Dr. P Rajalakshmi,
Professor,
Department of Electrical Engineering, IIT Hyderabad,
Dean Students, IIT Hyderabad
CYIENT CHAIR PROFESSOR IN Future Communications,
Project Director, Technology Innovation Hub on Autonomous Navigations (TiHAN-IITH),
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- **Academics**

University of Madras	B.E. in Electronics and Communication Engineering	1999
Indian Institute of Technology Madras	M.Tech in Electrical Engineering (Communication Systems)	2001
Indian Institute of Technology Madras	Ph.D. in Electrical Engineering (Communication Systems)	2009

- **Appointments**

July 2019 -till date	Professor, Department of Electrical Engineering, IIT Hyderabad, India
July 2015-June 2019	Associate Professor, Department of Electrical Engineering, IIT Hyderabad, India
Aug 2009-June 2015	Assistant Professor, Dept. of Electrical Engineering, IIT Hyderabad, India
Feb 2001-July 2002	Lecturer, Ushamartin Institute Communication and Technology, IIT Madras.

- **Administrative Roles at IITH:**

Some Key roles are -

- **Dean of Students** since November 2019
- Girls Hostel Warden 2010-2019
- Member of Institute Space Committee 2018-21

- **Membership of National/ International Academies/ Professional Bodies:**
  - Member of Expert Committee - Engineering Sciences (Start-up Research Grant & National Post-Doctoral Fellowships and Early Career Research Award Schemes) since July 2021.
  - Selection Committee member for post of Director - Project Monitoring (PM) at the office of Director General of Missiles and Strategic Systems DG(MSS), DRDO, Hyderabad.
  - Mentor for the identified start-ups as part of BHUMI (BSF High-tech Undertaking for Maximizing Innovation) challenge.
  - Jury member for DRISHTI grand challenge undertaken by MEITY on Strengthening Border Security.
  - Technical Expert for evaluation of Project regarding 'Dhaara smart flowmeter' at Initial Screening Committee Technology Development Board (TDB), DST, Govt. of India.
  - Mentor for Dr. Urmila from Dr. D. Y. Patil Institute of Technology, Pimpri, Pune, under the SERB-TARE scheme.

- **Entrepreneurial Activities:**
  1. Member of Confederation of Indian Industries (CII) Telangana, Digital Transformation and IT Panel since August 2018.
  2. Mentor of Start-up company SKIoT - incubated under i-TIC IIT Hyderabad, Founders - 2 PhD students from my lab.
  3. Mentor of Start-up CRIoT.

- **Research Interests:**

  Autonomous Navigation Technologies: Aerial/Terrestrial, Autonomous Navigation Testbed/Living Lab, Drone Based Sensing, Cyber Physical Systems (CPS)/Internet of Things (IoT), Wireless Sensor Networks, Embedded Systems.

  Application Areas: Smart Transportation – Terrestrial and Air-Borne, Agriculture, Healthcare, Environmental, Sensors like LIDAR, Hyperspectral/Multi-spectral/RGB Imaging are being used for these applications.

- **Ongoing/Completed Sponsored R&D Projects:**

1. PI in **'ADAS for point-to-point navigation system for autonomous car adaptable to Indian scenarios,** by Suzuki Motor Corporations, Japan, Rs. 3.976 Crores, September 2021 – Aug 2024.
2. PI in '***Real-Time Edge Computing Architectures for LiDAR-based Intelligent Transportation System*', by MeiTY, Rs.198.9655 lakh, March 2021 – Feb 2024.
3. PI in '***Technology Innovation HUB TIH on Autonomous Navigation and Data Acquisition Systems (UAV, RoV..)***' under **DST's NM-ICPS, March 2020 – March 2025.**
4. PI in '***AI based High Throughput Phenotyping to Accelerate Crop Improvement through Crop images Captured from Unmanned Aerial Vehicle (UAV) with On-Vehicle Sensors'*** Period Nov 2018-Nov 2021, Meity, Rs. 1 Crore
5. Co-PI in '***Design and Fabrication of Passenger Drone'***, 15 March 2019- 14 March 2022, Meity, Rs. 8.54253 Crores
6. Co-PI in '***IoT-based 3D printed time lapse smart microscope for embryo monitoring in IVF clinics***", SERB, DST, IMPRINT, 24 DEC 2018-24 Dec 2021, Rs. 71.896 Lakhs
7. Co-Investigator in '***5G Testbed'***, Period: 2018-2021, DoT, Rs. 66 Crores
8. Co-Investigator in ***"Data Science-based Farming Support System for Sustainable Crop Production under Climatic Change (DSFS) project***", Period: 06 February 2017 to 05 Feb 2022, DST-JST, Rs. 4.88 Crores
9. Co-Investigator in ***SATREP- m2SMART*** Project; May 2017 - 2022, JICA-JST funded
10. Principal Investigator in ***"IoT for Smarter Healthcare"*** funded by Department of Information and Technology (DeiTy), India, Period: March 2013 to Feb 2016, Project Cost: Rs. 3.94 Crores
11. Principal Investigator in "***Mobile Sensor Networks Technologies"*** funded by KDDI R&D Labs, Japan, Period: March 2011 to April 2015, Project Cost: USD 100000
12. Co-Investigator in 'Center for Healthcare Entrepreneurship', launched on 3rd December 2015. Funded by Raj and Avi from USA
13. Co-Investigator in "***IoT-eHealth"*** funded by Department of Science and Technology (DST) under IUATC project, Period: Oct 2012 to April 2015
14. Co-Investigator in "***Converged Cloud Communication Technologies"*** funded by Department of Information and Technology (DeiTy) India, Period: 2014 to 2019
15. Co-Investigator in "***Cyber Physical Systems"*** funded by Department of Information and Technology (DeiTy) India, Period: 2011 to 2016
16. Co-Investigator in "***Pervasive Sensor Environment"*** Project funded by Department of Science and Technology (DST) India and EPSRC (UK) under IUATC, Period: Sept 2009 to Sept 2012
17. Co-Investigator in "***Cognitive Radio"*** Project funded by Department of Information and Technology (India), Period: 2010 to 2013

