Animesh Nema

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Education

Worcester Polytechnic Institute (WPI)   **Worcester, MA**
 Master of Science in Robotics Engineering, GPA- 4/4   May 2019
 Related Courses: Deep Learning, Computer Vision (Udacity Nanodegree), Robot Dynamics, Robot
 Controls, Motion Planning, Swarm Intelligence, Foundations of Robotics, Smart Materials
Sri Ramaswamy Memorial University (SRM)   **Tamil Nadu, India**
 Bachelor of Technology in Mechanical Engineering, CGPA- 3.71/4   May 2017

Skills

 Programming Skills: Python, MATLAB, C++, Buzz
 Software Skills: ROS , PyTorch, TensorFlow, Keras, OpenCV, Github, scikit-learn , Catia, SolidWorks, Latex

Work Experience

Research Programmer   **WPI (DARPA)**
War fighter Analytics for smartphone healthcare   November 2018-March 2019
- Extracting and Analysing data from smartphone sensors to carry out real-time assessment of a war fighter.
- Developing machine learning/deep learning models to predict certain activities such as walking, sleeping etc and detect anomalies that could signal traumatic brain injuries.

Projects

Visual Odometry based Relocalization using ORB feature descriptor   **WPI**
Directed Research   October 2018-April 2019
- Developed a computationally inexpensive relocalization module for a vision-only based system, using computer vision techniques and a single Kinect camera.
- Applied ORB feature descriptor to identify key points in a scene and find matches from the map.
- Performed perspective transformation on images to find the relative pose of the camera, for pose estimation.

Predicting Grade of Road for Autonomous Vehicles Using Supervised Deep Learning.   **WPI**
Deep Learning   September–December 2017
- Built a Convolutional Neural Network and trained it on a labeled dataset of IMU and GPS readings to predict the grade of the road ahead of the autonomous vehicle.
- Carried out video parsing, data filtering and data augmentation. Analyzed the performance of the model by observing the real-time video implementation of the results.

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 developed a CNN using PyTorch.

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.
- Modified the conventional approach, resulting in a simplified and much more efficient performance.

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.
- Simulated using Gazebo and MoveIt.

Automated Aerial Cinematography using an UAV.   **WPI**
Motion Planning   October 2018-December 2018
- Developed a motion planning algorithm to enable the quadcopter to autonomously traverse in an environment and capture scenes, while avoiding obstacles.
- Utilized ROS for communication and simulated using Gazebo.

Three Finger Robotic Gripper with Tactile Sensors.   **SRM**
 B.Tech Final Year Project   January–May 2017
- Modelled a 3-finger robotic gripper using SolidWorks and mounted the tip of the gripper with force resistive sensors to determine the appropriate minimum grasping force. Manufactured the parts via 3-D printing.
- Actuated all the fingers by a single servo motor, programmed using Arduino.