

# Shivam Sehgal

<https://www.linkedin.com/in/shivam-sehgal-ab4049132/>

Email : [ssehgal7@umd.edu](mailto:ssehgal7@umd.edu)

Mobile : +1-240-495-4166

## EDUCATION

### University of Maryland College Park

*Master of Engineering in Robotics; GPA: 4.0/4.0*

MD, USA

*May 2024*

### Punjab Engineering College

*Bachelor of Engineering in Mechanical Engineering; GPA: 3.5/4.0*

Chandigarh, India

*May 2019*

## SKILLS

**Programming Languages:** C++, Python, MATLAB, C, Bash, HTML, UML

**Software and Tools:** Linux, Git, Docker, CMake, Valgrind, Doxygen, ROS, Gazebo, Fusion 360

**Libraries:** OpenCV, TensorFlow, NumPy, SciPy, sklearn, pandas, Matplotlib, GTest, pytest

**Domain Skills:** Robotics, Deep Learning, Machine Learning, Computer Vision, State Estimation, Data Structure, Algorithms

## EXPERIENCE

### Lamba Function

*Mechatronics Intern(Python, ML)*

San Fransico, California

*June 2023-August 2023*

- Developed an adaptive controller to control speed to follow a given spindle load, feed is optimised to follow chip load according to tool specification
- Implementing machine learning models for tool life and chip load prediction.

### Hero Motocorp, Neemrana

*Assistant Manager*

Rajasthan, India

*July 2019 – August 2021*

- Led a team of 60 field associates to achieve daily targets, implementing automation solutions for manual tasks such as automating bolt tightening at One-Way clutch sub-assembly, saving 2-manpower/shift .
- Implemented automation in oiling stations, saving 1 manpower/shift, while also digitizing tasks like log book, process audit, tool audit, and attendance, savings of 8 hours per week per team manager.

## ACADEMIC PROJECTS

### Enhanced Image Classification using CNN and Transfer Learning (Python, Pytorch)

- Implemented Transfer Learning strategy leveraging *ResNet34* resulting in a substantial leap in classification accuracy. The accuracy is significantly increased from 45% to 95% on the training data set having 10 classes with merely 140 training images per class.

### Precision Handwritten Digit Recognition with Convolution Neural Networks (Python, Pytorch)

- Developed a specialized CNN for recognizing handwritten digits, achieving an impressive 95% accuracy on the MNIST dataset. Explored various factors like learning rate, loss function, layers, momentum, batch size, epochs, and optimization techniques, showcasing the network's robust performance.

### Detailed 3D Scene Reconstruction with Simultaneous Pose Estimation (Structure from Motion) (Python)

- Rpplyed Structure from Motion (SfM) to reconstruct scenes and estimate camera poses. Conducted essential steps, including feature extraction, matching, outlier rejection, Fundamental and Essential Matrix estimation, and Bundle Adjustment. Achieved a detailed 3D reconstruction with accurate pose estimation.

### Accurate Pose and Depth Estimation using Stereo Vision (Python)

- Implemented stereo vision for precise depth map estimation from two images of the same scene captured from different camera positions. Conducted camera calibration, estimated poses, rectified images, and computed depth maps using the sliding window method. Attained meticulous depth estimation through a finely tuned stereo vision setup.

## CERTIFICATIONS

### Machine Learning Specialization: Specialization - 3 course series

Courses - 1) Supervised Machine Learning: Regression and Classification 2) Advanced Learning Algorithms 3)Unsupervised Learning, Recommenders, Reinforcement Learning