Dr. P Rajalakshmi,
Professor,
Department of Electrical Engineering, IIT Hyderabad,
CYIENT CHAIR PROFESSOR IN Future Communications,
Project Director, Technology Innovation Hub on Autonomous Navigations (TiHAN-IITH),
Email: raji@ee.iith.ac.in
Webpage: https://www.iith.ac.in/~raji/

- **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 -

- Faculty coordinator for Smart mobility since 2020
- Dean of Students November 2019 – November 2022
- Girls Hostel Warden 2010-2019
- Member of Institute Space Committee 2018-21

- **Membership of National/ International Academies/ Professional Bodies:**
  - Chair member of the Thematic Review Committee (TRC) for the Theme "Smart Cities & Mobility" for proposals submitted under SPARC, Phase 3 2024.
  - Member of Technical Committee ICARA 2024.
  - 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.
  - Technical Expert for evaluation of bids received for procurement of TABLETS PCS-125 Nos., SERVER and MOBILE APP SOFTWARE for the study entitled "Diet and Biomarkers Study India" at National Institute of Nutrition (NIN), Indian Council of Medical Research (ICMR), Jamal-Osmania, Hyderabad.
  - PEC Meeting at " M/s Krishigati Pvt. Ltd" ,Pune on 26 and 27 October 2023.

- **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. Dr. Urmila Abhijit Patil, **Teachers Associateship for Research Excellence (TARE)** under the mentorship of Prof. Rajalakshmi funded by Science and Engineering Research Board (SERB), Rs. 18.6 Lakhs, Jan 2022 – Jan 2025.
2. 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.
3. PI in '**Real-Time Edge Computing Architectures for LiDAR-based Intelligent Transportation System',** by MeiTY, Rs.198.9655 lakh, March 2021 – Feb 2024.
4. PI in '**Technology Innovation HUB TIH on Autonomous Navigation and Data Acquisition Systems (UAV, RoV..)'** under **DST's NM-ICPS, March 2020 – March 2025.**
   a. Autonomous Navigation of Micro Aerial Vehicles in Indoor environments Project funded by DYSL-AI, DRDO, Period: June 2023 -May 2024.
   b. IIT-TiHAN-Use Case Project funded by Tata Technologies Limited, Pune Period: September 2023-February 2024
   c. ADAS Project funded by L&T Technology Services Period: October 2023 - March 2025.
   d. CV2X Project funded by L&T Technology Services Period: October 2023 - March 2025.
   e. Consultancy Services Project funded by Metro Infrasys Pvt Ltd Period:August 2023 - September 2023.(completed).
5. 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.
6. Co-PI in '**Design and Fabrication of Passenger Drone'**, 15 March 2019- 14 March 2022, Meity, Rs. 8.54253 Crores
7. 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
8. Co-Investigator in '**5G Testbed'**, Period: 2018-2021, DoT, Rs. 66 Crores
9. 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
10. Co-Investigator in **SATREP- m2SMART** Project; May 2017 - 2022, JICA-JST funded
11. 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
12. Principal Investigator in "**Mobile Sensor Networks Technologies"** funded by KDDI R&D Labs, Japan, Period: March 2011 to April 2015, Project Cost: USD 100000
13. Co-Investigator in 'Center for Healthcare Entrepreneurship', launched on 3rd December 2015. Funded by Raj and Avi from USA
14. Co-Investigator in "**IoT-eHealth"** funded by Department of Science and Technology (DST) under IUATC project, Period: Oct 2012 to April 2015
15. Co-Investigator in "**Converged Cloud Communication Technologies"** funded by Department of Information and Technology (DeiTy) India, Period: 2014 to 2019

16. Co-Investigator in "**Cyber Physical Systems"** funded by Department of Information and Technology (DeiTy) India, Period: 2011 to 2016
17. 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
18. Co-Investigator in "**Cognitive Radio"** Project funded by Department of Information and Technology (India), Period: 2010 to 2013

- **Copyrights:**

1. **P. Rajalakshmi** "Autonomous Driving and Connected Vehicles - TiHAN Testbed Usecase Manual", January 2023, and the application has been assigned Dairy No: 1-12136880371.
2. **P. Rajalakshmi**" Regulatory Framework and Safety Performance Testing of Autonomous Vehicles Inclusion in Defined Operational Environments", Application No. 1-12655917261.2023
3. **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.
4. **P. Rajalakshmi** "TiHAN Trademark Logo", No. 5322142 (Class 41) No. 5322143 (Class 42), 2022.