- **Copyrights:**

1. **P. Rajalakshmi** and Digvijay S Pawar “Layout Design of Testbed for the Development of Autonomous Navigation Systems used in Ground and Aerial Vehicles”, March 2021, and the application has been assigned Dairy No. 6114/2021-CO/A.

- **Patents:**

1. **P. Rajalakshmi** and Naga Praveen Babu Mannam, "Energy efficient biomimetic Nano Aerial Vehicle and method for generating energy," December 2021, and The Application Has Been Assigned Number: 202141057570, TEMP/E-1/65432/2021-CHE.
2. **P Rajalakshmi**, A U G Sankararao, "System and Method for Hyperspectral Imager Interface on UAV for Data Acquisition", Application number: 202141042862, TEMP/E-1/48420/2021-CHE, September 2021.
3. **P.Rajalakshmi,** Bhaskar Anand, Mrinal Senapati, and Vivek Barsaiyan, “Techniques for Real-Time Accurate Geo-Referencing of Objects Using LiDAR”, May 2021, and the application has been assigned number: 202141020099.
4. **P. Rajalakshmi,** Naga Praveen Babu Mannam, “Techniques for improved Maneuverability of Bioinspired Quad Wing Unmanned Aerial Vehicle”, April 2021, and the application has been assigned number: 202141017174, TEMP/E-1/19042/2021-CHE.
5. **P. Rajalakshmi**, Shreeshan S, "A Method for Detecting Flight Path for Unmanned Aerial Vehicles based Imaging", August 2020, assigned number: TEMP/E- 1/36911/2020-CHE.
6. **P. Rajalakshmi**, Subhra S, IITH LORA Mote - Low-Power Long Range, July 2019, TEMP/E-1/31845/2019-CHE.
7. **P. Rajalakshmi**, Ajay Kumar, ”Discrimination of Filled and Unfilled Grains of Rice Using Thermal Images”, 14 May, 2019 and the application has been assigned number TEMP/E-1/20223/2019-CHE.
8. **P.Rajalakshmi,** M.P.R.Saikiran, Akshay Jhadav ,”Non-invasive IoT Enabled Power Monitoring Using a Split Architecture for Centralized Voltage Measurement”, 6th August, 2018 and the application has been assigned number TEMP/E-1/32193/2018-CHE.
9. **P.Rajalakshmi,** M.P.R.Saikiran, Akshay Jhadav ,”Fully Non-invasive Self-sustaining Current Monitoring Device Using Magnetic Flux Based Energy Harvesting”, 6th August, 2018 and the application has been assigned number TEMP/E-1/32196/2018-CHE.
10. **P. Rajalakshmi,** M P R Sai Kiran, Jagadish B, “On-chip System Architecture for Low Complex DWT based Eye Blink Identification for Controlling IoT Environments”, 27th March, 2017 and the application has been assigned number 201741010868, TEMP/E1/10971/2017CHE
11. **P Rajalakshmi**, U B Desai, Thirumurugan R, Akshay Jhadav, “Ultra-compact Internet of Things (Iot) enabled power monitoring module”, Appln. No. 5376/CHE/2015, 7 October 2015.
12. **P Rajalakshmi,** U B Desai, Vivek Akkala, “GPS tracking and Cloud based Secure Ultrasound system with Computer-Aided-Diagnosis (CAD) for preliminary diagnosis”, Appln. No. 6294/CHE/2014, 12 December 2014.
13. **P Rajalakshmi,** Divya Krishna, R Bharath, “Cloud based secure portable ultrasound imaging system for validating ultrasound video and GPS based tracking”, Appln. No. 6295/CHE/2014, 12 December 2014.
14. **P Rajalakshmi** et al, “A high speed and low complex beam-former system to transmit signals and method thereof”, Appln. No. 1249/CHE/2014, 11 March 2014.

