BHARATH KUMAR RAMESH BABU

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EDUCATION

Worcester Polytechnic Institute (WPI) (CGPA: 4/4) Aug 2021 - Present
Masters Degree, Robotics Engineering.

National Institute of Technology Tiruchirappalli, India (NIT-T) (CGPA: 7.8/10) Jul 2016 - Sep 2020
Bachelor Degree, Instrumentation and Control Engineering.
Minor Degree, Computer Science Engineering.

Relevant Courses: Computer Vision, Foundation of Robotics, Control Systems, Deep Learning, Motion Planning, Embedded Systems, Vision-Based Robotic Manipulation, Data Structures and Algorithms.

TECHNICAL SKILLS

Programming Languages **Proficient:** Python, **Intermediate:** C, C++, C#, Embedded C
Software Skills **Proficient:** ROS, Matlab, Linux, Unity, Gazebo, **Intermediate:** Blender, Fusion 360

WORK EXPERIENCE

Robotics Engineer, Flytbase, India Jul 2020 - May 2021

- Developed perception, navigation and automation modules for drone based warehouse inventory product (FlytWare) and progressed it to the stage of deployment at 3 warehouses in top organizations in United States. Delivered ROS/REST APIs for drone surveillance product (FlytNow) as per customer requirement.

RESEARCH EXPERIENCE

Research Assistant (Vision based Grasp Detection and Bench-marking) Nov 2021 - Present
Manipulation and Environmental Robotics Lab, Worcester Polytechnic Institute, *Prof Berk Calli*

- Created Gazebo environment for bench-marking grasp synthesis algorithms. Implemented 2 learning-based algorithms (GGCNN, ResNet) and 2 analytical algorithms (EFD, Assuming Symmetry) for benchmark evaluation.

Research Intern (Fault Tolerant Control of a Quad-rotor using Super-Twisting SMC) May 2019 - Jul 2019
Artificial Intelligence and Robotics Lab, Indian Institute of Science, *Prof Suresh Sundaram*

- Implemented Super-Twisting SMC and Control Allocation algorithm for robust trajectory tracking of a Quad-rotor. Achieved stable landing of the drone in simulation with 70% under-actuation in one of the rotors.

PROJECTS

3D Pose Estimation and Augmented Reality using Rubik's cube as fiducial Nov 2021 - Dec 2021

- Implemented Perspective Projection algorithm for augmented reality of virtual 3D objects. Estimated the pose of the camera using Perspective-N-Point algorithm. Designed Kalman Filter to improve the performance pose estimation.

Laser based SLAM for an Indoor Agricultural Robot using Gmapping Dec 2017 - Mar 2018

- Built a differential drive robot that can map and navigate indoor farmlands using Gmapping and ROS navigation stack with Kinect's RGB-D data and wheel/IMU odometry.

Shadow Detection and Removal using Unsupervised Segmentation Dec 2018 - Jan 2019

- Implemented an FCN based Unsupervised Segmentation algorithm for shadow segmentation. Designed a pipeline to extracts gabor features and match the sub-regions for transfer of illuminance to shadow regions.

End-Effector Trajectory Control of a 4DOF Manipulator using EEG signals Dec 2018 - Dec 2019

- Designed SSVEP classifier for EOG signals obtained from OpenBCI Ganglion. Achieved 98% accuracy for eye ball movement classification. Implemented end effector trajectory control in MoveIt using the output from EOG classifier.