- **Patents:**

1. **P. Rajalakshmi,** Nitish Kumar "Improved Radar-Camera Calibration Without Rotation and Translation Matrices" November 2023, Assigned Application Number:202341079326
2. **P. Rajalakshmi,** Sanju Kumar N T "A Framework for Autonomous Swarming with Precision Landing of Unmanned Aerial Vehicles" November 2023, Assigned Application Number:202341078899**.**
3. **P. Rajalakshmi,** Sanju Kumar N T "Technology for Data Acquisition Using LiDAR on Unmanned Aerial Vehicles " November 2023, Assigned Application Number: 202341079067**.**
4. **P. Rajalakshmi,** Swapnil Shinde "A Cost Effective Retrofitting Drive by Wire kit for Autonomous Electric Vehicles " November 2023, Assigned Application Number:202341079931
5. **P. Rajalakshmi,** Swapnil Shinde "A steering-responsive camera control system for autonomous navigation and method thereof " November 2023, Assigned Application Number:202341079263**.**
6. **P. Rajalakshmi,** D Santhosh Reddy "An automated intelligent labeling system and method thereof" November 2023, Assigned Application Number:202341079264**.**
7. **P. Rajalakshmi,** Syam Narayanan S "An alula-integrated propeller for thrust enhancement" August 2023, Assigned Application Number: 202341042951**.**
8. **P.Rajalakshmi,** Siva Rama Krishna Vanjari, Naga Praveen Babu Mannam, Aditya Bhagavathi Kandala, Prasanth Kumar Duba, Sathish Bonam, and Shiv Govind Singh, "A system for harvesting energy using Triboelectric Nanogenerators in biomimetic unmanned aerial vehicles", January 2023, Assigned Application Number: 202341004596.
9. **P. Rajalakshmi** and Bhaskar Anand, "System for Real-Time Geo-Referencing of Moving Objects Around a Moving Vehicle for Autonomous Transportation", January 2023, Assigned Application Number: 202341004566.
10. **P. Rajalakshmi, "**Optimal transmit power allocation scheme for Millimeter-wave UAV Swarms" in 2023 Assigned Application Number:202311033982
11. **P. Rajalakshmi,**L.Nirmala Devi,A. Nageswar rao ,K.Venkata Subbareddy"Design and development of an autonomous bird deterrent system forcrop protection using UAVS Assigned Application Number: 202241070286
12. **P. Rajalakshmi,** Naga Praveen Babu Mannam, and Prasanth Kumar Duba, "A system for determination of flight performance of bioinspired aerial vehicle in simulated space conditions" November 2022, Assigned Application Number: 17/981,424
13. **P. Rajalakshmi, "** A Method for Adaptive Multi-User Clustering in Non-Orthogonal Multiple Access Systems with Imperfect" in 2022 , Assigned Application Number:202241018280
14. **P. Rajalakshmi,** "Design and Development of Autonomous Bird Deterrent System for Crop Protection Using UAVs" in 2002 **,** Assigned Application Number:202241070286

15. **P. Rajalakshmi,** “Input Dependent Key-Based Logic Locking for Trustworthy Integrated Circuit Design” in 2022, Assigned Application Number:202221031928
16. **P. Rajalakshmi,** Naga Praveen Babu Mannam, and Prasanth Kumar Duba, “A system for determination of flight performance of bioinspired aerial vehicle in simulated space conditions,” July 2022, Assigned Application Number: 202241043483, TEMP/E-1/49571/2022-CHE.
17. **P. Rajalakshmi** and Bhaskar Anand, "System and method for Streaming Data between A Lidar Sensor and A Client Server", May 2022, Assigned Application Number: 202241028455.
18. **P. Rajalakshmi** "Method and system for identifying non-orthogonal multiple access (noma) user devices", March 2022, Assigned Application Number: 202241018280.
19. **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.
20. **P Rajalakshmi**, and 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.
21. **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.
22. **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.
23. **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.
24. **P. Rajalakshmi**, Subhra S, IITH LORA Mote - Low-Power Long Range, July 2019, TEMP/E-1/31845/2019-CHE.
25. **P. Rajalakshmi** and 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.
26. **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.
27. **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.
28. **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
29. **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.
30. **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.
31. **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.
32. **P Rajalakshmi**, “A high speed and low complex beam-former system to transmit signals and method thereof”, Appln. No. 1249/CHE/2014, 11 March 2014.

- **Intellectual Properties**

1. “Personalised Air Vehicle” in 2023 by TiHAN-IIT Hyderabad Design Application number:401163-001.
2. “A Hexacopter Frame “in 2023 by TiHAN-IIT Hyderabad Design Application number: 400433-001.

3. **"**Autonomous e-Bike" in 2023 by TiHAN-IIT Hyderabad Design Assigned Application number:400434-001.
4. **"**Humanoid Data Collection Stick (Industrial Design)" in 2023 by IIIT Dharwad and TiHAN-IITH, Design Application Number: 387720-001.

- **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: 53 (Accepted and Published**)**
Conferences: 196 (Accepted and Published)
Book Chapters: 2 (Accepted and Published)

List of Journals Publications:

1. Prasanth Kumar Duba, Naga Praveen Babu M ,**P Rajalakshmi** "Stereo Vision Based Object Detection for Autonomous Navigation in Space Environments" in Acta Astronautica (2024).
2. Syam Narayanan S, Yogesh Gangurde, **P Rajalakshmi,**, Aerodynamic Performance of Lambda Wing- UCAV at Different Back-Sweep Angles, Journal of Applied Fluid Mechanics, 2024
3. Annu, **P Rajalakshmi,** "Towards 6G V2X Sidelink: Survey of Resource Allocation - Mathematical Formulations, Challenges, and Proposed Solutions", OJVT-2024-02-0032.
4. Tejasri N, Kshitiz Kumar, Soumyajit Chatterjee, **Rajalakshmi Pachamuthu**, Balaji Naik and Uday B Desai " A Spatial-Spectral-Temporal Deformable Attention-based Framework for Water Stress Classification in Maize. Special Issue on IoT, UAV, BCI Empowered Deep Learning models in Precision Agriculture." 2023 **DOI:** https://doi.org/10.3389/fpls.2023.1241921
5. Priyanka Gattu, **P. Rajalakshmi** *"A step towards inter-operable Unmanned Aerial Vehicles (UAV) based phenotyping; A case study demonstrating a rapid, quantitative approach to standardize image acquisition and check quality of acquired images "* 2023 ISPRS Open Journal

of Photogrammetry and Remote Sensing. D**OI:** https://doi.org/10.1016/j.ophoto.2023.100042.

