

# Rituraj Harish Navindgikar

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## EDUCATION

### Northeastern University, Boston, MA

Master of Science in Robotics, Concentration in Computer Science (GPA: 3.8/4)

Expected May 2026

**Relevant Courses:** Robot Mechanics and Control, Robot Sensing & Navigation, Mobile Robotics, Robotics Science Systems

### Pune University, Pune, India

Bachelor of Technology in Computer Engineering (GPA: 3.8/4)

Aug 2024

**Relevant Courses:** Data Structures & Algorithms, Calculus, Probability & Statistics, Operating Systems, AI, Computer Graphics, Machine Learning, Database Management

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## TECHNICAL SKILLS

**Programming:** Python, C++, Java, MATLAB

**Robotics & Perception:** ROS2, SLAM, OpenCV, 3D Reconstruction, Sensor Fusion, Camera Calibration, Nvidia-Isaac, Gazebo, Rviz2

**Machine Learning & AI:** PyTorch, Keras, scikit-learn, Reinforcement Learning (PPO, Dopamine),

**Core Competencies:** Algorithm Design, Path Planning, Navigation, Kinematics, Control Systems

**Soft Skills:** Problem Solving, Team Collaboration, Adaptability, Communication

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## EXPERIENCE

Robotics Engineer Intern

July 2023 – July 2024

### Roll n Drive, Pune, India

- Developed real-time SLAM-based navigation for autonomous vehicles, increasing trajectory accuracy by 30% in dynamic environments
- Optimized sensor fusion algorithms integrating LiDAR, IMU, and depth cameras, achieving a 25% reduction in localization errors
- Designed a predictive obstacle avoidance model utilizing reinforcement learning, enabling safer navigation in cluttered spaces

Programming Lead

Aug 2022 – Dec 2024

### Team Cipher, Pune, India

- Led a 30+ member robotics team, developing dynamic motion control and real-time decision-making algorithms for autonomous navigation
- Implemented particle filters and dynamic occupancy grid maps, enhancing localization and trajectory planning efficiency by 40%
- Applied reinforcement learning techniques for robust adaptation in unpredictable environments, securing a **10th National Rank at DD Robocon 2023**

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## TECHNICAL PROJECTS

### Autonomous Perception Navigation

Present

- Designed a deep learning-based perception pipeline for real-time 3D reconstruction and robot navigation.
- Integrated vision, IMU, and LiDAR for 6-DoF tracking and shape estimation.
- Enhanced SLAM-based localization in unstructured environments.

### Jenga Playing Robot Arm

Feb 2025

- Developed a dynamic motion control system for precise robotic arm manipulation.
- Implemented object pose estimation and force feedback for stable block extraction.

### 3D Tunnel Mapping using SLAM

Dec 2024

- Built a GPS-denied mapping system using RTAB-Map SLAM for Northeastern's underground tunnels.
- Achieved 95% localization accuracy via stereo vision and multi-sensor fusion.

### IMU & Magnetometer-Based Navigation System

Oct 2024

- Developed sensor fusion-based state estimation for drift-free high-speed tracking
- Implemented real-time drift correction, removing sensor bias by 45%