

Anujith Muraleedharan

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🌐 [Personal Website](#)

🎓 [Google Scholar](#)

EDUCATION

Rajiv Gandhi Institute of Technology

Bachelor of Technology in Electronics and Communication Engineering GPA: 8.16/10

Aug '18 – Aug '22

Kottayam, India

- **Qualified GATE 2023 (ECE)** with top 1.58 percentile ranking among 70,000+ registered candidates.

RESEARCH EXPERIENCE

Indian Institute of Technology, Delhi

Research Associate Advised by **Prof. M. Hanmandlu**

June '24 – June '25

New Delhi, India

- Built a goal-retargeting framework that allows robots to re-aim grasp goals in real time under sensing delays and perturbations, maintaining task success through uncertainty-aware adaptation.
- Designed a progress-aware human-in-the-loop reinforcement learning framework that maintained full task success while halving feedback requirements through selective querying based on learning progress.

Indian Institute of Science

I3D LAB, Research Associate Advised by **Prof. Pradipta Biswas**

Aug '23 – May '24

Bangalore, India

- Designed and evaluated multiple control strategies (LQR, PD, Stanley, SMC), performed sensor fusion, and contributed to the robotic system development for an autonomous aircraft taxiing system.
- Developed an eye-gaze-controlled assistive robotic system integrating safety protocols, hand detection, and dynamic path planning to enable safe and autonomous stamp printing for individuals with SSML.

Rajiv Gandhi Institute of Technology

CASP LAB, Undergraduate Research Assistant Guided by **Prof. Manju Manuel**

Jan '21 – June '22

Kottayam, India

- Tested and validated the Processing Element (PE) unit design within the Unified Winograd-GEMM (UniWiG) architecture, ensuring functionality through simulations in Vivado.
- Verified Modified Booth Encoding (MBE) multipliers and Wallace tree adders while analyzing power consumption and resource utilization to optimize performance metrics.

WORK EXPERIENCE

RobotX Workshops [\[Website\]](#)

Simulation Developer

Oct '22 – Feb '23

Remote

- Built a modular simulation framework for the DJI Tello drone using Ursina engine, supporting realistic flight dynamics, real-time camera streaming, and command execution via both API and socket communication.
- Developed an interactive learning platform adopted by 200+ students, integrating GUI controls and visual feedback for immersive drone programming.

PUBLICATIONS

*Denotes Equal Contribution

1. U-LAG: Uncertainty-Aware, Lag-Adaptive Goal Retargeting for Robotic Manipulation

Anamika J H*, **Anujith Muraleedharan***

IROS 2025 Workshop on Perception and Planning for Mobile Manipulation in Changing Environments.

[\[Paper\]](#)

2. SPARQ: Selective Progress-Aware Resource Querying

Anujith Muraleedharan, Anamika J H

CoRL 2025 Workshop on Resource-Rational Robot Learning [\[Paper\]](#)

3. **Accessibility Analysis of Educational Websites using WCAG 2.0**
Utkarsha Singh, Jeevithashree Divya Venkatesh, **Anujith Muraleedharan**, Anamika J H, KamalPreet Singh Saluja, Pradipta Biswas
ACM Digital Government: Research and Practice [Paper]
4. **Eye-Gaze-Enabled Assistive Robotic Stamp Printing System for Individuals with Severe Speech and Motor Impairment**
Anujith Muraleedharan, Anamika J H, Himanshu Vishwakarma, Kudrat Kashyap, Pradipta Biswas
ACM Conference on Intelligent User Interfaces (ACM IUI) 2024
[Project Page] [Paper]
5. **Developing a Computer Vision based system for Autonomous taxiing of Aircraft**
Prashant Gaikwad, Abhishek Mukhopadhyay, **Anujith Muraleedharan**, Mukund Mitra, Pradipta Biswas
AVIATION Journal Vol 27 No 4 (2023)
[Project Page] [Paper]

PROJECTS

- Vision-Enabled and Natural Language Control for Mobile Robots** [Website] January 2025
- Built the language-to-action pipeline for interpreting natural-language commands into structured robot actions, enabling real-time control over motion and navigation tasks.
 - Implemented fuzzy and semantic destination mapping with sentence-transformer embeddings, integrating LLM-driven instructions with ROS for simulation and real-world execution.
- Get-3D** [Website] October 2024
- Implemented a real-time 2D-to-3D video conversion system with depth-based object segmentation and adaptive thresholding to enhance rendering accuracy and dynamic visual effects.
- Interactive 3D Holographic Display** [Website] June 2022
Undergraduate Thesis
- Designed a 3D holographic projection system using the Pepper's Ghost technique with gesture-based interaction, integrating Raspberry Pi, Leap Motion, and OMNI Haptic for advanced 3D object manipulation.
- Autonomous Racing: MPC vs. LQR** [Website] December 2020
Undergraduate Minor Project
- Developed and simulated a Model Predictive Control (MPC) algorithm for real-time vehicle trajectory tracking using linear model approximations, optimizing state and control variables within PyBullet.

AWARDS

- Division of Mechanical Sciences Research Symposium** [Certificate] May 2024
IISc Bangalore
- Participated in the 3-minute Research Video Contest and got shortlisted among the top 5 out of 28 teams.
- Technoxian World Robotics Championship** [Certificate] July 2023
AICRA
- Participated in innovation contest in which around 150 teams participated.
- Graduate Aptitude Test in Engineering (GATE)** [Scorecard] February 2023
IIT Kanpur
- Secured admissions to M.Tech. Programme in IISc Bangalore, IIT Madras, IIT Bombay and IIT Kharagpur.

PROGRAMMING SKILLS

Subjects of Interest: Reinforcement Learning, Control, Robotic Vision, Machine Learning
Languages: Python, C/C++, C#, JavaScript, SQL
Tools: MATLAB, Fusion 360, GIT, Unity, Motive
Frameworks: ROS, TensorFlow, PyTorch, PyBullet

SERVICE

Prominence

Chief Organizer

January 2021

Department TechFest

- Organized a competition on fastest line follower robot with a total participation of 10 teams.
- Conducted a seminar on Solar Electric Propulsion.
- Organized a workshop on Advanced Driver Assistance Systems (ADAS).

Intelligent User Interfaces (ACM IUI)

Reviewer

December 2024

Conference

- Reviewer for the Posters and Demos track of ACM IUI 2025.