

Nishant Shah

(508)-410-7958 | nshah3@wpi.edu

www.linkedin.com/in/nishantshah57/ | github.com/nishantshah57 | nishantshah57.github.io/website/index.htm

EDUCATION

Worcester Polytechnic Institute (WPI), Worcester, MA (Sept '19)

Master of Science, Robotics Engineering, GPA: 3.85/4.00

Gujarat Technological University (GTU), Gujarat, India (June '16)

Bachelor of Engineering, Mechatronics Engineering, GPA: 7.62/10.00

TECHNICAL SKILLS

Programming Languages: Python, C++, C, MATLAB, Octave, Buzz.

Software and Packages: ROS, Simulink, Gazebo, Rviz, Arduino IDE, Processing, Docker, Git.

EXPERIENCE

Associate Robotics Engineer, Humatics, Waltham, MA (Sept '19 – May '20)

- Worked on addition/modification of data APIs over UDP for IMU and UWB range sensor ROS driver and firmware.
- Analyzed multiple IMUs using statistical methods and algorithms to drive choice of IMU for the product.
- Performed localization performance evaluation for new in-house localization hardware and automated the navigation module.
- Worked on design and implementation of algorithm for obtaining good UWB range sensor data.

Robotics Software Intern, Humatics, Waltham, MA (Jun '19 – Aug '19)

- Designed and developed a tool for field deployment engineers for evaluation of Odometry, IMU and Range sensor data used for Localization using ROS framework.
- Improved understanding of Gazebo simulation (URDF, sensor plugins, controller plugins), sensor fusion and different type of robot models (Differential, Ackermann).

Algorithm Intern, Philips Connected Sensing, Cambridge, MA (July '18 – Dec '18)

- Worked on wearable biosensor, handled sensor data to monitor patient's activities, heart rate and respiration rate.
- Used MATLAB and C++ to deal with data collection, processing and sensor calibration using the tool developed by team.

PROJECTS

Manipulation and Grasping using a Robotic Arm, WPI (Oct '18 – Dec '18)

- Led a team of 4, responsible for weekly task assignment and conducted weekly update meetings.
- Utilized MoveIt and move base package for manipulation and grasping, simulated PR2 robot in Gazebo and visualized in Rviz.

Directed Research, WPI (Sep '18 – Mar '18)

- Used Cplex solver to implement heterogenous multirobot coordination with spatial and temporal constraints.
- Implemented Reinforcement Learning based algorithms in task allocation problems with temporal constraints.

Bipedal Walking using Genetic Algorithm and Reinforcement Learning, WPI (Mar '18 – Apr '18)

- Implemented Deep GA and DDPG on a Walker2d-v2 model using OpenAI Gym library and MuJoCo physics engine.
- Used Keras library to build a neural network and trained the weights which acted as the policy learned by the Bipedal Walker.

Distributed Localization in Partially GPS Denied Environment, WPI (Mar '18 – Apr '18)

- Simulated a swarm of Khepera IV robots and Footbots in ARGoS Simulator and programmed it using Buzz.
- Utilized range and bearing sensor to localize the robots and used trilateration algorithm to localize the stranded robot.

Adaptive Trajectory Control for Robotic Arm subject to varying load, WPI (Mar '18 – Apr '18)

- Implemented an adaptive controller using Linear Parameterization and Function Approximation Techniques (FAT).
- Simulated a two DOF manipulator in V-rep using FAT technique and Baxter in Gazebo using Baxter interface package.

Robot Navigation and Path Planning using Turtlebot, WPI (Oct '17 – Dec '17)

- Improved understanding of graph-based path planning algorithms (DFS, BFS, Dijkstra's, A*).
- Generated 2D occupancy grid-map using Gmapping package and navigated the robot in Gazebo using A* algorithm.

Teleoperation of a Robotic Arm using IMU sensor, WPI (Dec '17)

- Teleoperated a 4 DOF Robotic manipulator using the readings obtained from IMU sensor and controlled it using Arduino.
- Simulated the model in Gazebo and used ROS serial package to establish communication between IMU and the manipulator.

Haptic Device for Bilateral Stroke Rehabilitation, WPI (Sep '17 – Dec '17)

- Built two robotic manipulators with vibrational feedback and equipped two paddle Pong game for interactive rehabilitation.
- Implemented real time stick diagram animation and performed PID tuning on real robot to obtain optimal system response.