6. Ankit Singh, Aman Srivastava, **Rajalakshmi P**, Digvijay P, "Impact of Texting Induced Distraction on Driving Behavior, A Field Operation Test-Based Study", Transportation Research Board , 2023
7. A. U. G. Sankararao, **P. Rajalakshmi** and S. Choudhary, "Machine Learning-Based Ensemble Band Selection for Early Water Stress Identification in Groundnut Canopy Using UAV-Based Hyperspectral Imaging," in *IEEE Geoscience and Remote Sensing Letters*, vol. 20, pp. 1-5, 2023, Art no. 5505805, doi: 10.1109/LGRS.2023.3284675.
8. Naga Praveen Babu Mannam, Basa Sidvik and **P. Rajalakshmi** *"Concept Study of Titan Submarine Operating in Saturn Moon Titan Liquid Methane and Ethane Seas Using Experimental and CFD Methods* in IEEE Sensors Journal, 2022, **DOI:**10.1109/JSEN.2022.3215189.
9. Naga Praveen Babu Mannam, Prasanth Kumar Duba and **P. Rajalakshmi** "A BIOINSPIRED DRAGONFLY CONCEPT FOR MARS EXPLORATION: ANALOGOUS TO MARS Low-Cost Science Mission Concepts for Mars Exploration" , at The Westin Pasadena, 191 North Los Robles, Pasadena California 2022 https://ui.adsabs.harvard.edu/abs/2022LPICo2655.5007B/abstract
10. Amar Kumar Verma and **P Rajalakshmi,** "Humanoid Robot", participated in Department of Science & Technology, Government of India along with Government of Gujarat is organizing a two day "State S&T Ministers' Conclave" at Science City, Ahmedabad on 10-11 September, 2022.
11. B. Anand, H. R. Kambhampaty and P. Rajalakshmi, "A Novel Real-Time LiDAR Data Streaming Framework," in IEEE Sensors Journal, vol. 22, no. 23, pp. 23476-23485, 1 Dec.1, 2022, doi: 10.1109/JSEN.2022.3215189..
12. Bharath, R., Santhosh Reddy, D. & Rajalakshmi P, "A SoC-Based Programmable Portable Ultrasound Scanning System for Point-of-Care Applications and Clinical Research Activities" in SN Computer Science 3, 349," 2022, **DOI:** 10.1007/s42979-022-01241-7
13. Ajay Kumar Nain and **P. Rajalakshmi,** "A Cyclic Prefix based Secure Side-Channel (CP-SSC) over OFDM for LTE D2D Sidelink Communication" in Physical Communication, Volume 49, 2021, 101478, ISSN 1874-4907,**DOI:**: 10.1016/j.phycom.2021.101478.
14. Bhaskar 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.
15. 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.
    DOI: https://doi.org/10.1016/j.biosystemseng.2021.08.032
16. Ajay Kumar**, P. Rajalakshmi** "Efficient Maize Tassel-Detection Method using UAV based Remote Sensing" accepted in Elsevier: Remote Sensing Applications: Society and Environment. **DOI:** https://doi.org/10.1016/j.rsase.2021.100549
17. 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.
18. 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.
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List of Conference Publications:

1. Tejasri N, Praneela Sunkari, Balram Marathi, Uday B Desai,**P. Rajalakshmi**, "PANICLE SEGMENTATION ON UAV CAPTURED MULTISPECTRAL PADDY CROP IMAGERY", accepted in IGARSS 2024.
2. Kratika Yadav , Swapnil Shinde , Chebrolu Varsha, Ashish Kumar, Vempadapu Ramakrishna, **P. Rajalakshmi**, "Design Considerations and Framework Analysis for Software-Defined Autonomous Vehicles", accepted in 2024 IEEE 99th Vehicular Technology Conference: VTC2024-Spring
3. Sriya Behera,Bhaskar Anand,**P. Rajalakshmi**, "YoloV8 Based Novel Approach for Object Detection on LiDAR Point Cloud", accepted in 2024 IEEE 99th Vehicular Technology Conference: VTC2024-Spring.
4. **P. Rajalakshmi ,** Bhaskar Anand, Abhishek Thakur, Swapnil Shinde, “Revolutionizing Campus Transportation : The Implementation of LiDAR-Enabled 3D Map-Based Autonomous Shuttles” at Session Chair in SIAT 2024
5. Urmila Patil,**P Rajalakshmi,** , Amol Jadhav and Rajashree Bhokare, "Healthcare IoT Application for Hospitals Using Multi-Access Edge Layer Computation Architecture", IEEE IATMSI-2024.
6. Syam Narayanan S, Yogesh Gangurde, Hitesh Marella, Thivya Rannee, **P Rajalakshmi,** "Development of an Autonomous Blimp (Airship) for Indoor Navigation", AeroCON 2024 6-7 June 2024. organized by SAEINDIA and supported by SAE International.
7. Sanju Kumar N T, Prasanth Kumar Duba, Naga Praveen Babu Mannam and **Rajalakshmi Pachamuthu**, "Vibrational Analysis of Multirotor UAVs for Urban Air Mobility (UAM) Scenarios – Experimental Approach", AeroCON 2024 6-7 Jun, 2024. organized by SAEINDIA and supported by SAE International.
8. Tuhin Dutta, D Santhosh Reddy, **P Rajalakshmi**, “Real-Time Deep Learning based Safe Autonomous Navigation “ paper accepted in ICRMV 2024
9. Samuktha V, Hershitha Shukla, Nitish Kumar, Tejasri N, Santhosh Reddy D, **P Rajalakshmi**, “Improving Radar-Camera Fusion Network for Distance Estimation” ICCAE 2024.
10. Santhosh Reddy D, Kaipa Sri Charan, Sai Kumar Kayam, **P Rajalakshmi**” Robust Obstacle Detection and Collision Warning for Autonomous Vehicles Using Autoware Universe”. ICCAE 2024
11. Sandhya Addetla and **P. Rajalakshmi** “Amalgamation of Divergent Logs for Detection of Advanced Persistent Threats in Cyber Threat Analysis” has been accepted as a short paper at 5th International Conference on Computing and Network Communications 2023 (CoCoNet '23) conducted at PES University, Bangalore from 18-20 Dec 2023.
12. Sandhya Addetla and **P. Rajalakshmi** “Evolving Trends in Ransomware: Inherent Advanced Persistent Threat” has been accepted at 9th International Symposium on Women in Computing and Informatics 2023 (WCI '23) conducted at PES University, Bangalore from 18-20 Dec 2023.
13. Prasanth Kumar Duba, Naga Praveen Babu Mannam, Nishchala Mukku, and **Rajalakshmi P,** "Estimation of State for GPS-denied Navigation of Autonomous Underwater Vehicles (AUVs) in Underwater Exploration", 9th IEEE International Conference on Sustainable Technology and Engineering 2023 (IEEE i-COSTE 2023) at Shangir-La’s Fijian Resort, Yanuca Island, Nadi, Fiji, from 4-6 December 2023.

