Archit Shah

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OBJECTIVE

A self-motivated and result-oriented individual seeking opportunities as a Robotics Engineer. Offering sound knowledge in Python, C++, ROS and Autonomous Navigation.

EDUCATION

Santa Clara University — **Santa Clara, CA**
Master of Science in Mechanical Engineering (Depth Area- Robotics and Mechatronics) — June 2018
Gujarat Technological University — **Gujarat, India**
Bachelor's in Mechanical Engineering — Jan 2016

TECHNICAL SKILLS

Programming Language:	Python | C++
Utilities/Debugging tools:	Matlab | Simulink | Gazebo| Labview | Rviz
Libraries / Toolboxes:	Open CV | Keras | Numpy | Scikit-learn | Matplotlib | Control Systems toolbox (Simulink)
Design Tools:	Solidworks | Autocad
Platforms:	ROS | Microsoft Windows | Ubuntu Linux
Communication Protocol:	Mavlink | I2C | TCP/IP | SPI
Other Skills:	Design of Experiment | CIFER | SCADA | Microsoft Office

EXPERIENCE

Infinite Options *(ROS, SLAM, Python, C++, Open CV, Keras)* — **San Jose, CA**
Robotics / Computer Vision Engineer — Dec 2018 – Present

- Building an Indoor autonomous robot prototype using ROS that can navigate in an unknown environment and shoot live videos
- Integrated hardware to get autonomy and control stack running on the robot prototype
- Built & trained a Notes Classifier using Convolutional Neural Network (CNN) in python that can classify & file handwritten notes
- Established and maintained relationships with collaborating hardware suppliers to meet project goals

Skycart *(Python, ROS, Matlab, Simulink, Gazebo, Data-driven control system)* — **San Jose, CA**
Robotics Engineer — August 2018 – Dec 2018

- Performed simulation of Model Free Adaptive Controller (MFAC) for discrete Non-Linear systems using python and compared its performance with conventional PID controller.
- Designed & simulated a Model Free Adaptive Control algorithm in Simulink for precision landing of a Hexacopter
- Implemented SITL (Software in the loop) using ROS (Robot Operating System) for precision landing of a Hexacopter

Vinay Wire Products *(C++, Solidworks)* — **Gujarat, India**
Mechanical Engineer — June 2015-July 2016

- Designed an Automatic spot-welding machine to perform wire-mesh welding operation which improved productivity by 70 percent
- Developed a Semi-Automatic wire bending machine using an existing pneumatic cylinder
- Designed fixtures in Solidworks used for wire-mesh welding operation

PROJECTS

Autonomous Navigation of Caterpillar Wheeled Robot: *(Simultaneous Localization and Mapping (SLAM), Python)*

- Developed and implemented a feature-based localization algorithm known as Similarity Transformation which uses landmark's location to localize the robot using the Lidar and encoder data
- Implemented a featureless localization algorithm called Iterative Closest Point which assigns scan points to the walls of the arena to localize the robot even when the landmarks are not on the view of the robot
- Coached a Kalman filter by doing sensor fusion, used the extended Kalman filter, as the robot's states and control commands were highly non-linear. Augmented the filter to solve for the mapping problem
- Developed a much more sophisticated algorithm known as Particle Filter for localization purpose and extended it to a SLAM problem known as Fast SLAM 1.0

Navigation of a Summit Robot using ROS (Simulation): *(ROS, Gazebo, Rviz, Navigation stack, python)*

- Created map of the environment making use of the laser scan data and the Odometry data using gmapping package
- Localized the robot in the environment making use of laser scan data, map data using AMCL localization package
- Using the Navfn global planner & DWA local planner, a safe collision path to the final position was calculated making use of the global costmap, robot's sensor data.
- Performed visualization and debugging operations using Rviz and rqt