SHYAM SUNDAR RAVIKUMAR

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EDUCATION

Master of Science - Electrical and Computer Engineering	January 2019 - December 2020
University of Southern California	GPA: 3.57 / 4

Coursework: Data Mining, Image Processing, Machine Learning, Deep Learning, Pattern Recognition, Probability, Linear Algebra

Bachelor of Engineering - Electronics and Communication Engineering	May 2018
PSG College of Technology, Coimbatore, India	GPA: 8.48 / 10

SKILLS

Machine Learning:	PyTorch, TensorFlow, Keras, Scikit-Learn	**Programming:**	Python, C++, C, Java, Scala, SQL
Image Processing:	OpenCV, OpenGL, CNN, YOLO	**Data Analysis:**	Spark, Pandas, Matplotlib, Plotly, Seaborn
Mobile / Web Dev:	Android SDK, HTML, CSS, Unity	**Frameworks:**	Flask, Selenium, Docker, ROBOT

EXPERIENCE

Full Stack Developer Intern / Co-op | Collins Aerospace - Cedar Rapids, IA   June 2020 - Present

- Developed a Flight Data Simulator that emulates sensor data from the Aircraft Flight Control System and integrated it into the Software Stack to simulate the Moving Maps Software Airshow-2 in real-time
- Co-developed the Next-Gen Interactive Moving Maps Software Package Airshow-3 for the Collins Aerospace Cabin Systems
- Reduced Software testing time by 25% through Static Analysis to identify vulnerabilities and enforce better coding practices
- Currently working on writing test scripts to automate the hardware devices and driver testing using ROBOT framework

Project Assistant, Indigenous 5G Testbed Initiative | IISc Bangalore - Bangalore, India   July 2018 - December 2018

- Contributed towards the development of PHY and MAC layers for the Indigenous 5G Testbed of India
- Primarily focused on building transport channel blocks and benchmarking performance for further integration to higher layers of the protocol stack

PROJECTS

Yelp Recommendation System - [Python, Spark, Surprise, XGBoost]   2020

- Worked on Yelp's dataset to predict the ratings of a new business by a user
- User-based Collaborative Filtering, XGBoost, and Surprise (Scikit RecSys package) algorithms were used to train the RecSys
- Evaluated the Predictions obtained with trained models and obtained the lowest RMSE of 1.19 using the model trained on XGBoost

Amazon Whole Foods Delivery Slot Checker - [Python, Selenium, BeautifulSoup4, Bash]   2020

- Wrote an automated script which identifies the available Delivery slots from Amazon Whole Foods in the time of high demand for groceries during the COVID-19 pandemic
- Supports Google Chrome and Mozilla Firefox Web browsers and notifies about the delivery slots (if available) through email

3D Reconstruction of Objects from Single 2D Image - [PyTorch, OpenCV, ResNet-18, Android SDK]   2019

- Furniture objects segmented, cropped, and centered through YOLO v3
- Constructed a Model-free method using Autoencoders for 2.5D Prior Estimation and 3D Generation of models in Voxel Space
- Additionally implemented a Model-based approach to Reconstruct 3D models with a reduced set of 15 parameters
- Provided a comparative performance analysis and 3D models are visualized through an AR Mobile Application

Song Genre and Hit Prediction - [Python, ML Algorithms]   2019

- Trained models on custom datasets constructed from song features to classify Genres and predict a song becoming a Hit
- Analyzed the performance of models on Validation data to select the best performing model
- Evaluated the results of chosen models on unseen data and obtained an improved accuracy of 4% on the state-of-the-art model

Intelligent Driver Assistance System - [Java, Python, OpenCV, JSON requests, APIs]   2019

- Estimated Driver Emotion and Drowsiness (Facial Landmarks) and closest Rest spots (Google Maps API) and queried to/by (JSON Requests) the Ford SDL API
- Voice and Text Alerts are given if the driver is drowsy and 3 closest Rest-Spots are displayed on the Infotainment System
- Based on Driver Emotion, a playlist of songs of similar mood is generated (Spotify API) and the top 10 results are suggested on the Infotainment System
- **Winner of Ford Prize - CalHacks 6.0, UC Berkeley**

Self Driving Car Prototype - [Python, OpenCV, Control System]   2019

- Constructed an unmanned RC vehicle driven by image processing done with a Raspberry Pi
- Images acquired, filtered, edge detected to estimate the lanes, and peaks detected to control the steering
- Designed an efficient PID controller for smooth steering action and speed control before and after taking a turn