

Adityaveer Raswan

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Education

Clemson University International Center for Automotive Research (CU-ICAR), Greenville

Sep 2017 - Present

Master's of Science in Automotive Engineering

GPA: 3.9 out of 4.0

Relevant Courses - Autonomous Driving, Motion Planning, Robotics Mobility & Manipulation, Optimal Control, & Vehicle stability

Delhi Technological University (Formerly Delhi College of Engineering)

Aug 2011 - May 2015

Bachelor of Technology in Mechanical Engineering

First Class

Relevant Experience

Deep Orange 10 (with Ford, NVIDIA and Velodyne)

C++, Python, ROS, Git, CAN

Autonomous Lead | Motion Planning & Control

Dec 2017 - Present

- **Perception, Planning & Control Development** - Leading development of autonomous software stack for L4 Autonomous Vehicle, towards Lane Keeping, user selected Autonomous Parking, parking spot detection and planning in any orientation. Integration with Powertrain, Human Machine Interface and Vehicle Dynamics teams.
- **Motion Planning & Control Software** - Developed motion planning pipeline in C++/Python implementing Mission Planner, modular Behavior Tree, Hybrid State Astar and S-curve based Trajectory generation, and Stanley/Pure-Pursuit based hybrid lateral control. Simulated on Gazebo, followed by Golf cart testing and DO-10 vehicle testing.
- **Autonomous Systems Integration** - Sensor and hardware integration with NVIDIA DrivePX2, Velodyne LIDAR's, Cameras, GPS, IMU's and dSPACE MicroAutoBox II on ROS framework utilizing CAN and Ethernet communications.

Clemson University

C++, Python, MATLAB, Simulink

Automotive Engineering Student

Aug 2017 - Present

- **Planning with Dynamic Obstacles** - Developed a local planner based on Anytime Astar to do dynamic obstacle avoidance based on prediction. Implemented multithread planning & control to simulate real world driving.
- **Model Predictive Guidance of Autonomous Vehicle** - Co-implemented non-linear MPC for obstacle avoidance and lane change on highways using ACADO for varying road friction cases. Achieved run-time of 20-50 ms with an Intel® Core™ i7.
- **Autonomous F1/10th Car** - Implemented Adaptive Cruise Control and Lane Keeping algorithms on Traxxas F1/10th car using MATLAB. Successfully tested V2X communication for traffic handling using UDP.
- **Robot Planning & Control** - Developed algorithms to plan and control a Wheeled Mobile manipulator motion using Pseudo inverse, Auxiliary constraints and Artificial potential in both Task space and Joint space, simulated in V-REP.

UDACITY

C++, Python, Deep Learning

Self-Driving Car Engineer

Dec 2017 - Present

- **Behavioral Cloning** - Implemented NVIDIA's End to End learning for Autonomous Driving around a track using Keras. Utilized center lane driving, left to right recovery data, flipping images, and left and right camera data for a robust training data.
- **Traffic Sign Classifier & Advanced Lane Finding** - Modified LeNet's architecture to achieve 96.2 % test set accuracy for Traffic sign detection. Used distortion correction, perspective transforms, color transforms, and gradient thresholding to identify lane lines.
- **Object Detection, Estimation & Localization** - Used OpenCV feature extraction & linear SVM in scikit-learn to identify and track vehicles with 99.07 % validation accuracy. Fused LIDAR and RADAR data in C++ using EKF and UKF for Non-Linear models. Designed particle filter to probabilistically localize within a Map.
- **Path Planning** - Develop path planner in C++ achieving environmental prediction, maneuver selection, and trajectory generation for highway driving based on a finite state machine, and tested in UDACITY's simulator.
- **Vehicle control using Model Predictive Control & PID** - Build & optimized a Model Predictive Control in C++ using ipopt solver & proportional-integral-derivative controller to follow a target trajectory around a test track.

Bajaj Auto Ltd - Research & Development

C, MATLAB, INCA 7.0, dSPACE

Senior Engineer, Control Strategy

Jul 2015 - Jun 2017

- **Algorithm Validation and Diagnostics** - Responsible for developing algorithms in C to validate and diagnose Automated Manual Transmission's control strategies and associated hardware having production level variations. Post processed the data using MATLAB to plot trends and come up with thresholds for maintenance and performance vitality.
- **Electronic Throttle Control's (ETC) Development** - Tuned and improved the ETC feedback map using diagnostics data. Co-developed the ETC feedback-feed forward control algorithm for improved steady state and transient control.