14. Ajay Devidas Wanekar, Naga Praveen Babu Mannam, **Rajalakshmi P**, "Object Detection and Classification for Autonomous Surface Vehicles (ASVs) Through Near-Infrared Imaging", 9th IEEE International Conference on Sustainable Technology and Engineering 2023 (IEEE i-COSTE 2023) at Shangir-La's Fijian Resort, Yanuca Island, Nadi, Fiji, from 4-6 December 2023.
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16. Annu ,**P. Rajalakshmi**"Enhancing Sidelink 5G V2V Communication: A Distributed Probabilistic Congestion Control for Dynamic Resource Allocation, (AVs) " 17th IEEE International Conference on Advanced Networks and Telecommunication Systems (ANTS'23), held at Malaviya National Institute of Technology Jaipur.2023.
17. Suchitra Patil, Jana Kholova, Krithika Anbazhagan, Yogesh Parnandi, Priyanka Gattu, Sachin Gattu, Srikanth Mallayee, Prasad KSVV, V Padma Kumar, **P Rajalakshmi**, Vincent Vadez, Magesh Chandramouli, J Adinarayana, and Sunita Choudhary, "Development of UAV-based Digital Field Phenotyping for Crop Nitrogen Content Estimation", GlobConET 2023, Loughborough University, London UK.
18. **P. Rajalakshmi** "Map-Based Navigation for Autonomous Vehicles (AVs)" edition of ADAS & Autonomous Vehicle Technology Expo Europe, in Stuttgart, as part of the Vision, sensing, mapping and positioning session .
19. Digvijay S. Pawar, Ankit Singh, **P. Rajalakshmi** , "Chapter 28 Connected Autonomous Vehicles (CAV) Testbed at IIT Hyderabad", Springer Science and Business Media LLC, 2023
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21. Ankit Singh,Digvijay Pawar **P. Rajalakshmi** "Governing Autonomous vehicles inclusion in India: Developing regulatory framework, necessary infrastructure, and test scenarios" HONG KONG SOCIETY FOR TRANSPORTATION STUDIES, 2023.
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23. Tejasri N, Sam Mathew, Balram M, U.B. Desai **P. Rajalakshmi** "Deep Networks based Approach for Automatic Counting Panicles on UAV captured Paddy RGB Imagery" accepted in 2023 European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases.
24. Prassanth Kumar Duba, Naga Praveen Babu Mannam **P. Rajalakshmi** "STEREO VISION BASED OBJECT DETECTION FOR AUTONOMOUS NAVIGATION IN SPACE ENVIRONMENTS" International Conference on Spacecraft Mission Operations: SMOPS-2023.
25. Gattu Priyanka,Jana Kholova **P. Rajalakshmi** "Two Dimensional Histogram Based on Relative Entropy Thresholding for Crop Segmentation using UAV Images" IEEE International Geoscience and Remote Sensing Symposium 2023.
26. Gattu Priyanka, Shreeshan S, Subhra Shankha Bhattacherjee,Jana Kholova **P. Rajalakshmi** "Vision-based Point Cloud Processing Framework for High Throughput Phenotyping" IEEE International Geoscience and Remote Sensing Symposium 2023.
27. Parvez Alam **P. Rajalakshmi** "Analysis of Interference between Two LiDAR Sensors in Autonomous Driving Scenario" accepted in 2023 9th IEEE World Forum on the Internet of Things (IoT).
28. Adduru U.G. Sankararao, Saikiran K **P. Rajalakshmi** "Hyperspectral Image Denoising: A Comparative Study On UAV Based Vegetation Data" accepted in 13th IEEE Workshop on Hyperspectral Image and Signal Processing: Evolutions in Remote Sensing (WHISPERS) 2023.
29. Suchitra Patil, Sunita Choudhary, Jana Kholova, Krithika Anbazhagan, Priyanka Gattu, Srikanth Mallayee, Magesh Chandramouli, and J Adinarayana, **P. Rajalakshmi** ""Can UAV-based field phenotyping minimize human bias in scoring senescence A case of sorghum" accepted in International Conference on Millets: Breeding, Physiology, Genomics, Biotechnology, and Nutraceuticals-2023 (ICM-BPGBN-2023) Cochin.