- **Honors/Awards/ Achievements:**

1. Awarded ‘**CYIENT Chair Professor in Future Communications**’ at IITH, from April 2021 for a period 3 years.
2. **Project Director** – since March 2020 - “Technology Innovation HUB on Autonomous Navigation and Acquisition Systems (TiHAN)” a project funded by DST under NM-ICPS for a period of 5 years.
3. Awarded **Visveswaraya ‘Young Faculty Research Fellowship’** under Visvesvaraya PhD scheme for Electronics and IT of DeitY from January 2016 for a period of 5 years.

4. Recipient of 'Digital Trail Blazer Award 2016' by India Today in December 2016 at National Level.
5. Outstanding Paper Award, "A Novel Computer-aided diagnosis framework for Deep Learning for classification of Fatty Liver Disease in Ultrasound Imaging" won in IEEE Healthcom 2018.
6. "Outstanding Paper Award, "A Novel classification framework for EEG Based Four class motor imagery using Kullback-Leibler Regularised Riemannian Manifold" won in IEEE Healthcom 2018.
7. Kumar, Mahesh Taparia, P. Rajalakshmi: Best oral presentation in Plant Science Symposium 2018
8. Non-invasive power monitoring technology won Silver Medal in International Innovation Fair (IIA) 2017 held at Vizag.
9. "Ultra Compact IoT Enabled Power Monitor Device" won the Bronze Medal in Seoul International Invention Fair 2016.
10. "Implementation of diagnostically driven compression algorithms via WebRTC for IoT enabled tele-sonography" won the "Best Paper Award" in IECBES 2016 (IEEE EMBS Conference of Biomedical, Engineering and Sciences).
11. "Digital Trail Blazer Award" for Telangana by India Today in June 2016.
12. IoT Enabled Power Monitor was part of the showcase at India International Innovation Fair at Bangalore 9-11 sep 2016 which bagged the following awards:
    a. Gold medal - Best National Invention from International Federation of Inventors' Association (IFIA).
    b. Gold medal - Recognition of Creativity & Innovation - IIIFair 2016.
    c. Gold medal - Contribution To Innovation from Republica Portuguesa.
13. Awarded as an "INDIA's Most Inspiring Women Engineer/Scientist" for the year 2014 by Engineering Watch. http://women.engineeringwatch.in
14. IETE-M N SAHA MEMORIAL AWARD for the best application oriented paper, "Analytical Performance Computation for the Optical Networks with wavelength converters", year 2009.
15. Secured University rank during B.E. program

- **Technology Outcomes of Ongoing R&D activities:**

Actively involved in various R&D activities related to autonomous navigation technologies, drone based sensing, wireless sensor networks and IoT/CPS applications. Some of them are listed below:

- IIT Hyderabad has been granted with the **DST NM-ICPS Technology Innovation Hub on Autonomous Navigation and Data Acquisition Systems (UAVs, ROVs, etc.) – TiHAN**, with a funding outlay of 135 Crores INR for a period of 5 years. This is an interdisciplinary project which involves 40 faculty from different Departments like Electrical, Computer Science, AI, Civil, Mechanical, Design, Liberal Arts, and Entrepreneurship. An interdisciplinary 2 year M.Tech program on Smart Mobility is launched at IIT Hyderabad, where she is the faculty coordinator. As part of this DST NM-ICPS TiHAN Foundation, a Section 8 Company which importantly focuses on the R&D, skill development, innovation and entrepreneurship development, Industry, National and International collaborations, in the broad areas of autonomous navigation systems is established. Also, as part of this industry and academic collaborations are leveraged. These include both national and international agencies including: Suzuki Motor Corporation Japan, Maruti Suzuki India Pvt. Ltd., NVIDIA, Altran, ANRA, ARAI Pune, CDAC Hyderabad, CDAC Trivandrum, IIT Dharwad, IIIT Dharwad, IIIT Sri City, ICRISAT Hyderabad, etc. This international collaboration will significantly aid in realizing the utilization of autonomous navigation systems (both aerial and ground) in the Indian context.
- As part of this project, we have taken an initiative for setting up a state-of-the-art **Testbed/Living Lab for Autonomous Navigation (aerial and ground vehicles)** at IITH campus. The facilities include proving grounds, test tracks, connected vehicle (V2X) environments, signalized and unsignalized intersections, rain-fall emulators, smart poles, mechanical integration facilities, UAV testing, and developmental facilities, edge compute and networking infrastructure. This facility is envisaged to be a platform for enabling joint

collaborative research across industries, academia, and R&D labs focusing on autonomous navigation, both national and international. Strong industry collaboration has been established where more than 15 industries have come forward to collaborate with IIT Hyderabad in the area of Autonomous Navigation. An international collaboration has been established with the Suzuki Motor Corporation, Japan in the R&D of autonomous driving technology to develop point-to-point navigation systems using multi-sensory perception, as part of which, vehicles are sent to IIT Hyderabad from Japan for R&D purpose.
More details: https://tihan.iith.ac.in/

