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Ayush Dasgupta

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ABOUT ME

As a motivated and detail-oriented Electronics and Communication Engineering graduate with a solid academic foundation and practical experience in circuit design, signal processing, and embedded systems, I am eager to expand my knowledge through a master's program in a research-intensive setting. I hope to contribute to cutting-edge advancements in communication technology and IoT while honing my analytical and technical skills. My goal is to bridge theoretical principles to real-world applications, resulting in meaningful engineering solutions. I am excited to collaborate with experts, broaden my research knowledge, and pursue a career at the forefront of technological advancement.

EDUCATION AND TRAINING

Bachelor of Technology

K L University [2020 – 2024]

Field(s) of study: Electronics and Communication Engineering | **Final grade:** 9.17 CGPA

High School

Glendale Academy [2018 – 2020]

Field(s) of study: Grade XII | **Final grade:** 80%

Secondary School

Glendale Academy [2017 – 2018]

Field(s) of study: Grade X | **Final grade:** 72%

SKILLS

Technical Skills

IoT | Python | C++ Programming | Robotics | Autonomous Navigation | RADAR | Signal Processing | Microsoft Office | G-Suite

Soft Skills

Problem Solving | Written Communication | Teamwork | Leadership

LANGUAGE SKILLS

Mother tongue(s): Bengali

Other language(s): English | Hindi

INTERNSHIPS

[11/2024 – 07/2025]

Cogniti Core, India

Worked as an Autonomous Systems Intern:

- Worked on sensor fusion.
- Implemented and tested path planning and control algorithms for mobile robots/vehicles.
- Assisted in SLAM (Simultaneous Localization and Mapping) research for autonomous systems.
- Developed embedded software modules for real-time signal processing and control.
- Contributed to the integration of robotic platforms with ROS.

[05/2023 – 06/2024]

IIT Hyderabad, India

- Worked for over a year as part of the RADAR team in the Data Collection Project.
- Extensively handled automotive RADAR signal and data processing, contributing to navigation and sensor fusion research.
- Applied advanced algorithms to improve localization and perception for autonomous navigation systems.

Co-authored research outputs, including:

- *"TIAND: A Multimodal Dataset for Autonomy on Indian Roads"*
- *"An Efficient Approach for Calibration of Automotive Radar–Camera With Real-Time Projection of Multimodal Data."*

[05/2022 – 07/2022]

NIT Raipur, India

- Completed a remote summer internship focused on developing an efficient Devanagari script input–based P300 speller system using Brain-Computer Interface (BCI).
- Worked on signal processing and data handling techniques for EEG-based input systems.
- Enhanced skills in neural signal analysis, feature extraction, and data-driven research methodologies.

[09/2021 – 11/2021]

Vyorius, India

- Received intensive training in Robotics and Automation from IIT Kanpur as part of the selection process.
- Completed individual robotics projects to demonstrate technical skills, leading to selection for the internship.
- Worked on two industrial robot–based projects, applying automation concepts to real-world use cases.
- Gained hands-on experience in robotics system design, programming, and industrial automation workflows.

[07/2021 – 12/2021]

Team IshiHara LLC, Japan (Road to Shine Program)

- Selected among the top 5 of 6000 applicants across India for the prestigious Road to Shine Program by T-Hub Hyderabad & Hiroshima Prefecture.
- Collaborated with Masayuki Sugahara (CEO, Team Ishihara LLC) on the Tech Boukou program, an innovative skill-development initiative.
- Contributed to bridging the gap between traditional engineering education and industry requirements through applied projects.
- Gained international exposure by working in a multicultural, cross-border innovation environment.

Link: https://r2s.exchange/2021/reports/02/

FELLOWSHIP

[06/2024 – 10/2024]

TiHAN, IIT Hyderabad

- Continued previous internship research as a full-time fellow under the TiHAN Project.
- Led and managed the Data Collection and RADAR team, overseeing project execution and mentoring junior researchers.
- Conducted extensive work on SLAM (Simultaneous Localization and Mapping) and navigation frameworks using automotive RADAR.
- Strengthened leadership, research, and team management capabilities while contributing to India's autonomous mobility initiatives.

