Arpit Gupta

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EDUCATION

- **Worcester Polytechnic Institute (WPI)** — Worcester, MA
  Master of Science, Robotics Engineering , GPA - 3.7/4 — Aug 2017 - May 2019
- **Rajiv Gandhi Technological University** — Bhopal, India
  Bachelor of Engineering, Mechanical Engineering with honors, CGPA - 7.8/10 — May 2014

SKILLS

- Python, MATLAB, C++, JAVA, JavaScript
- Tensorflow, KERAS, OpenCV, ROS, scikit learn, PCL
- JSP, Servlets, Web Services, Databases(SQL, JCR, NoSQL), Git

WORK EXPERIENCE

- **Computer Vision Intern, Panasonic Automotive, Atlanta** — August 2018 - Present
  - Working on object, features detection combining deep learning and traditional computer vision techniques
  - Prototyping depth estimation pipelines using monocular SLAM and Vehicle CAN bus/IMU data fusion
  - Combining SLAM with real-time object detection to localize target object in 3-D
  - Developing data collection and processing application in ROS for cameras, LiDAR, IMU and CAN bus data
- **Software Engineer Intern (Autonomous Vehicles), DriveMind LLC, NJ** — June 2018 - August 2018
  - Implemented object detection and scene segmentation pipelines using deep learning frameworks(Caffe, Tensorflow) and CNN architectures like YOLO V3, MobileNet SSD, R-CNN
  - Developed data recording and processing applications integrating Camera and LiDAR with ROS
  - Used PCL and OpenCV to process point cloud and image data for scene understanding

PROJECTS

- **Pose Estimation using Deep Learning on Visual and LiDAR Odometry, WPI** — Feb 2018 - Present
  - Implemented Recurrent - Convolutional Neural Network to learn the spatio-temporal representation from the RGB image sequences in KITTI odometry dataset
  - Used LSTM to take optical flow learnt by CNN as input and predict the robot's pose in 6 DOF
  - Used PCL to extract feature descriptors from 3D Point clouds and used Pointnet to estimate robot's poses
- **Autonomous Robotic capture of flying objects using visual servoing, WPI** — Feb 2018 - May 2018
  - Developed simulation environment in V-REP for ABB IRB 140 Robot using ROS
  - Used Microsoft Kinect to predict object's trajectory using OpenCV and curve fitting
  - Solved the problem of slow data acquisition using ROS and achieved real-time performance
  - Implemented PID controller for 6-DOF robot arm to capture the objects in flight through visual feedback
- **Real Time Vehicle Detection for Self-Driving Car using CNN, WPI** — Oct 2017 - Dec 2017
  - Trained Deep Convolutional Neural Network on GTI vehicle image dataset and achieved 98% accuracy
  - Implemented transfer learning to detect vehicles in high dimensional images/videos from KITTI benchmark

  Language and Technologies: Python, Keras, Tensorflow, OpenCV
- **Face Recognition and Scene Recognition, WPI** — Oct 2017 - Dec 2017
  - Developed Eigenface and Fisherface algorithms from scratch in MATLAB using Principal component analysis for face Recognition. Compared algorithm performance with MATLAB computer vision toolbox
  - Implemented Bag of Words feature detector and Nearest Neighbour Classifier from scratch for Scene Recognition. Achieved Support Vector Machine level accuracy with hyperparameters tuning

PAST WORK EXPERIENCE

- **Software Engineer, Sapient Corporation, Bangalore** — July 2016 - July 2017
  - Wrote reusable code in JAVA and OSGi for content management frameworks
  - Developed RESTful web services and servlets for e-commerce and customer facing applications
- **Systems Engineer, Infosys Limited, Pune** — July 2014 - July 2016
  - Accorded with Aimer's award for outstanding software development in Digital Experience domain
  - Developed enterprise software components with object oriented programming(JAVA) and NoSQL databases
  - Worked on large code bases for performance tuning, platform migrations and feature enhancements