Anamika J H

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India
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Personal Website
Github

Education

Rajiv Gandhi Institute of Technology *2018 – 2022*
Bachelor of Technology in Electronics and Communication Engineering *Kottayam, India*
GPA: 8.2/10 [Transcript]

Research Experience

Indian Institute of Technology, Delhi *June 2024 – June 2025*
Research Assistant, Advised by ***Prof. M. Hanmandlu*** *[Website]* *Delhi, India*

- Developed a mid execution goal retargeting layer using point cloud perception, with an uncertainty aware retargeter that maintains a pose distribution under sensing lag to reaim goals and improve success.
- Contributed to the development of a selective human in the loop RL framework by designing a progress aware query policy that requests feedback only when learning stalls or degrades.

Indian Institute of Science, Bangalore *Aug 2023 – May 2024*
I3D LAB, Research Assistant Advised by ***Prof. Pradipta Biswas*** *[Website]* *Bangalore, India*

- Worked on integrating path planning and smooth eye gaze control into an assistive robotic arm for safe navigation and precise stamp printing for individuals with severe speech and motor impairments.
- Collaborated with a team to develop a rover's sensing system, integrating a 2D LiDAR with a camera for object detection and SLAM, and implemented Cartographer SLAM for navigation.

Rajiv Gandhi Institute of Technology *Jan 2021 – June 2022*
CASP LAB, Undergraduate Research Assistant Guided by ***Prof. Manju Manuel*** *[Website]* *Kottayam, India*

- Contributed to the development of the Data and Output Transform Units in a CNN accelerator by analyzing convolution algorithms and verifying functionality through behavioral simulations in Vivado.
- Developed a functional prototype of a 3D holographic projection system using the Pepper's Ghost technique, integrating real-time eye tracking via a pipeline of face detection, landmark detection, head pose estimation, and gaze estimation models to enhance interactive user experiences.

Professional Experience

Blue Bear Contracting Pvt Ltd. *Aug 2022 – Jan 2023*
Intern *Pandalam, India*

- Designed and implemented a pipeline to convert 2D floor plan images into textured 3D architectural models using Mask R-CNN for wall, door, and window detection.
- Achieved over 90% wall detection accuracy, and significantly reduced human intervention (by 80%) in the 3D modeling process.
- Automated the entire workflow using a RESTful API backend and Unity frontend, enabling real-time layout reconstruction and interactive visualization.

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.
   (Spotlight)[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]

Projects

Vision-Enabled and Natural Language Control for Mobile Robots *Jan 2025*
Personal Project

- Built a ROS 3D perception node for online multi-object detection and monocular depth inference, publishing stable SE(3) poses with probabilistic temporal smoothing (Kalman filtering) and TF integration.

Interactive 3D Holographic Display *June 2022*
Undergraduate Thesis

- Optimized a 3D holographic projection system by deriving optimal reflective angles via Fresnel equations and modeling intensity attenuation through acrylic using the Beer–Lambert law.

Autonomous Racing: MPC vs. LQR *Dec 2020*
Undergraduate Minor Project

- Designed and implemented a continuous-time LQR controller in PyBullet to optimize path tracking for an autonomous race car using state-space models and realistic vehicle dynamics.

Achievements

Division of Mechanical Sciences Research Symposium [Certificate] *May 2024*
IISc Bangalore
Research presentation shortlisted among the top 5 out of 28 teams.

National Engineering Olympiad [Certificate] *March 2022*
NEO '22
Secured All India Rank 22 in Electronics and Telecommunication Engineering.

Programming skills

Languages	Python, C/C++, C#, HTML
Tools	MATLAB, Fusion 360, GIT, Unity, Motive
Frameworks	ROS, TensorFlow, PyTorch, PyBullet

Teaching & Mentoring

Workshop Coordinator	Led Arduino and sensor interfacing workshop for first-year ECE students.
Seminar Speaker	Presented on Light-Induced Valleytronics in Pristine Graphene.