PUBLICATIONS

[2024]

An Efficient Approach for Calibration of Automotive Radar–Camera With Real-Time Projection of Multimodal Data

Keywords:

{Radar cross-sections; Calibration; Cameras; Sensors; Aluminum; Synchronization; Autonomous vehicles; Operating systems; Autonomous vehicles; calibration; camera; projection; radar; radar cross section (RCS); real time; reflector; robot operating system (ROS)}.

Publisher: IEEE Transactions on Radar Systems

N. Kumar, A. Dasgupta, V. Satyanand Mutnuri and R. Pachamuthu

Link: https://ieeexplore.ieee.org/abstract/document/10546272

[2024]

TIAND: A Multimodal Dataset for Autonomy on Indian Roads

Keywords: {YOLO; Laser radar; Simultaneous localization and mapping; Roads; Urban areas; Radar detection; Radar},

Publisher: IEEE Symposium on Intelligent Vehicle

Link: https://ieeexplore.ieee.org/abstract/document/10588583

[2024]

On the Road to Autonomy: A Comparative Analysis of Multimodal Datasets

Authors: Dasgupta, A., Gopi, O., Chowdhury, A., Behera, S. | **Publisher**: Recent Trends in AI Enabled Technologies (First International Conference, ThinkAI 2023)

Link: https://link.springer.com/chapter/10.1007/978-3-031-59114-3_2

PROJECTS

RADAR-Camera Sensor Calibration, Sensor fusion, and RADAR annotations with automatic labelling (TiHAN)

- Developed an innovative approach for calibrating RADAR and video sensors while mounted on the vehicle.
- The calibration approach is based on the normalization and direct linear transformation (NDLT) of RADAR data to camera coordinates.
- A deep learning architecture was developed using Convolutional Neural Networks (CNN), VGG, and RetinaNet to concatenate RADAR and camera data and conduct sensor fusion in real-time scenarios.
- Developed an innovative way for annotating RADAR data for object classification. The calibrated radar data is displayed on the camera image. CNN layers extract relevant features and then perform pooling operations. Meanwhile, the radar feature vector passes through fully connected dense layers.

ADAS use-case development using RADAR (TiHAN)

- Developed Automatic Emergency Braking (AEB) using 360° Navtech RADAR.

Multimodal Dataset generation using RADARs, LiDAR, Cameras and GNSS Sensors (TiHAN)

- Developed a multimodal synchronized data collection stack in the vehicle's LINUX environment to collect synchronized data from RADARs, LiDAR, cameras, and GNSS systems.
- Mounted 6 RADARs, 1 LiDAR, 6 Cameras, and a GNSS system to cover the vehicle's 360° field of view and minimize blind spots.
- Data was collected throughout Hyderabad, including rural and urban regions, during sunny, rainy, foggy, and nighttime conditions.
- All sensors are synced using the Precision Time Protocol approach.

RADAR SLAM (TiHAN)

- Led the RADAR SLAM project under TiHAN, focusing on Simultaneous Localization and Mapping (SLAM) using a 360° Navtech RADAR.
- Processed raw RADAR FFT data to perform key technical tasks for SLAM, including Feature Extraction, Odometry Estimation, and Environmental Mapping.

POSITIONS OF RESPONSIBILITY

Leadership Experience

- President, Entrepreneurship Development Cell- Founded and inaugurated the ED Cell at the university.
- Secretary, IEEE KLH Student Branch- Collaborated with faculty to strengthen IEEE engagement at the campus.
- School Council Captain- Represented the student body, managed council activities, and led cultural and academic initiatives.

HONOURS AND AWARDS

Achievements & Extracurriculars

- Certified swimmer with competitive experience
- Gold medallist in guitar performance
- Avid reader and writer with a passion for creative expression
- Secured Second Place in an Intra-college Idea Pitching Competition.
- Won Second Prize at *Start-up Rendezvous '21* and *Innovation Day Inter-college Idea Pitching Competition* conducted by KL CIIE.

HOBBIES AND INTERESTS

Hobbies & Interests

- Building side projects & exploring research insights
- Reading books across diverse genres
- Watching films of all kinds
- Swimming
- Listening to and exploring music