30. Abhishek Thakur, and **P. Rajalakshmi**, “LiDAR and Camera Raw Data Sensor Fusion in Real-Time for Obstacle Detection", accepted in IEEE Sensors Applications Symposium (SAS) 2023.
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32. Tejasri N ,Ujwal Sai G, Kumar A and **P. Rajalakshmi** " Deep Learning Based Overcomplete Representations for Paddy Rice Crop and Weed Segmentation" IEEE International Geoscience and Remote Sensing Symposium (pp. 6077 6080) IEEE 2022.
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35. Bhaskar Anand, and **P. Rajalakshmi**, "BEV Approach Based Efficient Object Detection using YoloV4 for LiDAR Point Cloud," accepted in 2023 IEEE 97th Vehicular Technology Conference: VTC2023-Spring.
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37. Tejasri N, **Rajalakshmi P**, Balaji Naik, Uday B Desai, “Intelligent Drought Stress Monitoring on Spatio-Spectral-Temporal Drone-based Crop Imagery using Deep Networks” in 2nd AAAI Workshop on AI for Agriculture and Food Systems, Jan 2023
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42. Shantanu Yadav, Sanju Kumar, **P Rajalakshmi**, "Vehicle Detection and Tracking using Radar for Lane Keep Assist Systems", accepted in IEEE VTC 2023.
43. Y. Makkena, R. Tella, N. Parekh, P. Saraf, Annu, H. Shukla, A. Matathammal, S. Danda, P. Chandrahas, A. Jadhav, P. Tammana, K. Kondepu, **P. Rajalakshmi**, "Experience: Implementation of Edge-Cloud for Autonomous Navigation Applications," accepted in 2023 International Conference on COMmunication Systems & NETworkS (COMSNETS), 2023.
44. Naga Praveen Babu Mannam, Gunashekhar V, Deeshant Sharma, and **P. Rajalakshmi**, “Offroad Autonomous Ground Vehicle for Pipeline Inspections using waypoint navigation and obstacle avoidance. 3rd International Refinery & Petrochemical Technology Conference & Exhibition- 23rd & 24th August 2022 Hotel HOLIDAY INN MAYUR VIHAR New Delhi.
45. Naga Praveen Babu Mannam, Basa Sidvik, Prasanth Kumar Duba and **P. Rajalakshmi** “Future Mobility with eVTOL Personal Air Vehicle (PAV): Urban Air Mobility (UAM)", International Conference on Electrical and Electronic Engineering (ICEEE 2022): Innovations in Electrical and Electronic Engineering, Springer, PP 323 337, April 2022.
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48. Naga Praveen Babu Mannam, Harshal Verma and **P. Rajalakshmi** "AEB Evaluation for the car to pedestrian farside Adult (CPFA) Scenarios SAEINDIA International Mobility Conference (SIIMC2022) Oct 12-14, 2022
49. Sunita Choudhary, Jana Kholova, Suchitra Mohan, Krithika Anbazhagan, Srikanth Mallayee, Yogesh Parnandi, Priyanka Gattu, Sachin Gattu, J Adinarayana, Vincent Vadez and **P Rajalakshmi**, "UAV based Digital Phenotyping for Managed Stress Environment: Potential to Alleviate Efficiency and Precision for Drought Selection", Interdrought VII, Dec 2022.
50. Naga Praveen Babu Mannam, Basa Sidvik and **P. Rajalakshmi** "Concept Study of Titan Submarine Operating in Saturn Moon Titan's Liquid Methane and Ethane Seas Using Experimental and CFD Methods" 3rd International Refinery & Petrochemical Technology Conference & Exhibition- 23th & 24th August 2022 Hotel HOLIDAY INN MAYUR VIHAR New Delhi.
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52. Gunashekhar V, Naga Praveen Babu Mannam, **P. Rajalakshmi**, "Autonomous Real-Time Vision-Based NDT inspection of Pipelines Using Deep Learning Models," 3rd International Refinery & Petrochemical Technology Conference & Exhibition on 23th & 24th August 2022 Hotel Holiday INN Mayur Vihar New Delhi, India.
53. Sanju Kumar N T, Harshal Verma, Naga Praveen Babu M, V Gunashekhar, and **P. Rajalakshmi**, " 3D LiDAR Based Pipeline Detection and Tracking Using Machine Learning (ML)", 3rd International Refinery & Petrochemical Technology Conference & Exhibition on 23th & 24th August 2022 Hotel Holiday INN Mayur Vihar New Delhi, India.
54. Naga Praveen Babu M, V Gunashekhar, Annam Hussain, and **P Rajalakshmi** "Autonomous Navigation and Fault Detection of Pipelines Using 2D LiDAR Sensors", 3rd International Refinery & Petrochemical Technology Conference & Exhibition on 23th & 24th August 2022 Hotel Holiday INN Mayur Vihar New Delhi, India.
55. Naga Praveen Babu Mannam, Sanju Kumar N T, Prasanth Kumar D, and **P Rajalakshmi** - Bioinspired Flapping Foil with Trailing Edge Flap for Remotely Operated Vehicles (ROVs). -2022 IEEE 5th International Conference on Computing, Power and Communication Technologies (GUCON) is being organized on September 23-25, 2022, at India Habitat Centre, Lodhi Road, New Delhi, India. With Financial Sponsorship of IEEE Industry Applications Society USA.
56. Sanju Kumar N T, Malika G, Naga Praveen Babu Mannam, Harshal Verma and **P Rajalakshmi** - Mobile Robot Terrain Mapping for Path Planning using Karto Slam and G mapping Technique. - 2022 IEEE 5th International Conference on Computing, Power and Communication Technologies (GUCON) is being organized on September 23-25, 2022, at India Habitat Centre, Lodhi Road, New Delhi, India. With Financial Sponsorship of IEEE Industry Applications Society USA.
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- Book Chapters

1. Naga Praveen Babu Mannam, Basa Sidvik, Prasanth Kumar Duba and **P. Rajalakshmi** , "Future Mobility with eVTOL Personal Air Vehicle (PAV): Urban Air Mobility (UAM) Concept", International Conference on Electrical and Electronic Engineering (ICEEE 2022): Innovations in Electrical and Electronic Engineering, Springer, PP 323–337, April 2022, DOI: https://doi.org/10.1007/978-981-19-1742-4_27
2. Yogesh Gangurde, Syam Narayanan S, Naga Praveen BabuMannam **P. Rajalakshmi** *"Design of Autonomous Unmanned Ground Vehicles (UGVs) in Smart Agriculture."* Predictive Analytics in Smart Agriculture, CRC Press, Taylor & Francis 2023.

