OM GAIKWAD

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EDUCATION

Worcester Polytechnic Institute (GPA: 4.0/4.0) — **Worcester, MA**
Masters in Robotics Engineering — Aug'22 -Present

Symbiosis Skills and Professional University (CGPA: 9.3/10.0) — **Pune, IN**
Bachelor of Technology in Mechatronics Engineering — Aug'18 – May'22
Coursework: Industrial Robotics, Control Engineering, MATLAB & Simulink, Mechatronics Engineering Fundamentals

KEY SKILLS

- Programming Languages: Python, C++, MATLAB.
- Tools & Framework: GitHub, ROS, Gazebo, Simulink, ROS2, TensorFlow, Matplotlib, SLAM
- Hardware: Raspberry Pi 4B, Nvidia Jetson Nano, Arduino Mega & Uno

INTERNSHIP EXPERIENCE

Robotics Engineering Intern — **Mar'22 – July'22**
RigBetel Labs (Website) — Pune, India

- Built mobile robots from scratch and got the opportunity to dive deep into path planning.
- Implemented and debugged electronics, hardware and circuitry on robots.
- Implemented mapping algorithms on robots for testing and tuning purpose.

Robotics Engineering Intern — **May'21 – Jan'22**
HunarPro Academy of Robotics (Website) — Pune, India

- Worked under the project: "Hospital assistance robot" as a part of the simulation team and performed simulation operations using ROS and Gazebo.
- Pitched the idea of hospital assistance robot in the BeChangeMaker competition by WorldSkills as one of the top 15 teams globally from India.
- Trained college students on basic robotics and control systems by inculcating practical knowledge & hands-on project building.

PROJECTS

Autonomous Mobile Robot for Warehouse Industries (GitHub)

- Designed and built an omni-wheeled AMR for Warehouse Industries that consists of omni-wheels to allow increased maneuverability, aluminum chassis, and mapping capabilities.
- Executed hands-on fabrication, assembly, wiring of the robot along with ROS Navigation Stack and GMapping.
- Implemented real-time obstacle avoidance and SLAM on ROS and Gazebo using LiDAR sensor.

Simulation of SCARA Robot in Gazebo using ROS2 (GitHub)

- Implemented forward and inverse kinematics node using the service server-client method.
- Applied PD controllers to the robot joints and published the joint efforts.
- Executed velocity controllers for the robot to follow linear trajectory along an axis.

Implementation of PPO and DQN on Breakout and Space Invaders Atari Game (GitHub)

- Underwent study of the OpenAI's Atari games Breakout and Space Invaders.
- Executed the Proximal Policy Optimization and Deep Q Network reinforcement learning algorithms.
- Performed a comparative analysis of the algorithms based on the training results and drafted conclusions on performance of the algorithms.

Pick and Place Mobile Robot for Hospital Scene (GitHub)

- Participated in IndiaSkills 2021, part of the WorldSkills competition, wherein work on building robots to solve problems in industries such as aerospace, mining and medicine, was carried.
- Worked on building a pick and place mobile robot operating in a hospital simulated arena.
- Implemented sensor fusion to perform teleoperation and autonomous tasks.
- Used omni-wheeled robot for increased maneuverability and reduced operational time to ensure efficiency.
- Achieved 1st position in the State Level competition and 2nd position in the Regional Level competition.

TECHNICAL PAPERS

- **Om Gaikwad**, Vastav Bharambe, Gaurav Desai, Shayan Ghorai, Shrinjoy Ghorai, Kehul Patni, Mohan "Design and Development of Aerial and Under-water drone for security and surveillance" (Paper)
- Parve Serena, **Om Gaikwad**, Poorvi Sidhapura, Sanket Chaudhary, and Shrikar Nakhye. "Development of Low-cost LiDAR Scanner for Indoor Mapping." (Paper)

COURSEWORK

- Fall 2022 – Foundation of Robotics, Robot Dynamics, Reinforcement Learning.
- Spring 2023 (Ongoing) – Deep Learning, Motion Planning, Engineering Project Management.