Hemanth Murali

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Education

University of Michigan - Ann Arbor (Aug 2024 – May 2026)   **GPA: 3.79/4.0**
MS in Robotics

Sri Sai Ram Engineering College, IN (Aug 2020 – April 2024)   **GPA: 4.0 / 4.0**
B.Tech in Artificial Intelligence and Data Science

Technical Skills

Languages: Python, C, C++, MATLAB, SQL, HTML, CSS, JavaScript, bash, PowerShell
Tools: VS Code, GIT, Unity, Unreal Engine, MySQL, Docker, MongoDB, Figma, Flutter, Bootstrap, Firebase
Frameworks: Numpy, OpenCV, PyBullet, SciPy, Scikit-learn, TensorFlow, PyTorch, Matplotlib, Pandas and Keras
Certifications: Machine Learning using Python and R, Python Masterclass, Web Design & Developer Bootcamp, Flutter & Dart
App Development, ROS2 Basics (Humble), Localization and 3D Mapping, SLAM, Advance Computer Vision, and Ethical Hacking

Experience

Robotics IT Support Engineer   *Ann Arbor, MI*
Michigan Robotics — University of Michigan   *Dec 2024 – Present*

- Managing OS imaging, deployment, and maintenance for **150+ devices**, ensuring optimal functionality for robotics research. Developing and integrating robotic systems, including sensors, actuators, and control interfaces, to advance research initiatives.
- Resolved **1,200+ robotic support tickets** using tools like TeamDynamix, BlueCat, and Netdisco, enhancing system efficiency.

Project Intern   *Bangalore, India*
Indian Space Research Organisation (ISRO - URSC)   *July 2023 – Aug 2023*

- Built a real-time data acquisition model of **point clouds from Flash LiDAR**, with object detection through Python.
- Analyzed the **VoteNet** model for 3D object detection using the **Hough voting algorithm** to detect 3D objects directly from raw point cloud data from the **KITTI dataset** and **Velodyne datasheet**, achieving a processing rate of 60 frames per second.

Research Intern   *Mumbai, India*
Indian Institute of Technology - Bombay   *Jan 2023 – June 2023*

- Designed a portable **COVID detection** system using Python with cyanine dye (DiSc2) for real-time diagnostics.
- Engineered comprehensive **data visualization** and hardware interaction solutions through advanced mathematical coding, leveraging Python libraries such as Numpy, Scipy, SpiDev, RPi.GPIO to enhance project efficiency by 30%.

Publication

- **System and Method of Smart Education using Integrated Systems of Augmented Reality/Virtual Reality and Virtual Voice Assistant,** Intellectual Property of India Published, App. No.: 202241074792 ↗
- **RSSI: Overboard Localization System,** ICPECTS — IEEE Xplore ↗

Projects

Autonomous path planning for microbot navigation using 6DOF robotic arm   *Jan 2025 - Present*

- Developing a 6DOF robotic arm to **autonomously control** magnetic fields, guiding microbots to navigate obstacles with **95% accuracy**. Integrating perception, path planning, and manipulation to optimize collective microrobot movement and efficiency.

Robotics Systems Lab – Armlab   *Jan 2025 - Present*

- Using a RGB-Lidar camera for block detection and manipulation with **depth estimation**, boosting **accuracy by 30%**. Implemented kinematics for motion planning and **autonomous grasping** with a 5-DOF arm, improving **efficiency by 25%.**

Autonomous Robots with Path finding algorithms   *Nov 2024 - Jan 2025*

- **A* path planner** for **PR2 mobile manipulator**, enabling efficient navigation and obstacle traversal.
- Implemented **ANA*** for dynamic motion planning **(98% accuracy)** & **RRT-Connect** for optimized path generation.

Robotic Arm Manipulation using Inverse Kinematics, Point Cloud and Grasping   *Oct 2024 - Dec 2024*

- Applied **inverse kinematics** for arm motion and grasping, with advanced point cloud analysis using **PCA, RANSAC,** & **ICP** for object detection, alignment, and reconstruction, achieving **97% position accuracy**.
- Developed antipodal grasping algorithms for efficient object handling and stack tower manipulation using a robotic arm.

TOOFAN: Education for the Future   *Aug 2022 - May 2024*

- **Founder & CEO** of an EduTech start-up leading a team, leveraging **AR/VR & AI Voice Assistant** for modern education.
- Secured **$85,000 funding** while driving innovation in voice-based interaction & task execution.

Computer Vision-Based Aircraft Recognition and Distance Estimation   *May 2022 - Aug 2022*

- Utilized **HOG** & **SIFT** for edge detection, implemented distance measurement using triangular & monocular depth estimation.

Others: Deep learning for segmentation & pose estimation; Image classification with CNN & KNN; Collision avoidance & human tracking in a surveillance drone; Optimization using gradient descent & QP solver; Robot estimation using the Kalman Filter.