Animesh Nema

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Education

Worcester Polytechnic Institute (WPI) **Worcester, MA**
Master of Science in Robotics Engineering, GPA- 4/4 May 2019

Sri Ramaswamy Memorial University (SRM) **Tamil Nadu, India**
Bachelor of Technology in Mechanical Engineering, CGPA- 3.71/4 May 2017

Related Courses: Deep Learning, Computer Vision, Robot Dynamics, Robot Controls, Swarm Intelligence, Motion Planning*, Foundations of Robotics, Smart Materials.
*To be completed by December 2018

Skills

Programming Skills: Python, MATLAB, C++, Buzz
Software Skills: CATIA, SolidWorks, PyTorch, Tensor Flow, Keras, OpenCV, Latex, Microsoft Office, Argos

Projects

Predicting Grade of Road for Autonomous Vehicles Using Supervised Deep Learning. **WPI**
Deep Learning September–December 2017

- Developed a deep learning neural network and trained it on a labeled dataset (Supervised learning) of Inertial Measurement Unit (IMU) sensor and Global Positioning System (GPS) readings.
- Built a Convolutional Neural Network (CNN) using Tensorflow environment and Keras. Programmed the CNN architecture on Python to predict the grade of the road ahead and observed it in real-time.

Facial Key point Detection **WPI**
Computer Vision / Deep Learning July 2018

- Designed an algorithm to detect 68 key points on a face (to identify features such as eyebrows, eyes, nose, lips and facial contour) by applying computer vision and deep learning techniques. Applied various transformations on the image dataset and trained a CNN using PyTorch.
- Requirements: PyTorch, Python, OpenCV.

Adaptive trajectory Control of a Robotic arm subject to Varying Payloads. **WPI**
Robot Controls March 2018- April 2018

- Modelled an adaptive trajectory tracking controller on a 2-link Robotic arm to carry objects of unknown masses while maintaining its desired path.
- Applied Fourier Series to eliminate the need of linear parameterization of the model, thus resulting in a simplified and much more efficient performance. Implemented the controller on MATLAB.

Three Finger Robotic Gripper with Tactile Sensors. **SRM**
Final Year Project January–May 2017

- Manufactured a 3-finger robotic gripper via 3D printing and tip of the gripper was mounted with tactile sensors (force resistive sensors) to determine appropriate minimum grasping force in order to avoid slip.
- Actuated all the fingers by a single servo motor. Modelled using SolidWorks and programmed using Arduino.

Robotic Control of Surgical Laser Waveguide using ABB IRB120 Robot **WPI**
Robot Dynamics February 2018- April 2018

- Performed dynamic modeling and control of the ABB IRB120 robot mounted with a laser waveguide, to follow certain trajectories and carry out tissue ablation. Developed a Python code for generating trajectories.

Occlusion based Collective transport of concave objects using Khepera IV robots **WPI**
Swarm Intelligence March 2018- April 2018

- Decentralized collective transportation of concave objects using Khepera IV robots by filling up the concave regions of the object with the robots and then implementing occlusion based transport strategy on the object.

Extra-curricular Activities

- Co-founded an NGO called "Hind Towards Change" to create awareness and promote sanitation, education, fundamental rights, government schemes etc.
- Achievements: Cricket, Squash, Badminton, Reading and writing, Guitar, Piano and Tabla.