- Researching on autonomous aerial vehicles which include bio-inspired and small category (micro/nano) drones, UAVs for urban air mobility, and air cargo applications. Technologies for accurate navigation, navigation in GPS denied environment, marker-based precision landing are being researched and developed. Working on end-to-end multi-modal transportation which includes end/first-mile connectivity including e-bikes, shuttle vehicles, and aerial vehicles.
- Researching on high throughput phenotyping methodologies using Drones/UAVs using RGB, multispectral camera in agriculture to aid the agriculture scientist identify the best breed of crop in terms of disease resistance, high yield.
- Researching on 3D point cloud data generated from LiDAR and Real-Time Edge Computing Architectures for LiDAR data for Intelligent Transportation Systems and multi-modal traffic analysis including drones.
- **IITH LoRA mote** – To enable long range communication in the IoT application which requires lower data rate, in-house designed LoRA based communication platform has been successfully designed and developed which is being used for agriculture, security applications.
- **IoT Enabled Soil Moisture probe:** Developed soil moisture sensor based on fringing electric field (FEF) technology to measure the soil moisture in the crop field and optimize the irrigation process. This technology provides good accuracy at required measurement range of soil moisture content and is also cost effective. The probe can measure soil moisture at multiple depths.
- **Ultra-compact IoT Enabled Power Monitoring Device**: IoT Enabled Power Monitor is designed and developed at IIT Hyderabad. It is a low-cost and compact solution for monitoring power consumption of any electric equipment. It wirelessly sends data to server computer, where it is stored for graphical visualization and analysis. To prevent intermediate tampering of power values by any intruder, the data is encrypted. The metering and communication modules are integrated along with non-invasive clip-on current sensor in a compact custom made 3d printed casing designed at IITH facilities. This technology has won awards and has been commercialised through a start-up at IITH by 2 PhD students through SkIoT Technologies.
- **IITH micro-mote** – Inhouse designed and developed 802.15.4 standards complaint wireless sensor node. General purpose mote which can interface any sensor (with appropriate signal conditioning) like environmental monitoring, smart buildings, agriculture monitoring, etc. IITH mote is shared for R&D activities at IISc Bangalore, Walchand college of Engineering, Sangli, IIIT Allahabad.
- Wireless Air pollution Monitoring System developed to sense gases like O2, CO2, CO, temperature, humidity with IITH mote as communication module. The module is self-powered using SOLAR panels and is also weather proof. This system is deployed in the city like Panjaguta area, nearby places like Shankarpally for collecting pollution data. Also 5 nodes are permanently deployed in the campus since 2011 collecting the data and sending to server automatically.
- CPS based Smart Room prototype at IITH – Energy efficient smart room based on Wireless sensor and actuator network is deployed in the CPS lab, where the electrical loads are controlled based on the context. Around 30% saving in energy is observed from the deployment. Smart phone based control of the smart room is also realized. In house

power monitoring modules were developed as part of smart room, which can be potential smart meter with appropriate enhancements.

- Mobile Sensor Networks: Smart phone based Field Deployment advisor tool is developed, which identifies the topology of the deployed wsn, remove the redundant nodes, identify the most energy starved node in the network and advice the deployer to overcome the problem of hot spots in the network
- FPGA based prototype of IoT enabled ultrasound scanning system is developed with biometric authentication and GPS tracking. The system has the smart signal processing features like preliminary CAD and organ validation algorithms on the device itself which will aid Tele radiology.
- IoT chipset development: Baseband processing for 802.14.5 for both the Tx/Rx is validated on FPGA platform. This is integrated with the RF frontend which is submitted for tape out.
- Modelling of accurate energy efficient MAC algorithms for high density bidirectional traffic in IoT/CPS networks is carried out. C based simulator for the Contention based MAC is ready. This is a powerful platform to test and validate any modified MAC that would be required for IoT/CPS applications.
- Long Range – Emergency Alarming System based on LoRa was designed and developed. Anybody requiring help, press the switch, which alert the rescue team on their mobile phone along with the MAP location information.

Details can be seen in https://www.iith.ac.in/~raji

- **Research Publications:**

Journals: 38 (Accepted and Published**)**
Conferences: 129 (Accepted and Published)

List of Journals Publications:

1. A. K. Nain and **P. Rajalakshmi** "A Cyclic Prefix based Secure Side-Channel (CP-SSC) over OFDM for LTE D2D Sidelink Communication" Accepted in Physical Communication, October 2021.
2. B. Anand, M. Senapati, and V. Barsaiyan, and **P. Rajalakshmi** "LiDAR-INS/GNSS Based Real-Time Ground Removal, Segmentation and Georeferencing Framework for Smart Transportation" in IEEE Transactions on Instrumentation and Measurement, vol. 70, pp. 1-11, 2021, Art no. 8504611, DOI: 10.1109/TIM.2021.3117661.
3. Shreeshan S, Subhra Shankha Bhattacherjee, Gattu Priyanka, **P. Rajalakshmi,** and Jana Kholova, "Fully Automated Region of Interest Segmentation Pipeline for UAV based RGB Images" in Elsevier Biosystems Engineering Journal, 2021.
4. Ajay Kumar**, P. Rajalakshmi** "Efficient Maize Tassel-Detection Method using UAV based Remote Sensing" accepted in Elsevier: Remote Sensing Applications: Society and Environment.
5. D. Santhosh Reddy, **P. Rajalakshmi,** and Mateen M.A. "A Deep Learning Based Approach for Classification of Abdominal Organs using Ultrasound Images" in Elsevier: Biocybernetics and Biomedical Engineering, Volume 41, Issue 2, 2021, Pages 779-791, ISSN 0208-5216, DOI: 10.1016/j.bbe.2021.05.004.
6. A. R. Jadhav, M. P. R. Sai Kiran, and **P. Rajalakshmi** *"Development of a Novel IoT Enabled Power Monitoring Architecture with Real-time Data Visualization for use in Domestic as well as Industrial Scenarios"* in IEEE Transactions on Instrumentation and Measurement, 2020, DOI: 10.1109/TIM.2020.3028437.
7. Ajay Kumar, Mahesh Taparia, Madapu Amarlingam, **P. Rajalakshmi** ,Balram M., and U.B. Desai, *"Discrimination of filled and unfilled grains of rice panicles using thermal and RGB images"* in Journal of Cereal Science, vol. 95, pp.103037, 2020, DOI: 10.1016/j.jcs.2020.103037
8. M.Amarlingam, K V V Durga Prasad, and **Rajalakshmi P**. ,S. S. Channappayya, C. S. Sastry, *"A Novel Low-complexity Compressed Data Aggregation Method for Energy-constrained IoT*

Networks " in IEEE Transactions on Green Communications and Networking, Vol. 4, no. 3, pp. 717-730, Sept. 2020, DOI: 10.1109/TGCN.2020.2966798.

9. Jagadish, B., P. K. Mishra, M. P. R. S. Kiran, and **P. Rajalakshmi**. "A Real-Time Health 4.0 Framework with Novel Feature Extraction and Classification for Brain-Controlled IoT-Enabled Environments." *Neural Computation* 31, no. 10 (2019): 1915-1944.
10. **Rajalakshmi, P.,** D. Santhosh Reddy, and R. Bharath. "CNN based framework for representative detection of liver images for CAD and tele-sonography applications." *CSI Transactions on ICT* (2019): 1-5.
11. Kiran, M. P. R. S., and **P. Rajalakshmi**. "Saturated Throughput Analysis of IEEE 802.11 ad EDCA For High Data Rate 5G-IoT Applications." *IEEE Transactions on Vehicular Technology* 68, no. 5 (2019): 4774-4785. doi: 10.1109/TVT.2019.2903890.
12. **Rajalakshmi, P**. "On building a smarter ecosystem using the internet of intelligent things: progress and future challenges." *CSI Transactions on ICT* (2019): 1-8.
