

NAVEEN BALAJI

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📍 Atlanta - US

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EXPERIENCE

Robotics Research Engineer

Joulea LLC

📅 May 2023 – Jan 2024

📍 Atlanta, USA

- Implemented a **SLAM system** using Lidar Inertial Odometry, and Point-cloud data, improving autonomous robot navigation via **collision-avoidant** paths in dynamic environments.
- Conducted scans and generated **3D models of Atlanta's largest buildings** using drone systems, contributing significantly to the city's building inspection.

Graduate Research Assistant

Healthcare Robotics Lab

📅 Aug 2021 – Apr 2023

📍 Georgia. Tech

- Developed **audio** models to perform cognitive impairment detection on multi-modal healthcare datasets .
- Created various assistive environments in the **physics simulator** to generate datasets for training machine learning policies
- Automated the **mobile manipulator robots** to do autonomous tasks like object handover and grasping.

Research Assistant

Intelligent Control lab

📅 Oct 2018 - Apr 2021

📍 IIT Kanpur

- Created an pose estimator using the Kalman filter procedure for indoor localization using imu, ble, and UWB technologies.
- Designed a novel fail-safe system for drone Positioning and **Posture estimation** without a GPS module.
- Developed a robust **vision-based drone landing** system on the color box, with a precise object tracking technique for search and rescue competition.

ACHIEVEMENTS

- 2021 **General Proficiency Medal** for the best academic performance at IITK among the graduate students
- 2021 **Research Proficiency Medal** for the best undergraduate project work done by graduate students
- 2019 **Gold medal** in **Inter-IIT Techmeet Aerial Robotics** [Search & Rescue competition] conducted by Govt. of India
- 2017 **All India Rank 924** in Engineering entrance [JEE Mains] among 1.2 million students

Relevant Coursework

- Deep Learning, Computer Vision, Computer Animation
- Human-Robot Interaction, Autonomous Navigation
- Robot Intelligence: Planning, Graduate Algorithms
- Reinforcement learning specialization, Optimization Methods
- Data Structures and Algorithms, Artificial Intelligence.

EDUCATION

MS - Electrical n Computer Engr.

Georgia Institute of Technology, Atlanta

📅 2024 – 2025

MS - Computer Science

Georgia Institute of Technology, Atlanta

📅 2021 – 2023

B.Tech. - Aerospace Engineering

Indian Institute of Technology, Kanpur

📅 2017 – 2021

TECHNICAL SKILLS

- **Robotics:** ROS, Gazebo, Arduino, OpenCV, Moveit, LabView, PCL, Open3D
- **Frameworks:** Pytorch, Tensorflow, Pybullet, OpenAI Gym, SageMaker, AWS
- **Languages:** Python, C++, C, MATLAB
- **Softwares:** GITHUB, HTML, AUTOCAD, Simulink, SolidWorks

Projects

Language model based plan generation

- Leveraged large language models like CLIP and BERT to formulate user-defined natural language constraints for robotic trajectory planning.
- Utilized diffusion model-based methodology to learn conditional distributions over feasible trajectory modifications.
- Developed a real-world simulation setup for executing planned trajectories directly on drone platforms, enhancing human-robot interaction.

Patent

N. Balaji, M. Kothari, and A. Abhishek. System and method for estimation of yaw angle for an aerial vehicle for autonomous navigation, 2019. **Indian Provisional Patent**

Publications

N. Balaji, M. Kothari, and A. Abhishek. Gps denied localization and magnetometer-free yaw estimation for multi-rotor uavs. *In 2020 International Conference on Unmanned Aircraft Systems (ICUAS)*, pages 983–990