Dev Gulati

degulati@ucsd.edu | 310-227-5700 | devgulati.tech | linkedin.com/in/devgulati | github.com/degulati

EDUCATION

University of California, San Diego **Anticipated December 2022**
M.S. in Mechanical Engineering
University of California, San Diego **September 2021**
B.S. in Mechanical Engineering (GPA: 3.6/4.0, Major GPA: 3.9/4.0)
Relevant CS Coursework: Design & Analysis of Algorithms, Search and Optimization, Recommender Systems & Web Mining, ML Algorithms, Advanced Data Structures, Software Tools & Techniques Lab, Mathematics for Algorithms & Systems

SKILLS

Programming: Python, C, C++, Java, HTML, CSS, JavaScript, MATLAB
Technologies: Docker, Linux, Git, ROS, OpenCV, Pandas, TensorFlow, GPU, Jetson Nano, Arduino, Raspberry Pi
Spoken Languages: English, Japanese, Hindi

EXPERIENCE

Mechanical Systems Control Lab, UC Berkeley (Autonomous Driving Team) **Berkeley, CA**
Research Intern – C++, Eigen, MATLAB, ROS June 2021 – Sept 2021

- Investigated a planning and control algorithm known as Constrained Iterative LQR for lane changing scenarios in the presence of obstacles and road constraints, with plans to publish a journal paper on the performance of the algorithm on a real vehicle
- Implemented and tested a higher fidelity vehicle dynamic model to improve accuracy of planner and controller in C++
- Developed a closed-loop simulation in ROS, integrating controller with planner and trajectory handler modules for testing algorithm on a real vehicle using C++ and Eigen

Mobility & AI Laboratory, Nissan Motor Corporation **Yokohama, Japan**
Data Scientist Intern – Python, Numpy, Pandas, Seaborn Nov 2020 – Dec 2020

- Built a data pipeline to analyze a 3TB dataset for modeling behavior of vehicles and pedestrians at a road intersection to improve understanding of driver decision-making, saving 120 hours of data collection and cleaning efforts
- Developed data visualizations for driving metrics, presenting results of data evaluation to senior management
- Applied filtering techniques for reducing noise in velocity & acceleration data, preserving data for use in training an AI model

Tata Elxsi (Video Analysis Team) **Bangalore, India**
Software Engineer Intern – HTML, CSS, JavaScript, Python (Flask) Aug 2020 – Oct 2020

- Built a front-end user interface that extracts video frames from a screen recording for demonstrating an exam proctoring software that monitors student activity during online exams for Indian universities using HTML, CSS, and JavaScript
- Integrated front-end user interface with a back-end storing facial detection models using AJAX and Python (Flask), collaborating with front-end and data science team to deliver a working prototype on time to present to customers
- Created documentation on problem, contributions, process, challenges, and future improvements in developing the interface

PROJECTS

Smart Light Switch System – *TensorFlow, Firebase, OpenCV, Raspberry Pi, Python*

- Awarded first place for creating a smart light switch system to reduce power consumption in an IEEE project competition
- Collaborated in a team of six with hardware and front-end sub-teams to build and pitch product at a showcase
- Implemented RCNN-based machine learning model on Raspberry Pi leveraging TensorFlow Lite Object Detection API

Autonomous RC Car – *Embedded Linux, Docker, NVIDIA Jetson Nano, Python, ROS, OpenCV, GPU*

- Built 1/8-scale RC car with custom hardware and software that drives autonomously around a racetrack in a team of four
- Implemented PID control in Python with gains that are tunable via an app interface communicating with the car over MQTT
- Leveraged ROS packages with OpenCV running on-board a Jetson Nano, resulting in completion of autonomous laps

Class Projects, Advanced Data Structures – *GDB, Valgrind, C++*

- Implemented and optimized a tool to compress and uncompress files using Huffman Encoding for files up to 10MB in size
- Designed and implemented a class to represent graphs with various functionalities; tested on an HIV dataset from San Diego
- Implemented data structures and algorithms for fast string searching, such as Suffix Arrays and Burrows-Wheeler Transform