Kritika Iyer

37 William street apt 2D, Worcester, MA 01609

774-701-2616 | Linkedin:kritikaiyer | kiyer@wpi.edu | github.com/iyerkritika | iyerkritika.github.io

EDUCATION

Master of Science, Robotics Engineering — May '18
Worcester Polytechnic Institute, (WPI), Worcester, MA — GPA: 3.76/4.00

Bachelor of Technology, Mechatronics — May '16
Shanmugha Arts, Science, Technology and Research Academy (SASTRA), India

SKILLS

Machine learning packages: Theano, Keras, Tensorflow, Scikit-learn
Programming Languages: C, C++, Python, MATLAB, Embedded C
Software and Tools: OpenCV, Git, ROS, Gazebo, Simulink, OpenRave, OMPL, Solidworks
Design Software: ProE, AutoCAD, LabVIEW, CODESYS, Solidworks, Ansys, COMSOL
Boards: Arduino, PIC, Raspberry Pi

EXPERIENCE

Internship: Persimmon Technologies — July '17 —Aug '17
- Designed a test bed in Solidworks with 25 individual components and 221 assembled components for Encoders
- Performed trade off analysis to make most efficient and cost effective design.
- Toleranced parts and made sure all standard and custom parts mesh well.

May '15 —Jun '15
Internship: Maruti Suzuki India Ltd, Gurugram, India
- 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 Reinforcement learning on a socially assitive robot (PABI) — Jan '18—Present
- Extracting features from images of faces and training neural network on those features(currently (61.13%)
- Designing reinforcement learning algorithm to customize sessions with children based on emotion and attention

Deep learning for robot perception — Aug '17 —Dec '17
- Designed a Convolutional Neural Network with different layers of flattening, max-pooling and dropouts.
- Trained on Kaggle dataset and achieved an accuracy of 68.5% (highest recorded for this dataset is 71%)
- Implemented Harr-face detect and the model obtained from training to detect emotions in real-time video feed.

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.

Modular teleoperation Framework — Feb '17 —May '17
- Developed an algorithm for complex master-slave coordination between manipulators and haptic devices.
- Implemented it in Gazebo using ROS on davinci and ABB IRB 120 robot.

Mapping and Motion Planning for RC Car — Jan '17 —May '17
- Implemented A*, RRT*, and ARA* algorithms using C++
- Compared optimality, completeness, space and time complexity in 3 different Gazebo worlds using ROS.

Motion compensation during surgery — Oct '16 —Dec '16
- Implemented motion compensation techniques using EKF(Extended Kalman Filter) and Fourier series
- Visualized using teleoperation on daVinci in Gazebo using ROS

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.

Estimation of Velocity of a bubble using image processing — Oct '15 —June '16
- Used a bubble column reactor to push bubbles into and obtain images
- Processed images in MATLAB using adaptive histogram and edge detection to calculate volume and velocity of bubble
- Published paper in IEEE: http://ieeexplore.ieee.org/abstract/document/6724169/