS fund of Rs.12 lakhs for “Modernization of Advanced process control and Automation lab”

Won the HOD of the year award by INSC Engineers for the academic year 2021

Have initiated Start up titled “Sai Krishna Automation solutions” (MSME Udyam Reg No: UDYAM-TN-08-0013544) to promote startup activities in the department

PHD THESIS TITLE:

Event based modeling and estimation techniques for fault diagnosis and fault tolerant control of systems

RESEARCH INTERESTS:

Event based modeling techniques; Petri net based modeling; Fault diagnosis and Identification; Fault Tolerant Control; Safety analysis; Cyber Physical Systems

EXPERIENCE:

S. No	Name of the Institution	Designation	Department	Period of Experience	Total Experience
1.	Vel's Srinivasa College of Engg and Technology	HOD In-charge	Electrical and Electronics Engg	June 2004-June 2006	2
2.	Sri Sairam Engineering College, West Tambaram	Associate Professor	Instrumentation and Control Engg	June 2006-July 2013	7
3.	Sri Sairam Engineering College, West Tambaram	Professor and Head	Electronics and Instrumentation Engg	(August 2013-till date)	11
				TOTAL	20

THEORY SUBJECTS HANDLED:

- Power Electronics and Drives
- Digital Signal Processing
- VLSI design
- Electrical Drives and Control
- Electrical Machines
- Control Systems
- Process Control
- Robotics and Automation
- Sensors and Transducers
- Advanced Control Systems

PhD RESEARCH SCHOLAR DETAILS:

S. No	Name of Scholar	Title of Research	Period	Status
1.	B. Uma Maheswari	Analysis of Flue Gas using Deep Learning Techniques	2021-2022	Confirmation completed (In process of Synopsis)
2.	N. Nithyarani	Advances in Fault diagnosis and Prognosis for Industrial Processes using Deep Learning Techniques	2023-2024	Confirmation completed
3.	H. Kala	Analysis of possible Vulnerability due to Depression	2024-2025	Course work
4.	A. Durgadevi	Detection and classification of brain tumor using image fusion technique and hybrid classifier	2024-2025	Course work
5.	G Suganya	An enhanced performance analysis of automatic Skin Cancer detection system using Deep Learning Technique	2024-2025	Course work
6.	R. Premkumar	A new configuration of Multi Level Inverter with reduced components count	2021-2022	Confirmation completed (In process of Synopsis)

UG PROJECTS GUIDED:

S. No	Title of the Project work	Period of Guidance
1	Voltage Sag Reduction and Power Quality Improvement using DVR	2023-2024
2	Modeling and Analysis of Battery Electrical Vehicle using MATLAB	2021-2022
3	Techniques for Smart Home Automation framework using Petrinets	2020-2021
4	Soil productivity and fertility using neuro fuzzy logic inference	2019-2020
5	Safety and hazard analysis for chemical process modeled by Petri nets	2019-2020
6	Rescue mechanism for borehole accidents using triangular omni directional robots	2018-2019
7	Multifunctional Agribot	2018-2019
8	Adaptive control of an autonomous Helicopter	2017-2018
9	Automated unit for wall painting using Arduino	2017-2018
10	Non-linearity compensation of LVDT using PID Controller	2016-2017
11	Modeling and analysis of process supply chain in pharmaceutical industries using hybrid Petri nets	2016-2017
12	Modeling ,analysis and performance evaluation of food safety and quality control monitoring using stochastic petrinets	2015-2016
13	Comparative study of controller behavior in non-linear CSTR	2015-2016
14	Design and fault tolerance analysis of quadruped robot	2013-2014
15	Design of Low Cost UAV hardware & Control Stability Analysis using simulation in Flight Gear	2013-2014
16	Analysis of various control schemes of a Binary Distillation Column	2012-2013
17	Petri net based fault accommodation for a Hybrid dynamic system	2011-2012
18	Petri net based Fault diagnosis and Identification	2010-2011

FDPs ATTENDED/GUEST LECTURES DELIVERED:

