

Bhaswanth Ayapilla

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EDUCATION

Carnegie Mellon University

Pittsburgh, USA

Master of Science in Robotic Systems Development | GPA 4.17/4.0

2024 – Exp. 2026


Relevant Coursework  - Computer Vision, Learning for 3D Vision, Robot Autonomy, Manipulation Estimation Control, Robot Mobility, Systems Engineering

Birla Institute of Technology and Science Pilani

Hyderabad, India

B.E. in Electronics and Communication Engineering | GPA 8.62/10.0

2020 – 2024

Relevant Coursework  - AI for Robotics, Robotics, Digital Image Processing, Reinforcement Learning, Machine Learning, Modern Control Systems, Internet of Things, Computer Programming

TECHNICAL SKILLS

Languages: C++, Python, MATLAB/Simulink **Libraries:** PyTorch, TensorFlow, Keras, scikit-learn, OpenCV, PCL

Frameworks: ROS/ROS2, Gazebo, MoveIt, Arduino, Solidworks, SUMO, Git, Docker, Linux

EXPERIENCE

Institute for Systems and Robotics

June 2023 – Jan 2024

Supervisors: Dr. David Cabecinhas and Dr. Pedro Batista

Lisbon, Portugal

- Developed an open-source Python-based simulator to analyze Autonomous Underwater Glider performance and motions
- Executed simulations of sawtooth and spiral motions, with PID implementation for precise control of pitch, heading, and trajectory tracking
- Designed controller for precise trajectory tracking and velocity control of Autonomous Surface Vehicle on MATLAB

Multi-Agent Robotic Motion Laboratory, NUS

June 2023 – Sept 2023

Supervisor: Dr. Guillaume Sartoretti

National University of Singapore, Singapore

- Formulated dual-phase selection and duration control solutions for multi-agent traffic signals using reinforcement learning
- Designed a novel reward function by incorporating dynamic vehicle information through V2V/V2I technologies, implementing a Hybrid PPO algorithm using PyTorch and simulating the results on SUMO simulator

CSIR - Central Electronics Engineering Research Institute

May 2022 – July 2022

Supervisor: Dr. Bhausaheb Ashok Botre

Pilani, India

- Performed analysis of batteries in low power Electric Vehicles using Machine Learning techniques for State of Charge (SOC) estimation and load forecasting, obtaining an accuracy of over 90%
- Utilized MATLAB to simulate temperature-dependent battery models and generated relevant data for ML training

RELEVANT PROJECTS

Lunar ROADSTER

Dr. William "Red" Whittaker | Sept 2024 – Present

- Building an autonomous Moon-working rover, capable of finding exploration routes and grooming the lunar surface to develop traversable surface trails
- Optimizing localization, navigation, and perception systems for precise and reliable autonomous operations using ROS2, sensor fusion, and computer vision

Autonomous Underwater Rover

Aug 2022 – May 2023

- Led a team of 20 for the development of an AUV for the Singapore Autonomous Underwater Vehicle Challenge (SAUVC); performing autonomous navigation, visual identification, and manipulation
- Orchestrated design and fabrication of the AUV; leveraging ROS for simulations encompassing navigation, control and path planning; applying object detection techniques for precise target acquisition

Underwater Localization and Depth Estimation

Aug 2022 – Dec 2022


- Optimized depth camera performance in underwater environments by developing and implementing underwater camera calibration, localization, depth estimation, and object detection techniques to enhance reliability

Autonomous Ground Vehicle

Aug 2022 – Mar 2023

- Engineered an open-source wheeled mobile robot proficient in mapping unknown environments with LiDAR and Depth Camera; performed autonomous navigation and path planning using SLAM
- Incorporating Visual SLAM using ROS, coupled with utilization of computer vision techniques for targeted object detection

LEADERSHIP

- Team Lead**  for Amazon ML Challenge 2023, team BARD.BITS; led a team of 4 and secured Rank 4 in India (2023)
- President** at Automation and Robotics Club, BITS Pilani India, steering a community of like-minded robotics enthusiasts, fostering collaboration and innovation within the club (2022 – 2023)