

Kritika Iyer

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OBJECTIVE

To work as a full-time Robotics Engineer

EDUCATION

Master of Science, Robotics Engineering

Worcester Polytechnic Institute, (WPI), Worcester, MA

May '18

GPA: 3.73/4.00

Bachelor of Technology, Mechatronics

Shanmugha Arts, Science, Technology and Research Academy (SASTRA), India

May '16

SKILLS

Programming Languages: C, C++, MATLAB, Embedded C, Python, Visual Basic, MS SQL

Software and Tools: ROS, Gazebo, Simulink, OpenRave, OMPL, Git

Design Software: ProE, AutoCAD, LabVIEW, CODESYS, Solidworks, Ansys, COMSOL

Boards: Arduino, PIC, Raspberry Pi, AVR

Machine learning packages: Theano, Keras, Tensorflow, Scikit-learn

EXPERIENCE

Internship: Persimmon Technologies

July '17 — Aug '17

- Designed a test bed in Solidworks for Encoders

Research: AIM Lab, WPI

Feb '17 — June '17

- Developed an algorithm for complex master-slave coordination between manipulators and haptic devices.
- Implemented it in Gazebo using ROS on davinci and ABB robots.

Research: Soft robotics Lab, WPI

Feb '17 — June '17

- Modeled a manta ray in Solidworks and simulating the fin movement in COMSOL
- Analyzed the effect of friction and fluid velocity on thrusts produced by the fin
- Designed a fin model to overcome the effects

Internship: Maruti Suzuki India Ltd, Gurugram, India

May '15 — Jun '15

- Studied trajectory controllers for 6 DOF Fanuc, ABB industrial robots used in car manufacturing.
- Designed ladder logic for bottle filling station involving complex pick, place and fill operations.
- Implemented logic on Siemens Programmable Logic Controllers (PLC).

PROJECTS

Deep learning for robot perception

Aug '17 — present

- Detecting emotions of an autistic child using deep learning in PABI robot.

Mapping and Motion Planning for RC Car

Jan '17 — May '17

- Implemented A*, RRT*, and ARA* algorithms and comparing optimality, completeness, space and time complexity on ROS and Gazebo in 3 different world scenarios.

Safe Driving using MPC for Autonomous Vehicles

Jan '17 — May '17

- Controlled a car using Kinematic Bicycle model and model predictive control (MPC).
- Worked in MATLAB to simulate results using Fmincon and Yalmip libraries.
- Implemented MPC to achieve safe driving diversion from reference trajectory for obstacle avoidance.

Motion compensation, WPI

Oct '16 — Dec '16

- Implemented motion compensation techniques using EKF and Fourier series in Gazebo using ROS
- Visualized using daVinci along with teleoperation

MANTA Ray

Sept '16 — Dec '16

- Fabricated tiny Manta rays from 3D printed molds with silicone dragon skin 10.
- Actuated the Manta rays using Nitinol Shape memory alloy wires and pneumatic actuators.

Kiosk for Autistic Children

Oct '15 — June '16

- Designed and fabricated a gaming kiosk with various motor skill enhancement tasks integrated into it
 - Controlled the system to track the speed of performance, gripping methods and overall improvement
- PIC16F877A and got input from various sensors.

PUBLICATIONS

- Raj, Nijin J., Kritika Iyer, and A. K. Dash. "Design, fabrication, kinematic analysis and control of a 3-DOF serial manipulator." Next Generation Intelligent Systems (ICNGIS), International Conference on. IEEE, 2016.
- Iyer, Kritika, et al. "Application of image processing for a bubble column reactor." Computational Intelligence and Computing Research (ICCIC), 2013 IEEE International Conference on. IEEE, 2013.