- **Invited Talks**

1. AI Horizons workshop at Society of Women Engineeers (SEW)hosted by Mathworks Hyderbad on 17 Feb 2024
2. Seminar on Autonomous Air Vehicles- Technologies and Applications AAV 2024 on 29-30th January jointly organized by ADE-DRDO & DESIGN DIVISION AeSI at Bengaluru.
3. Session Chair in SIAT 2024 at at Pune International Exhibition & Convention Center (PIECC), Moshi, Pune (INDIA) from 23-25 January 2024
4. Bharti School of Telecommunications Technology & Management on 22 December 2023 at IIT Delhi
5. IEEE Conference on Information and Communication Technology (CICT) 2023 hosted by PDPM IIITDM Jabalpur on December 15-17, 2023.
6. "Motion In Control (MIC-III)" at GARC Oragadam Chennai on 30th November & 1st December 2023
7. "INWAVE2 Workshop" on 7 August 2023 Invited speakers at IIT HYDERABAD.
8. "Autonomous Navigation" on October 8th 2022 invited speakers at ACM-W Women in Computing Celebrations at the BITS-Pilani Hyderabad campus.
9. "Artificial Intelligence and Machine Learning Systems " between 12th - 15th October 2022 invited speakers at a hybrid conference at the Chancery Pavilion Hotel, Residency Road, Bangalore.
10. "Autonomous Air Vehicles- Technologies & Applications" between 6-7 January 2023 invited speaker at ADE, Bangalore.
11. " Drone Connectivity, Operations and Standards" on 4th October 2021 invited speakers at an Online workshop.
12. "UAV based sensing" between April 30, 2021 - May 2, 2021 invited speakers Dr. Abhinav.at online workshop.
13. "Smart and Precise Agriculture 2021" on March 19th 2021 invited speakers at a plenary talk workshop.
14. Siemens Technologies on 5G + Edge application communication on 22nd and 23rd Nov 2023 at TiHAN IIT Hyderabad
15. In-house training program "Voluntary Vehicle-Fleet Modernization Program (V-VMP)" from 20 – 22 November 2023 (3 days) - Sponsored by Ministry of Road Transport & Highways, Government of India at TiHAN IIT Hyderabad.

16. Workshop on “Autonomous Vehicles Research Studio Solutions”, by EDUTECH at TiHAN IIT Hyderabad on 18-11-2023.
17. Demonstration of Drone Technology in Governance at Lal Bahadur Shastri National Academy of Administration, Mussoorie. Government of India (GOI) on 10th November 2023.
18. IESA AI Summit, November 7th – 8th, 2023, Hyderabad, Telangana, India.
19. India Mobile Congress (IMC) 2023, which is jointly conducted by the Department of Telecommunications (DoT) and the Cellular Operators Association of India (COAI) during 27th - 29th October 2023, New Delhi, India.
20. 25th (Silver Jubilee) edition International Conference on Speech and Computer (SPECOM 2023) in Hubli-Dharwad, India, from 29th November- 1st December 2023.
21. TiHAN, in collaboration with Mathworks, presents a Workshop on Automated Driving - From Design to Deployment on 13-10-2023.
22. 3rd National Workshop on TIPS is scheduled to be organized from 4-6 October 2023 at IIT Kanpur.
23. BAJA SAEINDIA 2024
24. TiHAN-IIT Hyderabad wheels out its own driverless car, ferries students and professors on campus, October 15th, 2023, Times of India.
25. Overview of autonomous navigation research, Rajiv Gandhi University of Knowledge Technologies, Nuzvid, Andhra Pradesh - 521 202, 27th September, 2023.
26. “Cyber Security and Cyber Physical Systems” on the occasion of Engineers’ Day Celebration by INAE on 15th September 2023 over WebEx.
27. CEP on "Introduction to Navigation System and Emerging Trends" organized by Directorate of Navigation System, Research Centre Imarat, DRDO scheduled from 26th-30th June 2023 at RCI.
28. TiHAN-IIT Hyderabad and NATRAX collaborate in the areas of Autonomous Drive Testing Facilities, June 08, 2023.
29. 2nd National Workshop on Technology Innovation in Cyber-Physical Systems (TIPS) under “National Mission on Interdisciplinary Cyber-Physical Systems (NM-ICPS)” scheduled on 6-8 April, 2023 at New Delhi.
30. 30th Convergence Expo & 8th Smart Cities India Expo during 27-29, March 2023, New Delhi.
31. Regulatory Framework for Autonomous Vehicles in India” on 24/03/2023 at TiHAN IIT Hyderabad.
32. Overview of #autonomous vehicles Navigation Research at IITH with specific use case discussion, TIH of IIT Delhi cobotalks on 9th March, 2023 a #special #Women’s Day edition.
33. “Motion in Control 2023” – Vehicle Dynamics Conference – India at ICAT Manesar Test Track in Manesar, Gurgaon on the 20th and 21st of February 2023.
34. “Motion in Control 2023” – Vehicle Dynamics Conference – India at National Automotive Test Tracks (NATRAX) in Indore, 23rd and 24th of February 2023.
35. 4th Structural Integrity Conference and Exhibition held at IIT Hyderabad during 14th - 16th December 2022.
36. 3rd International Refinery & Petrochemical Technology Conference & Exhibition on 23th & 24th August 2022 Hotel Holiday INN Mayur Vihar New Delhi.
37. 10th Edition Traffic Infra Tech Expo 2022 at Bombay Exhibition Centre, Mumbai on 16th - 18th Nov 2022.
38. Hon’ble Minister of State for Science and Technology & Earth Sciences, Dr. Jitendra Singh, inaugurates India’ 1st Testbed for Autonomous Navigation at IIT Hyderabad, July 04, 2022.
39. National Workshop on Technology Innovation in Cyber Physical Systems (TIPS) held in IIT Madras during May 6-7, 2022.
40. TiHAN, IIT Hyderabad and ARAI made a pact for India specific AV technology, October 18, 2021.

