Dev Gulati

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SUMMARY

Senior year engineering student specializing in Controls & Robotics with experience in software development pursuing software engineer roles. Prior experience as a Data Scientist intern at Mobility & AI Lab at Nissan and conducting research to build computational models for soft robots at Bioinspired Robotics and Design Lab at UCSD. Skills include Python, C++, and ROS.

EDUCATION

University of California, San Diego **Anticipated September 2021**

B.S. in Mechanical Engineering with a Specialization in Controls and Robotics (GPA: 3.57/4.0, Major GPA: 3.85/4.0)

Relevant Coursework:

- *Computer Science:* Advanced Data Structures, Software Tools & Techniques Lab, Mathematics for Algorithms & Systems
- *Mechanical:* Robotics (Graduate Course), Robotic Planning & Estimation, Intro to Autonomous Vehicles, Intro to ML Algorithms, Linear Control

EXPERIENCE

Mobility & AI Laboratory, Nissan Motor Corporation **Kanagawa, Japan**

Data Scientist Intern – Python, C#, SCANeR Nov 2020 – Dec 2020

- Conducted data analysis on 3TB dataset to model traffic behavior of vehicles and pedestrians at a road intersection in Python
- Developed visualizations for insights and cleaned data for use in an AI model, presenting results to senior management
- Investigated the relationship of seat pressure distribution with driver response in high-risk driving scenarios for development of novel driver assistance systems for collision avoidance, using SCANeR (AV Simulation Software), C#, and UDP Protocol

Bioinspired Robotics and Design Laboratory (BRDL) **La Jolla, CA**

Undergraduate Researcher – MATLAB Apr 2020 – Dec 2020

- Investigated interaction of soft bodies with granular media through numerical simulation
- Developed a computationally inexpensive physics-based simulation tool using a reduced-order modelling approach called resistive force theory (RFT) for investigating the interaction of soft robots with granular media in MATLAB
- Applied research for design exploration/optimization of robot by considering different geometries in MATLAB

Tata Elxsi (Engineering Services) **Karnataka, India (Remote)**

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 a proctoring application that monitors student activity during online exams for schools in India using HTML, CSS, and JavaScript
- Integrated user interface with back-end (facial detection models) using AJAX and Python (Flask)
- Created documentation on problem, contributions, process, challenges, and future improvements in developing the interface

PROJECTS

Autonomous RC Car – *Linux, Jetson Nano, Python, ROS, OpenCV* **Mar 2021 – June 2021**

- 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 algorithm in Python with PID gains that are tunable via an app interface that communicates with the car using the MQTT protocol, resulting in real-time control
- Leveraged ROS packages with OpenCV to command steering and throttle, resulting in completion of one lap autonomously

Smart Light Switch System – *TensorFlow, OpenCV, Raspberry Pi, Python* **Jan 2020 – Mar 2020**

- Awarded first place for creating a smart light switch system to reduce power consumption through collaborating in a team of six and presented product at showcase in IEEE's Quarterly Project's Competition
- Implemented RCNN-based machine learning model on Raspberry Pi leveraging TensorFlow Lite Object Detection API
- Adapted model to control the light switches in a room using a database and OpenCV

Binary Search Trees, Data Structures & Object-Oriented Design – *Java, C, C++* **Sept 2019 – Dec 2019**

- Programmed a binary search tree on disk using the template feature of C++ that accepts input from an ASCII file or keyboard
- Implemented a hash table with double hashing using a bully algorithm to decide between conflicts in Java and C++
- Created a polymorphic generic container based on a circular linked-list data structure in C that accepts input form a keyboard