

# Shubham Omprakash Patil

[pshubham@umich.edu](mailto:pshubham@umich.edu) | +1 734-510-0903

## EDUCATION

### University of Michigan, Ann Arbor

Sept 2021 - Dec 2022

*Master of Engineering in Automotive Engineering*

4.0/4.0

**Relevant Coursework:** Machine Learning, Self Driving Cars (controls and perception), Reinforcement Learning, Computer Vision, Dynamics and Control of Connected Vehicles

### Indian Institute Of Engineering Science and Technology, Shibpur

July 2017 - June 2021

*Bachelor of Technology in Mechanical Engineering*

8.65/10

**Relevant Coursework:** Automobile Engineering, Strength of Materials

## TECHNICAL SKILLS

- **Languages:** Python, C/C++, MATLAB
- **Libraries and Software:** OpenAi Gym, OpenCV, PyTorch, DeepMind Lab, Tensorflow, Git, ROS, Unity, Oculus, Metashape Agisoft

## WORK EXPERIENCE

### Emerging Technologies Group

University of Michigan, Ann Arbor

*Assistant to Instructor*

August 2021 - Dec 2021

Emerging Technologies group is based at the Visualisation Studio in the Duderstadt library of the University of Michigan. Equipped with VR/AR related equipments, the group enables university students to learn and develop about augmented reality

- Assisting course instructors during the course (and lab work) in Virtual Reality
- Developing 3D model (point cloud and mesh) using the Photogrammetry room at UofM
- Consulting students in technical difficulties from softwares like Rhino, Metashape Agisoft, Unity and Oculus

### Point One Navigation

Ann Arbor, Michigan

*Machine Learning Intern*

August 2021 - Dec 2021

Point One Navigation collaborating with TechLab M City (University of Michigan Ann Arbor) work towards Machine Learning and Computer Vision related solutions, increasing efficacy of real-time mapping and localisation of autonomous vehicles

- Converting Tensorflow model to TensorRT for the CULane and BD100K data sets
- Using texture mapping for improving accuracy of lane detection

## PROJECT EXPERIENCE

### Prioritized Experienced Replay

Ann Arbor, Michigan

*Course Project*

August 2021 - Dec 2021

Under the course of Machine Learning at UofM, a project on Reinforcement Learning was undertaken with a team of four students.

- Implementing experienced replay algorithm on complex OpenAi Gym environments like "Space Invaders" and "Ping-Pong", achieving an accuracy of 88%.
- Deploying prioritised methodology in the previous model to improve computational efficiency by 30% and accuracy by 22% in the complex environments.

### MPC and Image Classification

Ann Arbor, Michigan

Under the course of Machine Learning at UofM, a project on Self-Driving Vehicles (Controls and Perception) was completed by a team of 5 students

- Developing a trajectory synthesis algorithm for a given race track, and then deploying MPC to detect and avoid randomly generated obstacles with a range of 150m in online mode.
- Developing image classification model for 22 different types of vehicles from image and point cloud dataset.