41. Honorable Minister of Education Shri Ramesh Pokhriyal 'Nishank' has laid "India's 1st 'TiHAN-IIT' Hyderabad Testbed for Autonomous Navigation Systems (Terrestrial and Aerial)" Foundation Stone, December 29, 2020.
42. Regulatory framework to enable successful integration of autonomous vehicles, Autonomous Vehicles to shape the future of Indian Economy, 21st November 2023 organized by World Economic Forum (WEF).
43. Industry Meet on Connected Vehicle Technologies for India, Organised by TiHAN IITH And CDAC Hyderabad On 17th November 2023 At Hyderabad, India.
44. 9th IEEE International Conference on Sustainable Technology and Engineering 2023 (IEEE i-COSTE 2023), Shangir-La's Fijian Resort, Yanuca Island, Nadi, Fiji on 04-06th December 2023, Special Session 1: Autonomous Maritime Systems (AMS): ASVs and AUVs.
45. 2nd INternational Workshop on unmanned Aerial VEhicles (IN-WAVE 2) August 7th, 2023 - August 9th,2023.
46. TiHAN - #IITH, in collaboration with SiMa, presents a Technical Workshop on Edge computing Hardware.
47. TiHAN IIT Hyderabad at the ADAS & AV Technology Expo in Germany, June 2023, discussing Map-Based Navigation for Autonomous Vehicles.
48. Innovative Digital Technologies Take Center Stage at a Special Side Meeting ahead of G20 DEWG @ IIT Hyderabad, April 17, 2023.
49. Tata Technologies and TiHAN-IIT Hyderabad collaborate on Software Defined Vehicles (SDVs) and Advanced Driver Assistance Systems (ADAS), May 08, 2023.
50. 15th International Conference on COMmunication Systems & NETworkS, January 3 – 8, 2023, Chancery Pavilion Hotel, Residency Road, Bengaluru, India.
51. Workshop on Connected Vehicles and Autonomous Driving at COMSNETS 2023, Wednesday, 4 January 2023
52. IIT Hyderabad collaborates with Suzuki Motor Corporation for India-specific Autonomous Car - ADAS Technology Development Hyderabad, November 17, 2022.
53. Social Media of SMC
54. Chair Professors - Center for Autonomous Vehicles and Sensor Systems Dept. of Mechanical Engineering, Texas A&M University.
55. Chair Professors - 3D Systems Packaging Research Center, Georgia Institute of Technology, Atlanta, USA.
56. Chair Professors - The University of Michigan Transportation Research Institute, Human Factors, US.
57. Chair Professors - Civil & Environmental Engineering, University of California Berkeley.
58. Multi-Sensor Fusion in Autonomous Vehicles: Radar and Camera Perspectives - LTTS.
59. Performance Analysis of CV2X: Connectivity and Mobility Solutions – LTTS.

- **Visits**

1. Demonstration of Drone Technology in Governance at Lal Bahadur Shastri National Academy of Administration, Mussoorie. Government of India (GOI) on 10th November 2023.
2. 3rd National Workshop on TIPS organized from 4-6 October 2023 at IIT Kanpur.
3. TiHAN- IITH visit to Institute of Rural Management (IRMA), Anand, Gujarat, India on 4 September 2023
4. TiHAN IIT Hyderabad at the ADAS & AV Technology Expo in Germany, June 2023, discussing Map-Based Navigation for Autonomous Vehicles.
5. TiHAN-IITH visited Suzuki Motor Corp Yokohama centre and Skydrive, Japan on 24 August 2023

6. 2nd National Workshop on Technology Innovation in Cyber-Physical Systems (TIPS) under "National Mission on Interdisciplinary Cyber-Physical Systems (NM-ICPS)" scheduled on 6-8 April, 2023 at New Delhi.
7. "Motion in Control 2023" – Vehicle Dynamics Conference – India at National Automotive Test Tracks (NATRAX) in Indore, 23rd and 24th of February 2023
8. National Workshop on Technology Innovation in Cyber Physical Systems (TIPS) held in IIT Madras during May 6-7, 2022.

- **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

1. D.Santhosh Reddy
2. Swapnil Shinde
3. Bhaskar Anand
4. Phaneendra Pydimarri
5. Kratika Yadav

- 9 completed

1. Amar kumar verma
2. Saikiran
3. Adarsh
4. Akshay kumar
5. Rahul Dubbey
6. Swapna
7. Naga praveen babu
8. Venkata Satyanand Mutnuri
9. Syam Narayanan

PhD students:

- 15 currently guiding

S no	Name of the student	Thesis Title
1	G. Priyanka	AI based Crop Phenotyping using UAV.
2	Sanju Kumar	LiDAR based Mobile Mapping System.
3	Adduru U G Sankararao	Airborne Hyperspectral Imaging for Agriculture.
4	N.Tejasri	Deep learning Techniques for crop Trait estimation using UAV based Remote Sensing.
5	Sandhya	Advanced Network Security Defense Systems Leveraging

		Big Data Analytics.
6	Prashanth Kumar Duba	GPS-denied Navigation and Guidance of Unmanned Aerial Vehicles (UAVs).
7	Abhishek Thakur	Real Time Environment Perception, Mapping and Localization for Autonomous Navigation.
8	Girish Ramachandhruni	Operational Data Links for UAV/UCAV.
9	Parvez Alam	Real-Time Edge Computing Architectures for LiDAR based Intelligent Transportation Systems.
10	Abhilash. S	Automated Driving Incorporating Naturalistic Driving Study for Futuristic Vehicles.
11	Annu	Efficient Resource Allocation in V2X-Enabled Cooperative Intelligent Transport Systems.
12	Gurpreeth Singh	Autonomous and Intelligent IoT Access Control Model
13	Jhansi	Neuromorphic Computing
14	Adithya	Carla Simulation
15	Ghanendra Singh	Software defined vehicles

- 12 Graduated list with Thesis title

S no	Name of the student	Thesis Title
1	Raja Varaprasad Y	Modified IEEE 802.15.4 MAC with Integrated State Behaviour Model for High-Density Traffic IoT Applications
2	Mirza Sami Biag	Wireless Sensor Network for Real Time Pollution Monitoring and Smart Grid Application
3	R Bharath	Computer-assisted Algorithms for Ultrasound Imaging Systems
4	Madapu Amarlingam	Low-complexity Data Aggregation Methods for Energy-constrained IoT Networks using Compressed Sensing Framework
5	Francis K J	Photoacoustic Imaging: Theory, Modelling and Experiments
6	Ajay Kumar Nain	Exploring Physical Layer for Security: Novel Phase-encryption and Confidential Communication Techniques for Wireless Networks
7	Ajay Kumar	Techniques for Estimation of Crop Yield, Stress, and Flowering Stage using UAV based Remote Sensing
8	Malyala Pavana Ravi Sai Kiran	Modeling and Analysis of Dense Traffic IoT Networks