13. M. P. R. S. Kiran and **P. Rajalakshmi**, "*Performance Analysis of CSMA/CA and PCA for Time Critical Industrial IoT Applications,*" in *IEEE Transactions on Industrial Informatics*, vol. PP, no. 99, pp. 1-1. doi: 10.1109/TII.2018.2802497 https://doi.org/10.1109/TII.2018.2802497
14. M. P. R. S. Kiran, V. Subrahmanyam and **P. Rajalakshmi**, "Novel Power Management Scheme and Effects of Constrained On-node Storage on Performance of MAC Layer for Industrial IoT Networks," in *IEEE Transactions on Industrial Informatics*, vol. PP, no. 99, pp. 1-1. doi: 10.1109/TII.2017.2766783.
15. A. K. Nain, A. Z. Mohammed*, J. Bandaru, A. Kumar, D. S. Reddy, **Rajalakshmi.P.,** "A Residual Phase Noise Compensation Method for IEEE 802.15.4 Compliant Dual-Mode Receiver for Diverse Low Power IoT Applications" in *IEEE Internet of Things Journal*, January 2019, doi: 10.1109/JIOT.2018.2884654
16. Ajay K. Nain, Jagadish Bandaru, Mohammed A Zubair**, P. Rajalakshmi** " *A Secure Phase-Encrypted IEEE 802.15.4 Transceiver Design*", *IEEE Transactions on Computers*, 22 Feb 2017. https://doi.org/10.1109/TC.2017.2672752
17. M. Amarlingam, **P. Rajalakshmi**, "Smartphone Based Acoustic Navigation Tool for IoT Networks", Wireless Personal Communications, Springer Science+Business Media, LLC, part of Springer Nature 2019, 4 May 2019, https://doi.org/10.1007/s11277-019-06484-x
18. Amarlingam M, P. K. Mishra, **Rajalakshmi.P**, Sumohana S. Channappayya, C. S. Sastry, "*Novel Light Weight Compressed Data Aggregation Using Sparse Measurements for IoT Networks*", *Elseviers Journal of Network and Computer Applications, Jun. 2018.*
19. Francis Kalloor Joseph, **Rajalakshmi.P**., Dr Navalgund Rao, Mr Bhargava Chinni, Prof.Vikram Dogra, Dr.Sumohana Channappayya "Multiview Spatial Compounding Using Lens-Based Photoacoustic Imaging system" Accepted in *Photoacoustics journal* (PACS-2018).
20. Kalloor Joseph, Francis, Chinni Bhargava, Channappayya Sumohana, **Rajalakshmi.P,** Dogra Vikram Rao Navalgund, *"Two sided residual refocusing for acoustic lens based photoacoustic imaging system"* in IOP Physics in Medicine and Biology (iopscience-2018), DOI: 10.1088*1361-6560*aac8c5.
21. R. Bharath, **P. Rajalakshmi**, M. A. Mateen, "*Multi-modal framework for automatic detection of diagnostically important regions in nonalcoholic fatty liver ultrasonic images* ", *Elsevier Biocybernetics and Biomedical Engineering*, 2018.
22. M. Subrahmanyam, V., Zubair, M.A., Kumar, A. and **P. Rajalakshmi**, "*A Low Power Minimal Error IEEE 802.15.4 Transceiver for Heart Monitoring in IoT Applications*", in *Wireless Personnel Commun Springer* (2018). https://doi.org/10.1007/s11277-018-5255-y
23. Bharath, R., Pradeep Kumar Mishra and **P. Rajalakshmi**, "*Automated quantification of ultrasonic fatty liver texture based on c3urvelet transform and SVD*," in Biocybernetics and Biomedical Engineering (2017). https://linkinghub.elsevier.com/retrieve/pii/S0208521617303571.
24. M. P. R. S. Kiran, Prasad, Y.R.V., **P. Rajalakshmi**, " *Modeling and Analysis of IEEE 802.15.4 Multi-hop Networks for IoT Applications*", in Wireless Personal Communications, Springer. 30 November 2017. vol. PP, no. pp. 1-20. http://link.springer.com/article/10.1007/s11277-017-5082-6.

