Kritika Iyer

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OBJECTIVE: I have experience in developing applications from the Embedded to the GUI level and this helps me achieve my goal of becoming a robotics engineer and bring a positive effect in people's lives.

SKILLS

Software and Tools: ROS, Gazebo, OpenCV, OMPL, Simulink, Solidworks, Git, Mercurial
Programming Languages: C++, C, Python, MATLAB, Embedded C, C#(.NetFramework)
Machine learning packages: Theano, Keras, Tensorflow, Scikit-learn, AWS(RoboMaker)
Boards: Arduino, PIC, Raspberry Pi, STM32, Sciopta, JetsonTX2

EXPERIENCE

Medacuity - Software Engineering Specialist Sept '19—Present

- Working on projects with C++ and **CAN Bus** communication for medical devices and robots relating to angiography.
- Working as a **full stack engineer** on projects with **C# and C++, C** for clients in the Medical devices industry.
- Programming in the back end and front end for client server interfaces for a medical device used to implant of stents.

FESTO Corporation - Software Engineer June '18—Sept '19

- Developed drivers in C# and LabView for communication via **Ethernet, RS232 and, Serial port.**
- Worked on firmware development on **Arduino and STM** for products in the liquid handling industry.
- Designed and coding Graphical Interfaces using C#(.NET framework) in Visual studio for products and test benches.
- Programmed Programmable Logic Controllers (PLCs) in Codesys to control various devices.

Internship: Persimmon Technologies July '17—Aug '17

- Designed a test bench for Encoders in Solidworks with 25 individual components and 221 assembled components.
- Performed trade off analysis for cost and effective design and toleranced parts to ensure proper mesh.

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 using Siemens PLC.

EDUCATION

Master of Science, Robotics Engineering Aug '16—May '18
Worcester Polytechnic Institute, (WPI), Worcester, MA GPA: 3.8/4.00

Bachelor of Technology, Mechatronics July '12—May '16
Shanmugha Arts, Science, Technology and Research Academy (SASTRA), India

PROJECTS

Emotion and Attention level detection using deep learning Aug '17—May '18

- Designed a Convolutional Neural Network(CNN) with different layers of flattening, max-pooling and dropouts.
- Trained on Kaggle data set using **OpenCV** to get an accuracy of **68.5%** (highest recorded for this data set is **71%**.)
- Extracted features from images of faces and trained a neural network to detect the emotions to an accuracy of **85.19%**.
- Detected emotions and attention level in real-time video captured by a socially assistive robot (PABI).

Modular teleoperation Framework Feb '17—May '17

- Developed an algorithm for complex client-server coordination between manipulators and haptic devices.
- Implemented it in Gazebo using ROS on **daVinci and ABB IRB 120 robot**.

Motion compensation during surgery Oct '16—Dec '16

- Implemented motion compensation techniques using Extended Kalman Filter(EKF) and Fourier series.
- Visualized using teleoperation on daVinci in **Gazebo using ROS**.

Mapping and Motion Planning for RC Car Jan '17—May '17

- Implemented **A*, RRT*, and ARA*** algorithms in C++ for motion planning through an obstacle course.
- Compared optimality, completeness, space and time complexity in 3 different Gazebo worlds using ROS.
- Programmed RRT* and A* in **OpenRave** with the PR2 robot model.

Safe Driving using Model Predictive Control (MPC) for Autonomous Vehicles Jan '17—May '17

- Implemented MPC to achieve safe driving diversion from reference trajectory for obstacle avoidance.
- Worked in **MATLAB** to simulate Kinematic Bicycle model on a car using **Fmincon and Yalmip** libraries.