Pratik Bhujbal

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EDUCATION

MS, Robotics Engineering **Aug 2021- May 2023 (expected)**
University of Maryland, College Park MD
B. Tech in Mechatronics **July 2016 - May 2020**
SRM Institute of Science & Technology, Tamil Nadu India

SKILLS

Software: ROS (Robot Operating System), Python, C++, Matlab, Linux, Git, Embedded Programming**,** Altium, LabVIEW.
Interests: Mobile Robots, Localization, Sensor Fusion, Embedded systems

WORK EXPERIENCE

Robotics Software Engineer Intern **Oct 2020 – Jun 2021**
Drishti Works Mumbai, India

- Created the entire Diagnostics system using ROS diagnostic package and python scripts.
- Simulated different robots using gazebo and ROS with near-about real environment noise.
- Worked on AWS cloudwatch_metrics and logger and made separate scripts for custom metric messages and logs.
- Tuned the PID parameters for joint and actuator for simulation to get output as real robots.

Research Intern **June 2018 – July 2018**
Seco Tools Pune, India

- Used HMI and Numeric control to design tools.
- RAPID was used to program and iterate for specific tasks.

RESEARCH PROJECTS

GitHub- https://github.com/Prat33k-dev

Dr. Moovy: Medical assistance robot (Python, Dart, C++) July 2020 – Sept 2020

- Developed telepresence technology to the need of the hour minimizing the risk of hospital staff's exposure to the virus.
- The robot features an app-based remote control, audio conferencing between the patient and doctor, and highly maneuverable robot due to its Mecanum 4-wheel drive configuration. Also, cloud-based communication and internet-based control methods were used to move anywhere in the hospital.

Faby: The Telepresence robot (Path planning, C++, ROS, Python, Gazebo) Dec 2019 – May 2020
Developed a telepresence robot that can autonomously navigate through an indoor environment. ROS based software stack which enables open-source software and easier code modulation. It features interactive touch UI, Speech enabled communication and a web-based monitoring. My work includes,

- Navigation package, Map creation using slam_gmapping and pgm-map creator.
- Scripts for odometry data and motion control, Sensor data acquisition and Motion control algorithm.
- Circuit designs, power distribution system and Battery management system.

Autonomous Underwater Vehicle (AUV) (C++, Labview, Matlab, Altium) Feb 2018 – Nov 2019
Working in Team SRMAUV for almost two years and leading its Electronics domain, I have designed the Electronic systems and subsystems for two iterations for the team's vehicles, Zarna and Zarna 2.0. These include,

- Designing and deploying the power management systems. **|** Peripheral and sensor control.
- Embedded electronics. **|** Acoustic source localization and navigation systems.

Underwater Acoustic Positioning and Navigation System (Labview, Matlab) Oct 2018 – Dec 2018

- A real-time model in LabVIEW using NI hardware used to establish an acoustic guidance system using a single transmitting source.
- A mathematical model was designed based on TDOA (Time Difference of Arrival) between four hydrophones. Extended Kalman filter was used to fused azimuth from the IMU and acoustic system.