9	Jagadish Bandaru	Novel Techniques for Motor Imagery Classification in Brain Controlled IoT Environments

S no	Name of the Student	Thesis Title
10	D Santosh Reddy	Novel Techniques for Ultrasound Medical Image Classification in Abdominal Organs
11	Akshay Ramesh Jadhav	LoRa PHY Layer Enhancements and Application of IoT to Power Monitoring.
12	Bhaskar Anand	LiDAR-Based Perception for Intelligent Transportation System

M.Tech students:

- 10 currently guiding

S no	Name of the student	Thesis Title
1	Kshitiz Kumar	Learning Pedestrian Actions to Ensure Safe Autonomous Driving
2	Nitish Kumar	Sensor Fusion and RADAR based Navigation for Autonomous Vehicles
3	Manas Upadhyaya	Autonomous E-bike Micro Mobility
4	Rakshith Ram AC	Lidar and Camera based navigation for autonomous UGVs.
5	Rishav Kumar	Multi-Modal Fusion for Object Detection.
6	Amit Kumar Singh	GPS denied Navigation for UAVs.
7	Anuj arora	Mapping and Navigation on roots vehicle
8	Samyuktha	Camera -Radar Fusion for enabled ADAS system.
9	Yuvraj chowdary makkena	Building Edgecloud for Autonomous Navigation Vehicles
10	Sai kiran	Hyperspectral image data analysis for Agriculture applications
11	Vishnu swathik	Real-time LiDAR and camera based navigation
12	Bhavani	Autonomous Parking

- 39 Graduated with Thesis title

S no	Name of the student	Thesis Title

1	Paramatmuni Pavan Karthik	LTE Baseband Algorithms For Uplink
2	Ram Pravesh Kumar	RSSI Based Indoor Passive Localization For Intrusion Detection And Tracking
3	Saambhavi .V.B	Design of Voice-Controlled Intelligent Robot
4	Alok Kumar Bharati	WSN Based Power Monitoring for Smart Grids
5	Malyala Pavana Ravi Sai Kiran	Design and Development of Smart, Intelligent & IoT Enabled Remote Health Monitoring System
6	Vivek Akkala	Computer Aided Diagnosis on customized Ultrasound Imaging system.
7	Dusa Chandrashekar	Portable Ultrasound Data Acquisition System Design
8	Vinod Kumar Netad	3D Localization Techniques using RSSI with a Mobile Robot
9	K Divya Krishna	Computer-Aided Diagnosis and Smart Video Validation on IoT-Enabled Portable Ultrasound System
10	Subrahmanyam Vuddagiri	Avenues in IEEE802.15.4 MAC and PHY Layers
11	Arun Kumar	Ultrasound Mid-end Processing on Android Platform.
12	Mohammed Abdullah Zubair	NA
13	Atche Dileepkumar	IoT-Enabled Applications in Wireless Sensor Networks
14	Mude Nagarjuna Naik	Design and development of Wireless Sensor Network for Real time remote monitoring
15	Abhishek Anand	Compressive Sensing Implementation In a Wireless Sensor Network Environment
16	Punit Kumar	FGPA Prototyping of Ultrasound Signal Processing and Ultrasound Front-end Processing Hardware development
17	Pallavi Vaish	Smartphone Based Automatic Diagnostic Healthcare System
18	K.V.V.Durga Prasad	Design and Development of Energy Efficient Algorithms for Smart Agriculture
19	Mahesh Taparia	Canopy Coverage Estimation & Tassel Detection Using UAV-Based Remote Sensing and Crop-Weed Segmentation Using Static Images
20	Pradeep Kumar Mishra	A Study of Manifold Learning Methods for Multiclass Motor Imagery Classification.
21	Vivek Barsaiyan	LiDAR Point Cloud Processing for Traffic Sensing.
22	Mrinal Senapati	LiDAR Point Cloud Processing for Autonomous Navigation
23	Poluri Nikhil Koundinya	Multi-Sensor Perception and Control for Autonomous

		Navigation
24	Subhra Shankha Bhattacherjee	Automated Region of Interest Segmentation Pipeline for UAV based RGB Images
25	Shreeshan S	Automated plant phenotyping using UAV based RGB Images and Point Cloud data.
26	Mr Abhishek Singh	Radar with camera integration and GPS/IMU-based navigation of the ground vehicle.
27	Surya Pratap Singh Shekhawat	Autonomous Navigation of Drone Swarm.
28	Vipul Kumar Malik	Auto Adjustable Traffic Controller enabled with Special Vehicle Assistance System
29	Perabhattula Venkatesh	Computer-Vision based ADAS applications for Autonomous Vehicles in India.
30	G Venkata Ujwal Sai	Vision based Segmentation and Navigation for Unmanned Aerial Vehicles.
31	Deeshant Sharma	An Integrated Framework for UAVs: Localization, Mapping, and Navigation in GPS-Denied Environments.
32	Hari Nagaraja Srikanth	Enhancing Autonomous Vehicle Navigation with Real-Time Pothole Detection and Simulation-based Collision Warning Systems.
33	Rishabh Bhardwaj	Enhancing Autonomous Vehicle Capabilities: Drive-by-Wire Integration, Pedestrian Intent Estimation, and Collision Mitigation Systems Simulation in Carla.
34	Shridharam Tiwari	Handling Multi-Object Tracking and Pedestrian intention for Autonomous vehicles in real-time.
35	Hershita Shukla	DSRC Based Safety Alert System and Study on Camera Radar Fusion Network.
36	Palli Venkata Aishwarya	Vision-based Perception and Collision Warning for safe navigation of Autonomous vehicles in Indian scenarios.
37	Shantanu Yadav	ADAS System Design for Autonomous Vehicles using Radar Signal Processing.
38	Harshal Verma	LiDAR-Camera sensor fusion
39	Tuhin Dutta	ADAS for point navigation system for autonomous car adaptable to Indian scenarios