SANTHOSH REDDY D

6-302/26, Chandra Nagar, Meerpet, Balapur, Hyderabad, Telangana, India, 500097
(+91) 99486 95981 ◇ santhoshreddy14@gmail.com

WORK EXPERIENCE

Post Doctoral Researcher | Indian Institute of Technology Hyderabad, India

Dept. of Electrical Engineering *September 2021 - Present*

Project: "ADAS for Point-to-Point Navigation System for Autonomous Car Adaptable to Some Indian Scenarios" - Collaboration between IITH and Suzuki Motor Corporation(Japan).

As a Post Doctoral Researcher, my primary focus involves the development of the perception aspect of an autonomous vehicle designed for passenger transportation. Collaborating with Suzuki Motor Corporation, the project aims to create a system capable of safely and efficiently navigating roads autonomously. This marks a crucial step in the evolution of driverless vehicles, potentially transforming the way we travel and reducing road accidents.

Key Achievements:

- **Demonstrated Collision Warning System:** Successfully showcased a Vision-Based Navigation system compliant with ISO Standards for pedestrians, bicycles, and cars.
- **Scenarios Development:** Engineered Indian-specific scenarios, including potholes, speed bumps, traffic signs, and light detection algorithms. These were deployed in real-time for vehicle actuation.
- **Computer Vision Models:** Developed advanced computer vision models utilizing cutting-edge technology to empower autonomous vehicles. These models, driven by sophisticated object detection algorithms, enable self-driving cars to perceive and interpret their surroundings, including objects like speed bumps, potholes, traffic signals, pedestrians, and other vehicles. Segmentation models were also created to distinguish between driving spaces, alternate driving spaces, and lane markings, providing a comprehensive understanding of the road environment.
- **Dataset Creation:** Generated a unique dataset tailored for autonomous vehicles, encompassing objects around the vehicle, traffic signs, and traffic lights. Implemented all necessary steps in the data acquisition process within the city limits of Hyderabad.
- **Leadership Role:** Headed a team of 22 members, including administrative and technical personnel, ensuring adherence to project timelines. Conducted weekly client meetings to provide updates, gather feedback, and collaboratively assess the feasibility of implementing modifications in the research.
- **Reporting and Financial Management:** Produced quarterly and annual reports, drafted a proposal for financial support, and created financial reports and tax credit forms for client submission. Successfully met all project requirements within the established timeline, achieving key milestones by the end of the second year.
- **Administrative Expertise:** Demonstrated proficiency in administration, covering areas such as procurement, accountability, HR management, and project proposal drafting. Fostered positive relationships with team leads, contributing significantly to overall team satisfaction.

My current role has provided a platform to contribute significantly to cutting-edge research in autonomous vehicle technology, blending technical expertise with effective project management and leadership skills.

Project Associate *January 2014 - July 2015*

Indian Institute of Technology Hyderabad, India and RV VlSI Backend: Executed the physical design implementation of the Torpedo subsystem and Mixed-signal Communication module. Additionally, conducted digital full chip design utilizing UMC-180 NM technology.

EDUCATION

Indian Institute of Technology Hyderabad, India *July 2015 - September 2021*
PhD, Electrical Engineering

Thesis: "Novel Techniques for Ultrasound Medical Image Classification in Abdominal Organs."

- Developed Fatty Liver and Abdominal Organ Classification using Deep-learning Techniques.
- Proposed framework for representative detection of liver images of fatty liver using ultrasound imaging.
- Proposed and developed an automatic classification of COVID-19 using lung ultrasound images by deep learning methods.

Jawaharlal Nehru Technological University Hyderabad, India
Master of Technology *September 2012 - December 2014*
VLSI Embedded Systems
Jawaharlal Nehru Technological University Hyderabad, India
Bachelor of Technology *September 2007 - August 2011*
Electronics and Communication Engineering

SKILLS

Leadership

Strategic Planning

Business Development

Product Development

RESEARCH PURSUANCE

Researching under the guidance of Dr. P Rajalakshmi, Professor, IIT-Hyderabad, India

RESEARCH INTERESTS

Vision-Based Navigation, Out of Distribution, Reinforcement Learning for Navigation, Perception-based Autonomous Systems, Environmental Perception, Behavioral Decision-making, Autosar, Autoware

PUBLICATIONS

Journals

1. Palli Venkata Aishwarya, Rishav Kumar, **Dr. D Santhosh Reddy**, Dinesh Kumar Sonkar, Prof. P Rajalakshmi, "A Novel Approach to Vision-based Collision Warning System for Autonomous Vehicles" IEEE Transactions on Vehicular Technology, December 2024. (Submitted)
2. Bharath, R., **Santhosh Reddy, D.** and Rajalakshmi, P. "A SoC-Based Programmable Portable Ultrasound Scanning System for Point-of-Care Applications and Clinical Research Activities." SN COMPUT. SCI. 3, 349 (2022). https://doi.org/10.1007/s42979-022-01241-7

3. **Reddy, D.S.**, Rajalakshmi, P. and Mateen, M.A., 2021. "A deep learning based approach for classification of abdominal organs using ultrasound images." Biocybernetics and Biomedical Engineering.

4. Rajalakshmi, P., **Reddy, D.S.**, and R. Bharath. "CNN based framework for representative detection of liver images for CAD and tele-sonography applications." CSI Transactions on ICT 7.2 (2019): 131-135. CSI Transactions on ICT 7.2 (2019): 131-135.