FDPs ATTENDED

S.No	Title of the Programme	Details of the Programme	Duration and Month/Year of Event
1.	ICPCS Short Term Training programme on Machine Learning and Deep Learning for Real Time Applications	Organized by Dept of ECE, NIIT Warangal, AP sponsored by DST, GOI	10 days Nov 29, 2019 to Dec 08,2019

2.	Workshop on "Process Automation using MATLAB"	Conducted by Intellectz Tech 4 all is association with Dept of EIE at SEC	3 days July 2018
3.	ISO 9001:2015 Training	Creative Management Consultants	1 day June 2018
4.	FDP on "Power Electronics for Renewable Energy Systems"	Conducted by Dept of EEE, Tagore Engg College	3 days January 2018
5.	Short term course on "Control systems design"	Dept of Avionics Engg, Indian Institute of Space Technology, Thiruvananthapuram, Kerala	5days December 2012
6.	Faculty Development programme on "Entrepreneurship"	TBI@KEC and EMDC, Kongu Engineering College, Perundurai, Erode inassociation with NSTEDB, GOI	15 days November 2011
7.	Staff Development programme on "FPGA and its Industrial applications"	Department of Instrumentation and Control Engineering, College of Engineering, Pune	15 days June 2010
8.	Faculty Development programme on "Process Control"	Department of Instrumentation Engg, MIT, Anna University	15 days December 2008
9.	Staff Development Programme on "Modern Controller Design Techniques"	Dept of Instrumentation & Control Engg, Manipal Institute of Technology, Manipal, Karnataka	15 days June 2008

GUEST LECTURES DELIVERED

S.No	Title of the lecture delivered	Details of the Programme	Month/Year of Event
1.	Discrete state variable technique and digital controller design	Computer Control of Circuits and systems	May 2022
2.	Performance Evaluation and Modeling	AICTE STTP on Green IOT for Smart Environment	February 2021
3.	Computer Control of Processes	FDP on Digital Logic circuits, Computer Control of processes and Biomedical Instrumentation	December 2020
4.	Resource Funding Opportunities	FDP on Recent Innovations in Electrical, Electronics, Instrumentation, Automation and Teaching pedagogy	May 2020
5.	Basics and Applications of DVM and Oscilloscopes	FDP on Electronic Instrumentation and Control Systems	November 2019
6.	PN Junction devices and Transistors &Thyristors	FDP on Electronic devices and Circuits	May 2019
7.	MPC and GPC in the space of computer control of process	FDP on Control strategy prediction between conventional and intelligent controllers	April 2018

8.	Multi loop and multivariable control	FDP on Computer Control of Processes	November 2017
9.	FDP on Electrical Measurements	Guest lecture Delivered at Dept of EIE, Valliammai Engg College	March 2017
10.	Anna University Sponsored 7 days FDTP on “Power Electronics” by EIE dept at SEC	Acted as coordinator of the Programme and delivered guest lectures	June 2015
11.	Introduction to two port networks	Anna University Sponsored Seven days FDTP on EE6201 Circuit Theory at Agni College of Technology, Chennai	December 2014
12.	Control systems and its Applications	Guest lecture delivered in Dept of EEE at Saveetha School of Engineering, Saveetha University, Chennai	August 2014
13.	Modeling and analysis using Petri nets	Topic delivered at FDP on Control systems sponsored by Anna University, Chennai in the Dept of EIE at KCG College of Technology, Chennai	December 2013
14.	Control Systems Engineering and its applications	Guest lecture delivered in Dept of ECE, Hindustan Institute of Technology, Padur	September 2013

JOURNAL PUBLICATIONS:

NATIONAL JOURNALS:

S. No	Paper Title	Journal Details	Publication details (Vol/Edition/Year
1.	Modelling, Analysis and Control of Multi Capacity Process Using Hybrid Petrinets	SSEC TECH Journal	Vol. 9, 2011
2.	Modelling and Simulation of Chemical Processes using Petri nets	SSEC TECH Journal	Vol.8, 2009

INTERNATIONAL JOURNALS:

AUTHORED

S. No	Paper Title	Journal Details	Publication details (Vol/Edition/Year and month of publication)
1.	Melanoma Skin Cancer detection using KNN and SVM classifier	Journal of Xi’an University of Architecture and Technology (UGC Care2 Journal)	Vol.14, No.1, pp-267-271, 17th Jan 2022

