Avneesh Muralitharan

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Project

SlugEvents April 2022-October 2022

SlugEvents is an event platform designed to inform students about student events happening at UCSC. This application leverages FERN stack (Firebase, Express, React, Node.js) technologies and OpenAI's GPT-3.5 model to parse Instagram posts and identify location and time related information, displaying events in a toggleable card or map view.

- Utilized Firebase for cloud-based NoSQL database and authentication services, enabling secure data storage and user validation
- Developed an intuitive user interface with React Native, offering users the ability to create, view, and filter events, with an added map visualization feature.
- Integrated OpenAI's GPT-3.5-turbo model to intelligently analyze Instagram post data, identifying and categorizing events with high accuracy.
- Leveraged Express and Node.js to create a powerful, scalable backend that efficiently handles and processes user data and requests.
- Designed and implemented an asynchronous data handling system, allowing the application to continuously process Instagram posts in real-time, extracting event details and updating the application.
- Implemented Continuous Integration (CI) testing methodologies to ensure robust application performance and seamless interaction between different technologies

Boolepathy Jan 2021-June 2021

NeurotechX is a non-profit dedicated to advancing neurotechnology development. As part of a competition, NeurotechSC developed Boolepathy, a silent speech interface that takes in user EMG signals from the jawline area and uses machine learning and subvocal recognition to predict if a user is thinking 'yes' or 'no' with 90% accuracy.

- Used Fast-Fourier Transforms and data normalization to transform time series data outputted by 8-channel OpenBCI Cyton board (EEG Device) into a clean and interpretable format for a ML model further downstream
- Used MNE (Open-source Python package for analyzing human neurophysiological data), asyncio and numpy to process time-series data asynchronously, allowing Google Tensorflow ML model to make predictions continuously instead of just from discrete units of time

Experience

Research Intern September 2022-December 2022

Autonomous Vehicles Lab - Jim Whitehead | Santa Cruz, CA

Research project devoted to creating procedurally generated road networks for testing autonomous vehicles.

- Used Blender Python API to generate road networks and place objects like trees and procedurally generated buildings
- Target is OpenDrive, which allows import into the Carla simulation environment for testing autonomous vehicles

SWE Intern Feb 2021-August 2021

Alveo Technologies| Alameda, CA

Startup providing rapid, portable and cloud-based coronavirus tests.

- Developed React/Electron/Flask based application to validate COVID testing kits at the end of the manufacturing process by running C scripts on a tester device and ran unit/integration tests
- Designed React/Electron/Flask based application to run chemical assays by calling python callback functions and display entered data using Plotly; eventually replaced Thermofisher software originally used to run chemical assays as application ran on a server and could conduct assays remotely
- COVID test validation and remote assay software currently deployed and actively used to manufacture test kits

EDUCATION

UC Santa Cruz | Bachelor of Science in Computer Science Expected June 2024

- GPA: 3.73
- Relevant Courses: STAT131(Probability Theory), MATH23A(Vector Calculus), AM10(Linear Algebra), CSE16(Applied Discrete Mathematics), CSE101(Introduction to Data Structures and Algorithms), CSE120(Computer Architecture),

CSE102(Algorithm Analysis), CSE130(Principles of Computer Systems Design), CSE115a(Intro to Software Engineering), CSE209a/105(Algorithmic Toolbox)

SKILLS

- Fluent in C++, Python, Java, Javascript, HTML/CSS, RISC-V Assembly, MATLAB, and R
- Extensive experience regarding signal processing, linear programming, asynchronous programming, and data pipelines
- Proficient in full-stack web development using MongoDB, Express, React and Node
- Experience with docker, numpy, pyplot, matplotlib, pandas and tensorflow