Neet Mehulkumar Mehta

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EDUCATION

Worcester Polytechnic Institute (WPI) — **Worcester, MA**
Master of Science- Robotics Engineering, GPA- 3.66/4.00 — Dec 2022

Nirma University — **Ahmedabad, India**
Bachelors in Mechanical Engineering, GPA- 7.8/10.00 — May 2020

KEY SKILLS

- **Programming Skills**: C++, Python, MATLAB
- **Tools and Libraries**: TensorFlow, ROS, Gazebo, OpenCV, CARLA simulator, Simscape, Simulink, Git, Solidworks, ANSYS, Blender 3D.

WORK EXPERIENCE

Institute for Plasma Research (IPR) — **Gandhinagar, India**
Research Intern — Jan 2020 – May 2020

- Developed a fully working model 5-DOF serial manipulator on an omnidirectional platform for inspection of Tokamak reactor that can be controlled by VR setup.

RESEARCH EXPERIENCE

Cognitive Medical Technology (COMET) Lab, WPI *C++, python* — **Worcester, MA**
Modeling the Kinematics and Dynamics of Continuum robot using Machine Learning Techniques — Sept 2021 - Present

- Developed a deep neural network to model the complex and recursive kinematics and dynamics of continuum robot.
- Develop a LWPR (Locally-weighted projection regression) model and compare time complexity of algorithm with DNN.

PROJECTS

Real-time monocular vision-based SLAM with NVIDIA Jetson, CNN, and ROS — Sept 2021 – Present
C++, Python, Tensorflow, OpenCV

- Study different CNN architectures and techniques for depth reconstruction from a single image.
- Implement FCNN architectures on TensorRT for faster inference and use it as a part of the RTAB-MAP vSLAM algorithm pipeline to estimate the position of the moving Jetson nano and build the 3D map of the unknown indoor environment.

3D Object detection in Point Cloud using VoxelNet — Nov 2021 – Present
Python, Pytorch, OpenCV

- Implement a 3D detection network (VoxelNet) on KITTI vision benchmark dataset to unify feature extraction and bounding box prediction into a single stage, end-to-end trainable deep network.

Real-time object following and gesture control with NVIDIA Jetson, CNN — Nov 2021 – Present
C++, Python, Tensorflow, OpenCV

- Implement hand-gesture recognition and hand-gesture control using CNN, ROS on Nvidia JetBot.
- Implement Object following feature on Nvidia JetBot.

Real-time hand gesture recognition using SSD-MobileNet and Transfer Learning — Oct 2021– Dec 2021
Python, Tensorflow, OpenCV

- Trained object detection model consisting of 5gestures by Transfer Learning to a pre-trained SSD-MobileNet model and TensorFlow object detection API on RTX 2060 MAX-Q GPU .
- Achieved 80% accuracy for a class.
- Trained lightweight model suitable for real time hand gesture recognition.

Self-driving car simulation in CARLA simulator — Feb 2021 – May 2021
Python, CARLA

- Implemented ADAS system in CARLA simulator.
- Implemented lattice planning algorithms with Bezier curve primitive for turning the vehicle and overtaking in low traffic scenarios in the CARLA simulator using python API.
- Implemented Adaptive Cruise control (ACC) to an autonomous agent.
- Tuned the algorithm to get different curvature of the path.

Implementation and Visualization of Autonomous Robot Path Planning Algorithms *Python*	Feb 2021 – May 2021
• Implemented discrete and sampling-based algorithms such as A*, Weighted A*, Dijkstra, Probabilistic Road Map(PRM), Rapidly exploring Random Tree (RRT), RRT*, and Informed RRT* to navigate through obstacles in a 2D environment.	
Design and Simulation of a Quadruped Robot in different gaits and environments *SimMechanics*	Feb 2021 – May 2021
• Developed Kinematic and Dynamic model of the quadruped using different approaches and implemented different gaiting sequences (eg: walk, trot, gallop). • Developed control architecture for all the legs of the quadruped.	

EXTRACURRICULAR ACTIVITIES

- **Teaching Assistant:** Assisted professor in organizing two graduate-level courses in Summer ’21.
- **Publicity Volunteer:** Gathered the highest number of students from other universities for national level Tech-Fest ‘Praveg ’18.