Deepam Ameria

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Education

Carnegie Mellon University – Robotics Institute, School of Computer Science — Aug. 2024 – May 2026
Master of Science in Robotic Systems Development | GPA: 4.20/4.0 — Pittsburgh, PA
Coursework: Deep Learning; Robot Learning; Optimal Control and Reinforcement Learning; Computer Vision; Robot Autonomy; Computer Vision; Manipulation, Estimation, and Control

University of Mumbai – K.J. Somaiya College of Engineering — Aug. 2019 – May 2023
Bachelor of Technology in Mechanical Engineering | GPA 9.08/10.0 — Mumbai, India
Coursework: Robotics and AI; Deep Learning in Autonomous Vehicles; Programming in C; Mechatronics, Electric Vehicles

Experience

Robotics Software Intern, AlphaZ, Inc., Los Angeles, California — Jun. 2025 – Aug. 2025

- Delivered an autonomous stair-climbing module for the Unitree B2, enabling reliable multi-floor navigation and patrolling.
- Implemented YOLOv8 stair perception with depth fusion and real-time yaw/lateral error estimation, and a ROS closed-loop controller for precise alignment and ascent.
- Deployed the Fixposition GNSS on the Clearpath Husky A300, providing precise position for outdoor patrolling.

Graduate Engineer R&D, Yulu Bikes Pvt. Ltd., Bangalore, India — Jul. 2023 – Feb. 2024

- Implemented a real-time state-estimation pipeline for CAN and IMU decoding with Kalman filtering, validated on 200+ runs, delivering stable bike-tilt signals for control and analytics.
- Trained and deployed a lightweight time-series ML model on fused IMU data to predict fall risk during evasive maneuvers, with low-latency inference integrated into the ride software stack.

Self-Driving and Powertrain Engineer, Orion Racing India, Mumbai, India — Jan 2022 – May 2023

- Integrated a SICK MRS1000 LiDAR and built a real-time point-cloud pipeline; applied DBSCAN clustering to segment objects for mapping and navigation.
- Implemented and tuned a pure pursuit lateral controller for reference tracking and lane keeping.
- Led design of a 7.9 kWh Li-Po pack, integrating BMS telemetry and fault reporting into the vehicle software stack.

Projects

CMU VLA (Vision-Language-Action) Challenge, Carnegie Mellon University — Jul. 2025 – Present

- Developing a Vision-Language-Action pipeline that integrates perception (Camera+LiDAR), natural language understanding, and robot control to autonomously answer user queries in a Unity-based simulated environment
- Currently integrating Google Gemini API for LLM-based prompt parsing and intent classification.

Autonomous Lunar Rover for terrain manipulation (Advisor: Dr. William "Red" Whittaker) — Sep. 2024 – Present

- Building an autonomous terrain-modification system in ROS 2 with a linear-actuated dozer arm, enabling both autonomous and teleoperated grooming in a simulated lunar site.
- Designing a validation and planning stack leveraging high-resolution RGB-D data from a ZED 2i camera to detect craters, plan tool operations, and provide feedback for system validation.
- Containerized the ZED SDK on NVIDIA Jetson Orin to deploy in Docker, enabling active mapping of simulated lunar terrain with portable, scalable integration.

Optimal Model-Based Control for Humanoid Soccer, Carnegie Mellon University — Feb. 2025 – May 2025

- Developed a simulated soccer-kicking framework for the Unitree G1 humanoid to achieve stable ball strikes toward a target.
- Formulated a QP to compute foot impulse and contact position, with trajectories refined via Direct Collocation.
- Implemented Infinite Horizon Linear Quadratic Controller (LQR) for balance before/after impact and Time-Varying LQR for accurate trajectory tracking during the kick.

Motion Tracking with Real-Time Defense Mechanism, Carnegie Mellon University — Feb. 2025 – May 2025

- Integrated depth camera and interfaced Franka Arm manipulator using ROS to perceive and track motions and improve human-robot interaction.
- Leveraged YOLOv8 for precise detection of sword and OpenCV for centroid tracking.
- Planned defensive trajectories by computing perpendicular interception poses and executed them with the Franka Arm for real-time blocking.

Skills

- **Programming and Platforms:** Python, C++, MATLAB, Embedded C++, ROS2, Mujoco, SolidWorks,
- **Software Development and Libraries:** PyTorch, OpenCV, Linux and Bash, Git, Docker, AWS
- **Robotics:** Kinematics and Dynamics, Deep Learning, Reinforcement Learning, Computer Vision, Control Systems, Sensor Fusion, Sensor Calibration