2.	Techniques for Smart Home Automation Framework Using Petrinets	International Journal of Critical Reviews (Scopus Indexed)	Vol.4, No.7, pp-1121-1230, 25th March 2020
3.	Safety and hazard analysis for chemical process modeled by timed Petrinets	International Journal of Research and Analytical reviews (UGC approved)	Vol.6, No.2, pp-155-163, April-June 2019
4.	Modeling, Analysis and Performance Evaluation for Fault Diagnosis and Fault Tolerant Control in Bottle-Filling Plant modeled using Hybrid Petri Nets	International Journal of Applied Mathematical Modelling, Elsevier Publications	Vol.37, No. 1, pp. 4842-4859, April 2013
5.	Performance evaluation and model checking in systems modeled as hybrid Petri nets	International Journal of Applied Mathematical Modelling, Elsevier Publications	Vol. 36, no.8, pp. 3941-3947, August 2012
6.	Petri net based approach for achieving on-line fault diagnosis and performance evaluation of real-time industrial processes	International Journal of Computer Applications (IJCA)	no.11, pp. 5-9, August 2011
7.	An observer based approach for achieving fault diagnosis and fault tolerant control of systems modeled as hybrid Petri nets	International Journal of ISA Transactions, Elsevier Publications	Vol. 50, no. 3, pp. 442-452, July 2011
8.	Observer Based On-Line Fault Diagnosis of Continuous Systems Modeled as Petri Nets	International Journal of ISA Transactions, Elsevier Publications	Vol. 49, no. 4, pp. 587-595, October 2010

CO AUTHORED

S. No	Paper Title	Journal Details	Publication details (Vol/Edition/Year and month of publication)
1.	Study of Fault Detection for Vision Based Robot Using Petri Net in Dynamic Obstacle Avoidance	International Journal of Research and Technology (IJERT)	Vol.1, no.8, pp.1-5, October 2012

CONFERENCE PROCEEDINGS:

S. No	Title of the paper	Conference Details	Month/Year of publication
1	Self Charging In E-Vehicle Using Two Batteries	2024 International Conference on Communication, Computing and Internet of Things, IC3IoT 2024 (Scopus Indexed)	April 2024

2	A Systematic Approach on Waste Water Treatment Using Predictive Analysis	2023 Intelligent Computing and Control for Engineering and Business Systems, ICCEBS 2023 Sri Sairam Engineering College (Scopus Indexed)	Dec 2023
3	Development of Interactive Boolean Algebra Lesson Using Unreal Engine 5	2023 Intelligent Computing and Control for Engineering and Business Systems, ICCEBS 2023 Sri Sairam Engineering College (Scopus Indexed)	Dec 2023
4	Development of Smart Energy Meter Based on IoT	2023 Intelligent Computing and Control for Engineering and Business Systems, ICCEBS 2023 Sri Sairam Engineering College (Scopus Indexed)	Dec 2023
5	Design of an Efficient LED Driver using Non Ideal Boost Converter for Lighting Applications	2022 IEEE International Conference on Future Trends in Smart Communities (ICFTSC) December 1-2, 2022, Borneo Conventional Centre Kuching Sarawak, Malaysia (Scopus Indexed)	Dec 2022
6	Review on Jaundice Detection in Neonates Using Image Processing	International Conference on Communication, Computing and Internet of Things, IC3IoT 2022 - Proceedings, 2022 (Scopus Indexed)	March 2022
7	Modeling and Evaluation of Cyber physical systems using Petrinets	4th IEEE International Conference on Computing and Communication Technologies, Sri Sairam Engineering College (Scopus Indexed)	Feb 2022
8	Techniques for smart home automation framework using Petrinets	International e-Conference on Green Technologies for Power generation, Communication and Health Care, St. Peter's Institute of Higher Education and Research, Chennai	June 2020
9	Safety and hazard analysis for chemical process modeled by Timed petri nets	National Conference on Signal processing, Communication and networking, NCSPCN-2019, Sri Venkateshwara College of Engineering, Chennai	March 2019
10	Soil productivity and fertility using neuro fuzzy logic inference	IEEE conference on Information, Embedded and Communication systems, ICIECS-2019, St josephs College of Engg, Chennai (Scopus Indexed)	March 2019

