Shastri Ram

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EDUCATION

Carnegie Mellon University, Pittsburgh PA

- MSc Robotics — Aug 2016- Present
- Expected Graduation May 2018
- BS Electrical and Computer Engineering, Additional Major in Robotics — Aug 2012- May 2016
- Programming Languages: C, C++, ROS, Simulink, Python, MATLAB, Arduino C, Pascal, System Verilog

WORK EXPERIENCE

Research Assistant — Oct 2012- Dec 2013
Quality of Life Technology Center Personal Robotics Lab
Carnegie Mellon University

- Designed custom mounted shields for the 2D scanning Hokuyo lasers using Creo Parametric
- Developed a program using Python and the ROS Python package, for the robot, HERB, to autonomously dock and charge itself
- Calibrated 2D scanning lasers

Research Assistant and Systems Engineering Intern — May 2015- Present
Field Robotics Center
Carnegie Mellon University

- Working in collaboration with Yamaha to build and design a self-driving all terrain vehicle
- Integrated sensors such as GPS, IMU, Velodyne 64, Multisense with vehicle
- Built a ROS-CAN driver, using C++, that listened to ROS messages and published them to the CAN network and vice versa
- Conducted system characterization tests to develop the open loop model of the vehicle, then modified and tuned the control architecture of the vehicle, via Simulink to have a better response
- Debugged and tested the system extensively to identify and fix bugs especially with the drive by wire system
- Currently designing a system for terrain classification

PROJECTS

TrashBot — Jan-May 2016

- Designed and built a trash sorting robot which classified trash and sorted it into recyclable and non-recyclable bins
- Principal Power Systems Engineer and Embedded Programmer

EZ-Kart — Aug 2015 – May 2016

- Developed and constructed an autonomous cart with the aim of aiding workers in warehouses
- Located the user wearing an April tag using a vision system and maintained a set distance in front of the user as the user moved

Learning Terrain Traversability Using SVMs and CNNs — Aug 2016- Dec 2016

- Created a system to segment an image into traversable, partially traversable and non-traversable regions.
- SVM- libsvm, CNN- custom CNN with inspiration from AlexNet

Autolabelling of Outdoor Terrain Images with Roughness Metric — Aug 2016- Dec 2016

- Programmed a system which fused IMU readings with images.

RELEVANT COURSES`

- Past Courses- Embedded Control Systems, Intro to Robotics, Artificial Intelligence, Humanoid Robotics, Mobile Robot Programming, Robot Kinematic and Dynamics, Systems Engineering, Mechatronics, Computer Vision
- Current Courses- Intro to Machine Learning, Kinematics Dynamics and Controls

ACTIVITIES

- Formula Society of Automotive Engineers, Director of Safety Systems — Jan 2013- Jul 2014
- Eta Kappa Nu- Electrical and Computer Engineering Honor Society, VP — May 2015- May 2016
- Tau Beta Pi- Engineering Honor Society — May 2015