

Yogesh Gajjar

✉ ygajjar@usc.edu

☎ (213) 399-0913

🔗 yogeshgajjar123.github.io

in [yogesh-gajjar](#)

🐙 [yogeshgajjar](#)

EDUCATION

Master of Science in Electrical and Computer Engineering

December 2020

University of Southern California

GPA: 3.57/4.0

Coursework: *Self-Driving Fundamentals, Machine Learning, Pattern Recognition, AI for Robotics, Computer Vision, Linear Algebra, Probability for Engineers, Robot Kinematics and Dynamics, State Estimation and Motion Planning, Image Processing, Introduction to ROS, Autonomous Cyber-Physical Systems.*

Bachelor of Technology in Instrumentation and Control Engineering

May 2015

Institute of Technology, Nirma University

GPA: 8.02/10.0

TECHNICAL SKILLS

Languages: C, C++, Python, Matlab, HTML, CSS

Framework/Libraries: OpenCV, Sci-kit Learn, Keras, Tensorflow, PyTorch, Flask, Redis, PCL

CNN Architecture: LeNet-5, ResNet-50, VGG-16, EfficientNet

Object Detection/Segmentation: Faster-RCNN, YOLOv3, RetinaNet, Mask-RCNN, DeepLab

Sensor Fusion: Kalman Filter, Extended Kalman Filter, Unscented Kalman Filter, Particle Filter

Other: Git/GitHub, ROS, Latex, GCP, Azure, AWS, Arduino, Raspberry Pi, Nvidia Jetson SoC

EXPERIENCE

Graduate Researcher (USC CPS-VIDA Group)

August 2019-Present

- Accelerate development of object detection, tracking, segmentation, sensor fusion, and SLAM algorithms on the F-1/10th scale autonomous car.
- Spearhead research on developing Signal Temporal (STL) monitors, and vision-based Timed Quality Temporal (TQTL) monitors for ROS to track perception robustness.

Computer Vision Intern (Frenzy Labs, Inc)

May 2020-August 2020

- Proposed and developed a network architecture by integrating state-of-the-art R-CNN object detection and H-CNN classification network, which improved apparel classification/detection performance by 5%.
- Devised an end-to-end testing pipeline with RESTful request dispatching using Flask framework to accelerate model evaluation and deployment with reproducibility and traceability.

PROJECTS

F-1/10th Self-Driving Car

C++, ROS, Jetson Xavier

- Built a 1/10th scale autonomous delivery vehicle prototype for outdoor environment with Perception (Yolov3), Localization (Cartographer), and Path Planning (ROS Navigation) software stack.
- Designed to perform online STL monitoring and TQTL based perception prediction to ensure safe autonomy.

Yolov3 Road 2D Objects Detection

C++, ROS, Darknet, Jetson Xavier

- Trained independent Yolov3 object detection algorithm to detect road objects and traffic lights on Berkeley DeepDrive 100k images and Bosch Traffic Light dataset.
- Deployed trained weights on f1-tenth vehicle for a real time road object detection.

Intelligent Drivers Enhanced Assistance System

Python, OpenCV, Google Cloud API

- Programmed a platform to detect drowsiness and emotions of driver using OpenCV's pre-trained face recognition libraries and Google Cloud API's.
- Queried to/by (JSON requests) Ford's infotainment SDK to initiate voice assistance to alert drivers.

Distracted Driver Detection

Python, Keras

- Predicted state of driver from 45,000 images falling under 10 classes with a vanilla CNN architecture and pre-trained ResNet-50 architecture. Achieved a robust 98% accuracy.

Image Processing Algorithms

C++

- Implemented Edge Detection, Half-Toning, Geometric Image Modification, Texture Classification and Segmentation algorithms from scratch.

LEADERSHIP AND INVOLVEMENT

- Secured **Ford** sponsor award out of top 300 teams at UC Berkeley Cal Hacks 6.0 Hackathon 2019 for building a platform called IDEAS (Intelligent Drivers Enhanced Assistance System).