

Anujith Muraleedharan

✉ anujithmuralidharan@gmail.com

☎ +91 7025138725

🌐 [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

- Refined eye-gaze-controlled robotic system for individuals with Severe Speech and Motor Impairments by integrating Asimov-inspired safety protocols, hand detection, and path planning for safe operation.
- Developed a graph-based global path planner that dynamically generates real-time obstacle-free paths, ensuring collision prevention and navigation around obstacles.
- Built an autostereoscopic display system with 2D-to-3D video conversion using depth-based segmentation for improved depth perception and immersive viewing.

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 a comprehensive Eye-gaze-controlled assistive robotic system, including user interface design, control algorithm development, and hardware integration for a stamp printing application for individuals with Severe Speech and Motor Impairment.
- Designed and assembled a six-wheel rover with a rocker-bogie suspension mechanism, capable of traversing 15% slopes while supporting a 25 kg payload.

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. **Advancing Rehabilitation: Adaptive Robotic Arm for Safe Block Printing with Gaze Control**
Anujith Muraleedharan*, Anamika J H*, Madasu Hanmandlu
Springer International Journal of Intelligent Robotics and Applications (Under-review)
[\[Project Page\]](#)

2. **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]
3. **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
[Paper]
4. **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.