11	ICT as a potential tool in Outcome based Accreditation	4th WOSA International Conference, NBA, Delhi	September 2018
12	Estimation based fault diagnosis and identification in sequential industrial batch processes modeled as Hybrid Petrinets	IEEE Second International Conference on Computing and Communication Technologies (Scopus Indexed)	February 2017
13	Performance and stability analysis of a second order liquid level interacting system	International Conference on Electrical, Electronics and Computer science (ICEECS2014) held at Chennai	March 2014
14	Petri net based approach for achieving on-line fault diagnosis and performance evaluation of real time industrialprocesses	International Conference in VLSI, Communication and Instrumentation (ICVCI 2011) at Saintgits College of Engg, Kottayam, Kerala	April 2011
15	Observer based Approach for Determining Place Markings of Multi Capacity Systems Modeled as Hybrid Petri Nets	International Conference in Trends in Industrial Measurements and Automation (TIMA 2011) at CEERI centre, CSIR Complex, Taramani, Chennai	January 2011
16	Mathematical Approach for Modelling, Analysis and Control of Multi Capacity Process Using Hybrid Petri nets	International Conference on System Dynamics and Control (ICSDC-2010) by Dept of ICE at Manipal Institute of Technology, Manipal	August 2010
17	Mathematical Model for Fault Diagnosis and Control of Batch Process using Timed Petri nets	International Conference on Mathematical and Computational models (ICMCM-2009) by Dept of MCA at PSG College of technology, Coimbatore	December 2009
18	Modelling and Simulation of Continuous and Batch Processes using Petri nets	International Conference on Electrical Energy systems & Power Electronics in Emerging economics (ICEESPEEE-2009) by Dept of EEE at SRM University, Kattankulathur	April 2009

BOOKS/CHAPTERS PUBLISHED

S. No	Title of the Book/Chapter	Publication Details	Month/Year of publication
1	Current trends in artificial intelligence and machine learning: a comprehensive overview	Cutting edge technologies in health and allied science, ESN Publications	January 2023
2	Electronic Circuit Design	Scientific International Publishing House	March 2024

ONLINE COURSES UNDERGONE

S. NO	Name of the Course	Course Platform	Duration of Course	Date/Period of Completion
1.	Entrepreneurship-I-Laying the Foundation	Coursera	14 Hours	Feb 6, 2020
2.	Creativity and Entrepreneurship	Coursera	8 Hours	March 5,2020
3.	Complete Electric Circuit Course for Electrical Engineering	Udemy	10.5 Hours	March 31, 2020
4.	Complete Electrical Machines for Electrical Engineering	Udemy	14.5 Hours	March 31, 2020
5.	Step into Robotic Process Automation	Guvi	15 Hours	June 1, 2020
4.	IIC Online sessions conducted by IIC MHRD Innovation Cell	IIC	22 days	July 7, 2020
5.	ATAL FDP on Cyber-Physical Systems	AICTE and ATAL	5 days	07-11-2020 to 11-11-2020
6.	ATAL FDP on Artificial Intelligence	AICTE and ATAL	5 days	07-12-2020 to 11-12-2020
7.	ATAL FDP on Capacity Building	AICTE and ATAL	5 days	15-02-2021 to 19-02-2021
8.	NPTEL Online course on Road map for Patent creation	NPTEL and Swayam	8 weeks	Jan –March 2021 (obtained a score of 80% and elite + silver medal)
9.	NPTEL Patent Law for Engineers and Scientists	NPTEL and Swayam	12 weeks	Jan-Apr-2022 56%
10	NPTEL Managing Intellectual Property in Universities	NPTEL and Swayam	4 weeks	July-Aug 2022 57%
11	NPTEL Patent Drafting for Beginners	NPTEL and Swayam	4 weeks	July-Aug 2022, July-Aug 2023 45%, 64%
12	NPTEL Introduction On Intellectual Property To Engineers And Technologists	NPTEL and Swayam	8 weeks	Jan-Apr 2023 63%
13	NPTEL Innovation by design	NPTEL and Swayam	8 weeks	July-Aug 2023 53%

