Siddharth Singh Solanki

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Education

Georgia Institute of Technology, Atlanta, USA [2022 - Present]
- Master's in Computer Science (Specialisation: Machine Learning)

Indian Institute of Technology Goa, Farmagudi, India [2018 - 2022]
- B.Tech in Computer Science and Engineering (**CPI 9.72/10**) Bronze Medalist, ranked second in the batch

Technical Skills

- **Programming:** Python, C++, C, Bash, OpenGL, SQLite, JavaScript
- **Softwares/Libraries:** PyTorch, MATLAB, LaTeX, Android Studio

Internships

MathWorks, Natick, USA [2023]
- Worked with MATLAB and C++ codebase along with Simulink's parallel compute library.
- Developed a function handle through which users can define and execute custom progress trackers and plots for their simulations without compromising the simulation speed.
- It reduces the execution time for a typical user workflow upto 10X for simulations involving 3-D plots in aerospace and automotive applications.
- Debugged existing bugs in the codebase. Wrote unit, system tests and customer facing documentation. Code will be shipped with 2024-a release of MATLAB.

MathWorks, Hyderabad, India [2021]
- Worked with C++, MATLAB and JavaScript codebases.
- Optimized automated CNN deployment feature for Intel architecture GPUs and achieved 2X speedup in training popular CNNs such as ResNet, VGG-16 and AlexNet.
- Developed a customer facing MATLAB application and worked on full stack feature development for new wavelet modulation algorithm interface.
- Documented and tested the developed optimizations and application which eventually got shipped with 2022-b, 2023-a release of MATLAB.

Machine Vision Lab - IIT Roorkee, Roorkee, India [2020]
- Developed a hybrid Recurrent Neural Network based architecture for the real-time sign language detection problem.
- Worked extensively with OpenCV and PyTorch to implement a proof of concept of the architecture and was awarded with the best research project for the year 2020 by the internship committee.

Projects

Stay Alive Think and Drive App [2023]
- A web application which helps users to plan their journey by providing safety features based on past accident data, and live current weather conditions on the route.
- The app has a React frontend and Mongo DB backend. Integrated with google maps API and weather APIs that work live with geolocation after the user inputs a travel route. GitHub

Reliable Answer Deduction [2022]
- Fine tuned BERT based LLMs and experimented with different attention mechanisms to develop a model which gives answers to the questions asked from a given comprehension. Project page

Distributionally Robust Optimization [2022]
- Semester long research project; studied mathematical guarantees in making robust decisions under stochastic and adversarial paradigms. Report
- Coded computationally tractable formulations using Wasserstein metric for classification applications to achieve better performance than standard scikit-learn functions.

Building an Assistant bot [2021]
- Worked on building a assistant bot in a national robotics competition. Implemented Monte carlo localization using point cloud mapping for autonomous navigation. Simulation Video
- Used Octomap and trained a YOLO object detector model for automation of perceiving and picking trash objects using a robotic arm. Simulation Video

Trash Classification [2020]
- Built the data pipeline for TACO trash dataset and modified convolutional layers of a lightweight SSD7 object detector which could identify and classify upto 7 different trash categories. GitHub