**Animesh Nema**

159 Highland Street, Apt 3 Worcester, MA, 01609 [anema@wpi.edu](mailto:anema@wpi.edu) 774-502-4739

<https://animeshnema.github.io/index.html> <https://github.com/AnimeshNema> [www.linkedin.com/in/animesh-nema/](http://www.linkedin.com/in/animesh-nema/)

# 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, Swarm Intelligence, Foundations of Robotics, Smart Materials, Motion Planning\*

\*To be completed by December 2018

# 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:** PyTorch, Tensor Flow, Keras, OpenCV, ROS, Catia, Latex, SolidWorks, Microsoft Office, Argos

**Projects**

**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 Cinematography Motion Planning using Unmanned Aerial Vehicles WPI

Motion Planning October 2018- Present

* Deploy a Motion planner for an Unmanned Aerial Vehicle to perform Automated Cinematography on a subject while keeping it in the camera frame and accounting for obstacles.
* Test the results in a simulated environment for various kinds of camera shots.

# Solving Relocalization for SLAM using Vision. WPI

Directed Research September 2018-Present

* Carry out Relocalization in a previously mapped environment using Visual Slam based approach.
* Implement feature descriptor algorithms and compare the results with the database to identify a location in the environment.

# 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.
* Implemented occlusion-based transport strategy on the object and used Argos simulator and Buzz programming language.

# Extra-curricular Activities

* Co-founded an NGO called "Hind Towards Change" to create awareness and promote sanitation, education, fundamental rights, government schemes etc.
* Received awards in sports such as cricket, swimming and table tennis. Proficient in sports such as badminton and squash.
* Part of the school orchestra and play instruments such as tabla, piano and guitar.