5. A. Z. Mohammed, A. K. Nain, J. Bandaru, A. Kumar, **D. S. Reddy** and R. Pachamuthu, "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, vol. 6, no. 2, pp. 3437-3447, April 2019. DOI: 10.1109/JIOT.2018.2884654

Conferences

1. **Santhosh Reddy D**, Kaipa Sri Charan, Sai Kumar Kayam and Rajalakshmi P,"Robust Obstacle Detection and Collision Warning for Autonomous Vehicles Using Autoware Universe" 2024, 16th International Conference on Computer and Automation Engineering (ICCAE2024), Melbourne, Australia, March 14-16, 2024. (Accepted)

2. Samuktha V., Hershitha Shukla, Nitish Kumar, Tejasri N., **Santhosh Reddy D** and Rajalakshmi P, "Improving Radar-Camera Fusion Network for Distance Estimation 2024" 2024, 16th International Conference on Computer and Automation Engineering (ICCAE2024), Melbourne, Australia, March 14-16, 2024. (Accepted)

3. Tuhin Dutta, **D Santhosh Reddy**,Prof Rajalakshmi P, "Real-Time Deep Learning based Safe Autonomous Navigation paper," 2024 8th International Conference on Robotics and Machine Vision (ICRMV 2024) Shanghai, China.

4. H. N. Srikanth, **D. S. Reddy**, D. K. Sonkar, R. Kumar and P. Rajalakshmi, "Pothole Detection for Autonomous Vehicles in Indian Scenarios using Deep Learning," 2023 IEEE 26th International Symposium on Real-Time Distributed Computing (ISORC), Nashville, TN, USA, 2023, pp. 184-189, doi: 10.1109/ISORC58943.2023.00033.

5. P. V. Aishwarya, **D. S. Reddy**, D. K. Sonkar, P. N. Koundinya and P. Rajalakshmi, "Robust Deep Learning based Speed Bump Detection for Autonomous Vehicles in Indian Scenarios," 2023 IEEE 26th International Symposium on Real-Time Distributed Computing (ISORC), Nashville, TN, USA, 2023, pp. 201-206, doi: 10.1109/ISORC58943.2023.00036.

6. **D. S. Reddy** and P. Rajalakshmi, "A Novel Web Application Framework for Ubiquitous Classification of Fatty Liver Using Ultrasound Images," 2019 IEEE 5th World Forum on Internet of Things (WF-IoT), Limerick, Ireland, 2019, pp. 502-506. DOI: 10.1109/WF-IoT.2019.8767283

7. R. Bharath, P. Kumar, **D. S. Reddy** and P. Rajalakshmi, "Compact and Programmable Ultrasound Front-End Processing Module for Research Activities, " 2018 40th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), Honolulu, HI, 2018, pp. 921-924. DOI: 10.1109/EMBC.2018.8512343

8. **D. S. Reddy**, R. Bharath and P. Rajalakshmi, "A Novel Computer-Aided Diagnosis Framework Using Deep Learning for Classification of Fatty Liver Disease in Ultrasound Imaging," 2018 IEEE 20th International Conference on e-Health Networking, Applications and Services (Healthcom), Ostrava, 2018, pp. 1-5. DOI: 10.1109/HealthCom.2018.8531118 **(Received Outstanding Paper Award)**

9. **D. S. Reddy**, R. Bharath and P. Rajalakshmi, "Classification of Nonalcoholic Fatty Liver Texture Using Convolution Neural Networks," 2018 IEEE 20th International Conference on e-Health Networking, Applications and Services (Healthcom), Ostrava, 2018, pp. 1-5. DOI: 10.1109/HealthCom.2018.8531193

10. P. K. Mishra, B. Jagadish, M. P. R. S. Kiran, P. Rajalakshmi and **D. S. Reddy**, "A Novel Classification for EEG Based Four Class Motor Imagery Using Kullback-Leibler Regularized Riemannian Manifold," 2018 IEEE 20th International Conference on e-Health Networking, Applications and Services (Healthcom), Ostrava, 2018, pp. 1-5. DOI: 10.1109/HealthCom.2018.8531086

11. R. Bharath, **D. S. Reddy**, P. Kumar and P. Rajalakshmi, "Novel architecture for wireless transducer based ultrasound imaging system," 2016 IEEE EMBS Conference on Biomedical Engineering and Sciences (IECBES), Kuala Lumpur, 2016, pp. 432-436. DOI: 10.1109/IECBES.2016.7843487 **(Received Best Paper Award)**

ACHIVEMENTS

- Received the Best Research Academic Award for my work in healthcare during my PhD. Also Worked on automatic ultrasound detection during the COVID-19 during pandemic.
- Received Outstanding paper award "A Novel Computer-Aided Diagnosis Framework Using Deep Learning for Classification of Fatty Liver Disease in Ultrasound Imaging" in 20th International Conference on E-health Networking, Application Services (Healthcomm'18)-2018.
- Received best paper award "Novel Architecture for Wireless Transducer Based Ultrasound Imaging System" in IEEE EMBS Conference of Biomedical, Engineering and Sciences(IECBES)-2016.

REFERENCES

Dr. P. RAJALAKSHMI
Professor
Dept. of Electrical Engineering
IIT-Hyderabad-502285
Email: raji@ee.iith.ac.in
Mob: (+91) 40 2301 6452