PATENT DETAILS

S. No	Title	Type	Application No	Patent Filing date	Status
1.	Automated Safety system for Driver and Pillion Rider in Two Wheeler	Application	202041043044	09.10.2020	Application in Hearing
2.	Computation and Governance of Driver's Performance Using Machine Learning	Application	202041056851	08.01.2021	Reply Filed. Application in amended examination
4.	Efficient charging strategies: grid-integrated pv-solar EV charging modes	Application	202441039777	31.05.2024	Awaiting Request for Examination
5.	Machine learning analysis of teacher social support effects on student emotions	Application	20241104209	07.06.2024	Awaiting Request for Examination
6.	The role of machine learning and biotechnology in autonomous harvesting and data driven management for advancements in agriculture	Application	202441041428	07.06.2024	Awaiting Request for Examination
7.	Machine learning and IoT for predicting electric power and optimising features based on soil moisture in agriculture	Application	202441048130	05.07.2024	Awaiting Request for Examination
8.	Predicting academic engagement: machine learning analysis of teacher social support effects on student emotions	Application	202411042090	07.06.2024	Awaiting Request for Examination
9.	The role of machine learning and biotechnology in autonomous harvesting and data driven management for advancements in agriculture	Application	202441041428	07.06.2024	Awaiting Request for Examination
10.	Bicycle Storage Rack using Solar Light as a Power Source	Design	350756-001	05.10.2021	Granted 04-01-2023

PROJECT WORKS UNDERGONE:

Qualification	**:**	**Doctor of Philosophy**
Project title	**:**	**Research studies for On-line Fault Diagnosis of Real Time Industrial processes modeled as Petri nets**
Duration	**:**	3 months
Company	**:**	Chennai Petroleum Corporation Limited (unit of IOCL) Manali, Chennai, Tamilnadu, India.
Project Description	**:**	The work involved in the real-time data collection and for carrying research studies on real-time Industrial processes. The plant taken for study was SRU plant of CPCL, limited.
Qualification	**:**	**Master of Technology**
Project title	**:**	**IGBT based Digital Control Unit for Brushless DC Generator of Main Battle tank (ARJUN)**
Duration	**:**	12 months
Company	**:**	Combat Vehicles Research and Development Establishment (CVRDE), Avadi, Chennai, Tamilnadu, India.
Project Description	**:**	The project involved in the fabrication and development of a Hardware and assembly program using 8051 Microcontroller to control the output voltage and provide necessary protection for over voltage and over current of Brushless DC Generator present in the Main Battle tank- Arjun. This was an indigenisation project completed successfully in the organisation for the imported product (Control unit) present along with the generator.
Qualification	**:**	**Bachelor of Engineering**
Project title	**:**	**Automatic Controller for Liquid Infusion With Computer Interface**
Duration	**:**	6 months
Company	**:**	Sundaram Medical foundation, Chennai, Tamilnadu, India
Project Description	**:**	The project involved in the development of hardware model and a software program written in C language for controlling the amount of fluid (saline) infused into the body of a person and continuous monitoring with the help of a Computer. This was an innovative biomedical project submitted with fulfillment for completion of course work.

SOFTWARE SKILLS:

Operating Systems	:	MS Dos, Windows XP, Windows 10 and Windows 9x
Languages	:	C
Applications	:	Matlab, PSpice, VI LabVIEW, PLC and SCADA
Others	:	MS-Office 2024, MS-Excel 2024

PERSONAL TRAITS:

- ✓ Hard working and team minded
- ✓ Willingness to learn
- ✓ Possessing good communication skills

PERSONAL DETAILS:

Age	:	45 years (27-07-1980)
Marital status	:	Married, 2 sons
Languages Known	:	English, Tamil, Hindi and Telugu
Passport Number	:	W8487569, Chennai, Tamilnadu, India

REFERENCES:

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DECLARATION

I hereby declare that the above information's furnished by me are true to the best of my knowledge.

Yours faithfully,

(Dr. K. RENGANATHAN)