25. Francis, K. J., Chinni, B., Channappayya, S. S., **P. Rajalakshmi,** Dogra, V. S., & Rao, N. "*Characterization of lens based photoacoustic imaging system*", in Photoacoustics, 23 September 2017. vol. PP, no.8, pp. 37-47. https://ac.els-cdn.com/S2213597917300216.
26. K. Divya Krishna, Vivek Akkala, R. Bharath, **P. Rajalakshmi**, Mohammed Abdul Mateen, S. N. Merchant, and U. B. Desai *" Computer Aided Abnormality Detection for Kidney on FPGA based IoT Enabled Portable Ultrasound Imaging System*", Elsevier IRBM - Innovation and Research in BioMedical Engineering. 2016, http://dx.doi.org/10.1016/j.irbm.2016.05.001
27. Bharath, Punit Kumar, Chandrashekar Dusa, Vivek Akkala, Suresh Puli,Harsha Ponduri, K. Divya Krishna, **P. Rajalakshmi** , S. N. Merchant, Mohammed Abdul Mateen and U. B. Desai,"*FPGA based Portable Ultrasound Scanning System with Automatic kidney detection,*" in Journal of Imaging 2015, 1, pp. 193-219; doi:10.3390/jimaging1010 September 2015 .
28. Thejaswini. M, **Rajalakshmi. P**, U. B. Desai, "*Novel Sampling Algorithm for Human Mobility Based Mobile Phone Sensing,*" Internet of Things Journal, IEEE, vol. no.2, no.3, pp. 210-220. DOI: 10.1109/JIOT.2014.2388074, 19 May, 2015.
29. Pavana Ravi Sai Kiran, M**., Rajalakshmi, P**.; Krishna, Y.S.; Acharyya, A., "*System Architecture for Low-Power Ubiquitously Connected Remote Health Monitoring Applications With Smart Transmission Mechanism,*" in Sensors Journal, IEEE, vol.15, no.8, pp.4532-4543, 16 March 2015, doi: 10.1109/JSEN.2015.2413836.
30. Raja Vara Prasad Y, M.P.R.S. Kiran, **Rajalakshmi. P**, "*Reliability and Delay Analysis of Slotted Any Cast Multi-hop Wireless Networks Targeting Dense Traffic IOT Applications,*" IEEE communication Letters, 9-Feb, 2015, vol.19, no.5, pp.727 - 730 DoI: 10.1109/LCOMM.2015.2401582
31. Thejaswini. M, **Rajalakshmi. P**, U.B. Desai, "*Duration of Stay Based Weighted Scheduling Framework for Mobile Phone Sensor Data Collection in Opportunistic Crowdsensing*", Peer-to-Peer Networking and Applications: Crowd Sensing Networks, Springer, July 2016, Vol.9, no.4, pp. 721-730.
32. Maheswari, S., Acharyya, A., **Rajalakshmi, P.**, Puddu, P.E. and Schiariti, M. *"Accurate and Reliable 3-lead to 12-lead ECG Reconstruction Methodology for Remote Health Monitoring Applications";* IRBM - Innovation and Research in Biomedical Engineering, 2014, Elsevier
33. Raja Vara Prasad Y, **Rajalakshmi .P** "*Effect of relay nodes and transmit power on end-to-end delay in multi-hop wireless ad hoc networks",* International journal of space based situational computing-2013, Inderscience Publishers.25-28 March, 2013.
34. Raja varaprasad Y, MirzasamiBaig, Rahul K Mishra**, P .Rajalakshmi**, U.B.Desai, S.N.Merchant "*Real time wireless air pollution monitoring system*," ICTACT Journal on Communication Technology, special issue on next generation wireless networks and applications vol. 2, issue-2, June 2011, pp. 370–375
35. **P Rajalakshmi**, Ashok Jhunjhunwala, "*Re-routing at critical nodes to enhance performance of wavelength reassignment in all-optical WDM networks without wavelength conversion,*" IEEE/OSA Journal of Lightwave Technology, vol. 26, issue 17, Sept. 2008, pp. 3021-3029.
36. **P Rajalakshmi**, Ashok Jhunjhunwala, "*Analytical performance computations for optical networks with wavelength conversion,*" IETE Journal of Research, vol. 54, issue 1, pp no. 31-38, Published online: 01 Sep 2014, **DOI:**10.1080/03772063.2008.10876179
37. **P Rajalakshmi**, Ashok Jhunjhunwala, "*Wavelength Reassignment Algorithms for All-Optical WDM Backbone Networks,*'' Elseviers Optical Switching and Networking Journal, vol. 4, issue 3/4, pp. 147-156, Available online 24 August 2007 **.** doi:10.1016/j.osn.2007.08.002
38. **P Rajalakshmi**, Ashok Jhunjhunwala, "*Routing, wavelength and timeslot reassignment algorithms for TDM based optical WDM networks,*" Elseviers Computer Communications Journal, vol. 30, issue 18, pp. 3491-3497, 2007

