

Atharv Mendhe

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EDUCATION

Dwarkadas J. Sanghvi College of Engineering - Ville Parle, Mumbai

2022 - 2026

Pursuing B.Tech Computer Engineering, GPA - 8.5

Champions Science Junior College - Kharghar, Navi Mumbai

2020 - 2022

EXPERIENCE

Coding Head at DJS Antariksh

August 2024 - Present

- Integrated Teensy and Arduino Giga microcontrollers with ROS for reliable real-time sensor-actuator communication
- Used NVIDIA Jetson and Raspberry Pi boards to control the rover and stream up to seven simultaneous camera feeds
- Enabled fully autonomous traversal using ZED2 camera with ROS-based path planning and navigation
- Worked extensively in Gazebo and RViz for simulation and debugging. Created a URDF from scratch using .stl files. Simulated and controlled a 4-wheel differential and a 4-wheel independent steering rover in Gazebo and RViz.

Generative AI Intern at Hexaware Technologies

October 2024 - December 2024

- Developed a meeting summarizer that transcribed audio from meetings or podcasts, providing intelligent QnA with clickable timestamps, detailed speaker activity charts, and concise summaries of key discussion topics.
- Integrated features to extract and display context, including company details, acronyms, and topic insights.
- Enhanced usability by supporting audio uploads, enabling seamless navigation and quick access to critical information.

PROJECTS

Optimizing and Quantizing YOLOv8 for Real-Time Object Detection on NVIDIA Jetson

January 2025

- Trained a custom YOLOv8 object detection model for detecting task-specific objects with high precision and recall
- Converted the PyTorch model to ONNX format and optimized it using TensorRT, for deployment on NVIDIA Jetson
- Reduced inference time from 1.2 seconds to 30 milliseconds, achieving real-time performance for edge applications

Autonomous Robotic Arm Operation

March 2025

- Simulated a maintenance panel in Gazebo with embedded ArUco markers, using ROS-based marker detection to estimate the panel's pose and obtain an approximate transform of the end-effector relative to the panel for initial alignment
- Deployed a custom-trained object detection model to recognize individual switches on the panel, then extracted their 3D coordinates using ZED2 stereo camera point cloud data, transforming them into the robot's planning frame
- Planned arm trajectories in MoveIt based on detected coordinates, and refined positioning using visual servoing to ensure precise physical interaction; the entire pipeline was visualized in RViz for validation and debugging

Marker-Based Global Vehicle Localization in GPS-Denied Environments

April 2025

- Designed a vision-only localization system that relied exclusively on ArUco marker detections placed at fixed, known global coordinates, eliminating the need for GPS, IMU, or odometry-based inputs in challenging environments
- Captured high-resolution marker poses using a ZED2 stereo camera, then computed the vehicle's pose with respect to each detected marker's local frame, dynamically updating in real time as the vehicle moved
- Converted the locally estimated pose into the global coordinate frame using known marker positions and relative transforms, while filtering out distant or low-confidence detections to ensure robust and accurate localization

RESEARCH

Off-Target Gene Sequence Prediction of CRISPR-Cas9 Genome Editing

Submitted

- Designed and implemented CRISPR-DWA and CRISPR-PROB, novel deep learning frameworks for generating potential off-target sequences and predicting their likelihood in CRISPR-Cas9 systems, outperforming existing methods.
- Utilized dynamic windowing and multi-headed attention mechanisms to capture intricate sequence dependencies, enabling accurate prediction of rare but critical off-target events. Achieved a F1 score of 0.984 and AUROC of 0.987

CO-CURRICULAR

ML Head at Synapse

- Exploratory Data Analysis (EDA), Normalization and Standardization of Data, Various Clustering Algorithms(K-means, DBSCAN, Hierarchical, Mean Shift, Agglomerative), Regression(Linear, Logistic, Ridge, Lasso)
- Artificial Neural Networks, CNNs, Creating a custom embedding layer from scratch, Question & Answering and text generation using LSTM's and RNN's, Building a Transformer from scratch using Self Attention Layer
- Mentored 25 junior ML developers in learning core ML concepts and guiding them in writing research papers

Senior Software Engineer – European Rover Challenge(ERC)

- Participated in ERC, a global competition organized by the European Space Foundation annually in Poland, where university teams designed, built, and operated prototype Martian rovers to perform real-world field tasks
- Competed in autonomous and semi-autonomous mission tasks, achieving 7th worldwide, 1st in Asia, and 1st in India.
- Developed all software aspects of the rover, including autonomous navigation and control of a 6-DOF robotic arm
- View Certificate, Watch our rover in action

SKILLS

- **Relevant Coursework:** Harvard's CS50's-Intro to CS with Python, Intro to AI with Python
- **Programming:** C, Python, HTML, React, Java, ROS, ROS2, Micro-ROS, URDF
- **Hardware:** Nvidia Jetson, Raspberry Pi, ZED2, Intel Realsense, Arduino Uno, Arduino Giga, ESP32, Teensy
- **Libraries:** Scikit Learn, Numpy, Pandas, Matplotlib, Seaborn, TensorFlow, Keras, PyTorch, Selenium, Flask

ACHIEVEMENTS

2nd Runner-up in International Rover Challenge(IRC 2025)

1st Runner-up in International Space Drone Challenge(ISDC 2024)