Raghav Nandwani

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Education

- **A. James Clark School of Engineering, University of Maryland** College Park,MD
  Master of Engineering Robotics; GPA: 3.8 *Aug 2018 - May 2020*
- **Manipal University Jaipur** Puttaparthi, India
  Bachelor of Technology Mechatronics Engineering; GPA: 3.7 —(7.7/10) *May 2013 - April 2015*

Skills

- **Programming Languages** : Python, C++, Octave
- **Frameworks and Libraries** OpenCV, TensorFlow, Keras, PyTorch, SciKit, Pandas, Matplotlib, Numpy
- **Tools and Software** ROS, Gazebo, V-REP, MATLAB, AutoCAD, PLC, SCADA, RoboDK, Git
- **Relevant Coursework** : Classic and Deep Learning approach for Geometric Computer VIsion, Perception for Autonomous Robots, Planning for Autonomous Robots, Advanced Techniques in Visual Learning Recognition, Fundamentals of Artificial Intelligence and Deep Learning, Sensor Systems, Robot Modelling and Control

Projects

- **RGB-D Fusion for Real-Time Object Detection** Explored various learning techniques such as end-to-end learning and transfer learning on RGB and Depth subnetworks, as well as main network after the fusion. Recognized Increase in AP by 3% on KITTI dataset, by merging depth information in state of the art single-pass convolutional neural network architecture i.e. YOLO. Oct 2019
- **Traffic Sign Detection and Classification** Detected Region of Interest (ROI), using HOG feature detector and Maximally Stable Extremal Regions (MSER) i.e. traffic signs in every frame of the video sequence Trained a multi-class SVM classifier using the HOG features to classify the detected traffic signs. May 2019
- **MyAutoPano** This involved combining the outputs of Corner Detection, Adaptive Non-Maximal Suppression, Feature Extraction and Matching, Robust Homography Estimation using RANSAC, and finally Warping and Blending multiple images to create a seamless panorama. In addition to this, compared the results of Homography estimation using Supervised and Unsupervised approaches. Feb 2020
- **Visual Odometry (SfM)** Implemented a visual odometry pipeline to estimate 3D motion of camera for car dataset. Calculated Fundamental Matrix and Essential Matrix using 8-point algorithm through RANSAC. Estimated camera pose using cheirality check and linear triangulation Apr 2019
- **Adv. Lane Detection and road curvature prediction** Developed a lane line detection software using Python and OpenCV, using HSL color space and identifying peak of histograms from given video frame from front camera of moving vehicle. Used sliding window and poly-fitting to calculate road curvature and distance between lane and center of image to calculate vehicle offset. Feb 2019

Experience

- **CNH Industrial** Noida, India
  Graduate Trainee (Product Development) *Aug 2017 - Jul 2018*
  - Graduate Trainee in platform division for NAFTA and EMEA Tractor projects in Product Development department
  - Planned and budgeted the projects and coordinated with other departments to make sure all the deliverables are achieved as planned
  - Prepared presentations for the projects for senior management, for approvals through Global Product Development (GPD) Process from Product Change Request (PCR) to OK To Ship (OKTS)
- **Automation Engineers A. B. Pvt. Ltd.** Noida India
  Internship (PLC Programmer) *Jan 2017 - Jul 2017*
  - Internship in the Automation Software section of the Engineering Department
  - Automated the sequential operations of a Bottle filling plant and the testing of main PCB using Ladder Programming along with VXI instrumentation techniques that led to 30% reduction in testing time of each product