List of Conference Publications:

1. Adduru U G Sankararao and **P Rajalakshmi**, " UAV Based Hyperspectral Remote Sensing and CNN for Vegetation Classification", accepted in International Geoscience and Remote Sensing Symposium (IGARSS) 2022.

2. Ujwal Sai G, Tejasri N, Ajay Kumar, and **Rajalakshmi P**, " Deep Learning based Overcomplete Representations for Paddy Rice Crop and Weed Segmentation", accepted in International Geoscience and Remote Sensing Symposium (IGARSS) 2022.
3. A. Thakur, B. Anand, H. Verma and P. Rajalakshmi, "Real Time Lidar Odometry and Mapping and Creation of Vector Map," *2022 8th International Conference on Automation, Robotics and Applications (ICARA)*, 2022, pp. 181-185, DOI: 10.1109/ICARA55094.2022.9738576.
4. Naga Praveen Babu Mannam, Basa Sidvik, **P. Rajalakshmi**., "Concept Study of Titan Submarine Operating in Saturn Moon Titan's Liquid Methane and Ethane Seas Using Experimental and CFD Methods" accepted in Ocean Sciences Meeting 2022, USA.
5. M. P. R. S. Kiran and **P. Rajalakshmi** , "A Novel Load Estimation Based Dynamic CBAP Allocation Policy for mmWave WLANs" Accepted in IEEE International Conference on Advanced Networks and Telecommunications Systems (ANTS) 2021.
6. Naga Praveen Babu Mannam, Basa Sidvik, Prasanth Kumar Duba and **Rajalakshmi P**, "Hydrodynamic Analysis of Extra-Terrestrial Submarine in the Lakes of Saturn Moon Titan using CFD" accepted in 2nd IEEE IAS International Conference on Computational Performance Evaluation (ComPE-2021) is being organized at North-Eastern Hill University (NEHU) during 1st-3rd December 2021.
7. Naga Praveen Babu Mannam, Prasanth Kumar Duba and **Rajalakshmi P**, "Bioinspired Dragonfly Concept for Mars Exploration: Analogous To Mars Ingenuity Helicopter" accepted in Low-Cost Science Mission Concepts for Mars Exploration workshop at The Westin Pasadena, 191 North Los Robles, Pasadena, California.
8. Naga Praveen Babu Mannam, Basa Sidvik, Prasanth Kumar Duba, and **Rajalakshmi P**, "Future Mobility with eVTOL Personal Air Vehicle (PAV): Urban Air Mobility (UAM) Concept" accepted in 2022 3rd International Conference on Electrical and Electronics Engineering (ICEEE 2022), The University of Malaya (UM) (Malay: Universiti Malaya), Kuala Lumpur, Malaysia.
9. M. Senapati, B. Anand, Abhishek Thakur, Harshal Verma and **P Rajalakshmi**, "Object Detection and Segmentation using LiDAR-Camera Fusion for Autonomous Vehicle," Accepted in 2020 Fourth IEEE International Conference on Robotic Computing (IRC), 2021.
10. Adduru U.G. Sankararao, Sanju Kumar N.T and **P. Rajalakshmi**, "Optimal Parameters Selection for UAV Based Pushbroom Hyperspectral Imaging" Accepted for IEEE India Geoscience and Remote Sensing Symposium 2021.
11. Adduru U.G. Sankararao, G. Priyanka, **P. Rajalakshmi** and Sunitha Choudhary, "CNN Based Water Stress Detection in Chickpea Using UAV Based Hyperspectral Imaging" Accepted for IEEE India Geoscience and Remote Sensing Symposium 2021.
12. Naga Praveen Babu Mannam, Prasanth Kumar Duba and P**. Rajalakshmi**, "Development of semi-autonomous dragonfly based UAV in free flight conditions" Accepted in 2021 International Conference on Smart Generation Computing, Communication and Networking (SMARTGEN) - A Hybrid Conference 2021.
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15. **P. Rajalakshmi**, Adduru U.G. Sankararao, and G. Priyanka, "Drone-Based Sensing for Agriculture: Way Forward" an extended summary in 5th International Agronomy Congress, Nov 2021.
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17. B. Anand, V. Barsaiyan, M. Senapati, and **P. Rajalakshmi** , "Quantitative Comparison of LiDAR Point Cloud Segmentation for Autonomous Vehicles" Accepted in IEEE 94th Vehicular Technology Conference: VTC2021-Fall, 27 - 30 September 2021
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19. Ajay Kumar, Mahesh Taparia, **P. Rajalakshmi** , Wei Guo, Balaji Naik, Balram Marathi, and Uday Desai *"UAV Based Remote Sensing For Tassel Detection And Growth Stage Estimation of Maize Crop Using Multispectral Images"* Accepted in IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Waikoloa, Hawaii, USA, 2020
20. Akshay Ramesh Jadhav and **P. Rajalakshmi** , *"Enhanced LoRa Data Rate through PATCH"* Accepted in IEEE World Forum on Internet of Things (WF-IoT 2020), New Orleans, USA, 2020
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25. Jagadish Bandaru and **Rajalakshmi P.**, *"A Novel Experimental Study to Enhance the Attentional State using EEG Signals"* Accepted in IEEE Sensors Applications Symposium 2020, Kuala Lumpur, Malaysia, 2020.
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33. D Santhosh Reddy, **Rajalakshmi.P**., "A Novel Web Application Framework for Ubiquitous Classification of Fatty Liver Using Ultrasound Images," Accepted in IEEE 5th World Forum on Internet of Things (WF-IoT), 15-18 th April. 2019.
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113. Mirza Sami Baig, **Rajalakshmi P**, "*CR Based WSAN for Field Area Network in Smart Grid*", Advanced in Computing ,Communications and Informatics (ICACCI), 2013 International Conference on, India, August 2013, Pages: 811 - 816, DOI: 10.1109/ICACCI.2013.6637280
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115. Raja Vara Prasad Y and **Rajalakshmi P** ,"*Context aware building energy management system with heterogeneous wireless network architecture*" IEEE/IFIP Wireless and Mobile Networking Conference (WMNC), 23-25 April 2013, Dubai , DOI: 10.1109/ WMNC.2013.6548976
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119. Saambavi, **P Rajalakshmi**, *"Hard software codesign for AES in FPGA*", ICACCI, India, 16 May 2012
120. Raja vara prasad Y, Bharathi, Alok Kumar, **P Rajalakshmi**,U B Desai, "*WSN based power monitoring in smart grids,*" proceedings of Seventh IEEE International Conference on Intelligent Sensors, Sensor Networks and Information Processing (ISSNIP), 6-9 Dec 2011

Adelaide, Australia pp. 401-406 , **DOI:**10.1109/ISSNIP.2011.6146589

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122. **P. Rajalakshmi** and Ashok Jhunjhunwala, "*Load balanced routing to enhance the performance of optical backbone networks,*" Proceeding of IEEE International conference on Wireless and Optical Communications Networks, WOCN 2008, 5-7 May 2008,Surabaya, Indonesia, Pages: 1 - 5, DOI: 10.1109/WOCN.2008.4542490
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- **Conferences/Workshops/Symposium Organised:**

  Some are listed below
  - **CPS 2012**
  - Cognitive Radio 2012
  - **NGHS 2013**
  - ISDF 2015
  - SHE 2015
  - Indo-Japan RoundTable on Collaboration Hub for Research in ICT, 19 Jan 2016
  - ISDF 2016
  - NCC 2018
  - ICDF 2018
  - Indo-Japan midterm evaluation May 2019

- **Students:**

  Post-Doctoral fellows:

  5 currently working

  PhD students:

  11 Graduated, 13 currently guiding

  M.Tech students:

  24 Graduated, 16 currently guiding