Prajwal Bhaskar Bharadwaj

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Education

Georgia Institute of Technology (Georgia Tech) — Atlanta, Georgia
Masters in Robotics (*Courses: AI, Controls, Deep Learning, Perception and Navigation*) — *May 2024*
Graduate Teaching Assistant: CSE 6730 Modeling and Simulation

National Institute of Technology Karnataka (NITK), Surathkal — Surathkal, India
Bachelor of Technology in Mechanical Engineering, — *May 2019*

Technical Skills

Application Softwares:	ROS, Gazebo, OpenCV, Simulink, MSC Adams, V-REP, Labview, Fusion 360
Programming:	Python, C, C++, Visual Basic, MATLAB, Mathematica

Publications

Bhavik Parmar, **Prajwal B Bharadwaj**, *"Design, Implementation of Gaits and Control of a Quadruped Robot"*, 8th International Engineering Symposium, Kumamoto University, Japan, 2019 · [Publication]

Experience

Caterpillar India — *Bangalore, India*
Associate Engineer, Power Systems and Controls Division — *July 2019 - June 2022*
- Delivered neural network-based performance optimization projects and tuned turbocharger control maps
- Improved test cell operational efficiency (TEEP) by 24.5% through remote monitoring and analysis
- Translated Simulink-based turbocharger controls tool to Python-based software eliminating license costs

Mechanical Chef *(Cooking Robot Startup)* — *Bangalore, India*
Mechanical Design and Robotics Intern — *May 2019 - June 2019*
- Designed a novel robotic system for volume-based delivery of cooking ingredients, which reduced the number of required actuators to half the original count and slashed production costs [Video]

Indian Institute of Technology (IIT), Bombay — *Mumbai, India*
Research Intern, Suman Mashruwala Advanced Micro-Engineering Lab — *May 2018 - July 2018*
- Developed a feedback-controlled mechatronic system running on Simulink-Tiva real-time interface, for precision control of z-stage motion in a Microstereolithography 3D printer [Video]
- Achieved microscopic displacement resolution of 10µm and validated using opto-electronic sensors [Image]

Indian Institute of Space Science and Technology (IIST) — *Thiruvananthapuram, India*
Research Intern, IIST Summer Internship Programme — *June 2017 to July 2017*
- Designed static and dynamic leg trajectories, simulated them using Fourier techniques for computational advantage in cyclic operation, and implemented reference tracking using five-bar inverse kinematics
- Achieved stable walking, turning and trotting gaits using MATLAB-Adams Co-simulation [Video]

Projects

Autonomous Mobile Robot, *Mobile Robotics Lab, Georgia Tech* [Video]
- Developed scripts for LiDAR, Raspicam data fusion. Implemented object-tracking on Turtlebot3
- Implemented a state machine for smooth transition between obstacle avoidance and goto-goal behaviour
- Built image classification models for prediction of direction signs and navigation in a directed maze

Smart City, *Robot Localization Team - Sensors and Actuators Lab, NITK Surathkal*
- Developed an algorithm incorporating the use of ArUco markers and USB Webcam to localize moving robots and identify stationary POIs on the smart city grid to aid the path-planning of robots

Quadruped robot, *Mechanical Team Lead, ABU Robocon 2019* [Video]
- Created a framework to automatically generate leg trajectories on quadruped robot based on pose values obtained from IMU and proximity sensors. Implemented stair climbing gait and tested on 35% gradient

Snake Robot, *Winning Team: e-Yantra National Robotics Competition(2018), IIT Bombay* [Video]
- Developed novel algorithms for rapid pitching and fall recovery of snake robot, simulated them alongside caterpillar, side-winding, serpentine gaits in V-REP, and implemented in Arduino code

Merits and Extra-Curriculars

- First place among 5932 participating teams at the e-Yantra National Robotics Competition, IIT Bombay
- Mentored two underprivileged undergrad students to secure jobs in robotics and automation firms