

Akhil Jawvadi

College Park, MD, 20740

📞 240-398-8827 ✉️ javvadi.akhil@gmail.com 🌐 [linkedin.com/in/akhil-javvadi-820ba5219/](https://www.linkedin.com/in/akhil-javvadi-820ba5219/) 🐙 github.com/AkhilJavvadi

About Me

I am passionate about solving challenging problems in robotics through research and innovation. My expertise includes developing intelligent algorithms, optimizing robotic navigation, and applying deep learning techniques to real-world automation. I enjoy working on research-driven projects that push technological boundaries.

Education

University of Maryland (UMD), College Park, MD

CGPA: 3.67/4

Master of Engineering – Robotics

May 2025

Relevant Coursework: Robot Modeling, Intro to robot programming, Control of Robotics Systems, Planning and Perception for Robots, Building Robot Software System, HRI, Natural Language Processing, Multimodal Foundation Models, Manufacturing and Automation.

Indian Institute of Information Technology, Design and Manufacturing, Kancheepuram

CGPA: 8.29/10

Bachelor of Engineering – Electronics and Communication Engineering

Aug. 2019 – May 2023

Relevant Coursework: Data structures and Algorithms, Machine Learning, Analog and Digital Communication, Microprocessors and Computer Architecture, VLSI Design, Embedded System Design, Advanced digital signal processing

Technical Skills

Programming Languages: Python, C, C++, MATLAB, Embedded C

Libraries and Tools: OpenCV, ROS2, Gazebo, MATLAB, NumPy, Pandas TensorFlow, PyTorch, Deep Learning, Arduino, Movelt, Solidworks, Git, Github, CMake, VS Code, Jupyter Notebook, Arduino Studio, SQL, Django

Development Platforms: Linux (Ubuntu), Embedded robotics, Gazebo

Soft Skills

Creative Thinking, Leadership, Interpersonal communication, Self-Motivated, Workload Management, Strong Problem-Solving Skills

Experience

Titan Research and Development

Oct 2022 – May 2023

Research Intern

Hosur, IN

- Developed a machine learning-based classification system for defect detection in analog watches. Applied classification and deep learning algorithms, achieving 90.5% accuracy with traditional models and 92.46% accuracy with deep learning. Optimized the system with TensorFlow and OpenCV, enhancing detection efficiency under varying lighting conditions. Worked with a dataset of 500 watches, refining preprocessing techniques for better model performance. The system was successfully tested in a real-world manufacturing setup, reducing defective detection time by 95%.

Projects

Adaptive Text-to-Command Translation for Robot Navigation Using T5-small

Oct 2024 – Dec 2024

- Fine-tuned a T5-Small transformer to translate natural language commands into structured navigation plans with perfect test accuracy, integrated Low-Rank Adaptation (LoRA) to reduce training parameters by 99.64% while retaining 98.5% accuracy, and implemented the resulting NLP model with ROS2 and Gazebo to validate autonomous navigation on a TurtleBot3.

DYNAMIC A AND DIJKSTRA PATHFINDING FOR A DIFFERENTIAL DRIVE ROBOT*

Spring 2024

- Enhanced *A and Dijkstra algorithms** with non-holonomic motion constraints, incorporating wheel RPM, kinematic models, and angular velocity profiles to achieve realistic and efficient motion planning. Improved path efficiency and reduced deviations for differential drive robots. Evaluated performance in Gazebo simulations for autonomous navigation tasks.

PERCEPTION-BASED TURTLEBOT NAVIGATION

Spring 2024

- Developed an AI-powered perception pipeline integrating YOLO, optical flow, and horizon line detection for real-time navigation. Applied projective geometry to locate vanishing points and adapt to dynamic environments, achieving 85% success in unfamiliar terrains.

SIMULATION-BASED AUTONOMOUS INDUSTRIAL ROBOT FOR AGILE MANUFACTURING

Spring 2024

- Developed and implemented a ROS-based robotic control system for the Agile Robotics for Industrial Automation Competition (ARIAC), focusing on automated pick-and-place, sensor-driven decision-making, and fault handling in industrial workflows. Improved task efficiency and adaptability in industrial workflows. Successfully simulated and validated automation processes in Gazebo.

Take the quiz | Python, Django, SQL

January 2023

- Built an interactive quiz platform using Python, Django, and SQL, supporting real-time scoring, multiple-choice questions, and user analytics. Enhanced engagement and adaptive difficulty for learning applications.

Med Nurse (Viropana) | Fusion 360, Arduino, Sensors, Gazebo, ROS2, C++

Spring 2022

- Developed an autonomous robotic nurse assistant for medical supply transport within hospitals using ROS2, Arduino, and Fusion 360. Integrated sensor-based navigation and obstacle avoidance to ensure precise deliveries. Validated in Gazebo simulations for real-world hospital automation.