Vishnu Prem

email vprem@seas.upenn.edu • **website** vishnuprem.github.io • **linkedin**.com/in/vishnuprem6/ • **phone** +1 (267)-916-6313

EDUCATION

University of Pennsylvania, School of Engineering & Applied Science — *Philadelphia, PA*
Candidate for Master of Science in Engineering in Robotics – *GPA: 3.62/4* — *May 2021*
Courses: Design of Mechatronic Systems, Introduction to Robotics, Applied Machine Learning, Machine Perception, Learning in Robotics, Deep Learning for Data Science

Manipal Academy of Higher Education, School of Engineering & IT — *Dubai, UAE*
Bachelor of Technology in Mechatronics Engineering; minor: Robotics and Automation —*GPA*: *9.46/10* — *Oct 2018*
Research Abroad: University of Salford, UK in Spring 2018

EXPERIENCE

Amazon Lab 126 — *Sunnyvale, US*
Software Development Engineer Intern — *Jun 2020 – Aug 2020*
Implemented features for planning and control in the navigation stack for a new line of devices under development in the Advanced Technologies team. *C++17*

GRASP Lab – University of Pennsylvania — *Philadelphia, US*
Research Assistant — *Jan 2020 – May 2020*
Worked for a US Army funded DCIST collaborative research alliance project, implementing SLAM for multi drone navigation based on 3D point clouds from LiDAR scans. Implemented RRT* to realize leap frog strategies, ie plan a path for a multi robot system that maps environments with insufficient unique features. *C++11, ROS, Python, OpenCV*

Autonomous Systems and Advanced Robotics Research Centre- University of Salford — *Manchester, UK*
Undergraduate Student Researcher- Guide: Theo Theodoridis — *Feb 2018 – May 2018*
Development of navigation stack for Pioneer P3DX robot**.** Incorporated 3D depth camera and deep learning for landmark detection, localization by triangulation and obstacle avoidance with sonar sensors. *Python, Java, OpenCV*

Mimic Production — *Berlin, Germany*
Robotics and Animatronics Intern — *Mar 2019 – May 2019*
Developed software pipeline in embedded Linux platform for animatronic robot control. Designed hardware mechanism prototype for humanoid robot face. *Python, Raspberry Pi*

TECHNICAL SKILLS

- *Software*: C, C++, Python, ROS, MATLAB, git
- *Libraries:* OpenCV, Eigen, Numpy, PyTorch

RELEVANT PROJECTS

[visit website: vishnuprem.github.io **for more]**

Rao-Blackwellized Particle Filter for SLAM*(2020):* Implemented RBPF SLAM for indoor F1tenth autonomous car equipped 2D LiDAR and IMU. Generated maps based on data obtained from simulation.

Semantic Segmentation of 3D LiDAR*(2020):* Developed deep learning models for segmenting Semantic KITTI dataset composed of annotated LiDAR data from a vehicular scenes.

Unscented Kalman FIlter*(2020): UKF implemented for estimating roll, pitch and yaw based on data from IMU*

3D Pose Estimation*(2020): Used image data to estimate the 3D pose of an object by key point detection.*

FMT* Planning framework for Autonomous Cars *(2019):* Developed a ROS service node to serve as a global mission planner for Autonomous Vehicles that incorporates Fast Marching Tree algorithm in C++.

Semi-Autonomous Battle-bot *(2019):* Fabricated hardware and programmed microcontroller to localize robot using IR beacon in embedded C**.** Set up remote control via UDP and implemented PD control for autonomous navigation

Chess Playing Robot *(2017):* Developed computer vision algorithm using Python and OpenCV for detecting move made by human. Fabricated robot arm and wrote embedded software for robot arm control

ACTIVITIES & OTHER ACHIEVMENTS

Volunteer Head of Mechatronics Department for annual tech festival Technovanza'17 at MAHE Dubai • 1st Place in 'Institute of Physics' Young Lecturer Competition '18 at Manchester Metropolitan University, UK • Best Actor Award at Interhouse Drama Competition '14 SEPS, Abu Dhabi • Best Speaker at Interhouse Debate Competition'14 SEPS, Abu Dhabi

References available upon request