Aditya Challamarad

917-498-6018 | adityasc16@gmail.com | linkedin.com/in/adityasch | github.com/Adityasc9

Education

SUNY University at Buffalo — Buffalo, New York
B.S Computer Engineering Honors, Minor in Electrical Engineering; ***GPA: 4.0*** — *Sep 2022 – May 2026*

Experience

Machine Learning Intern — May 2024 – Present
Soundverse.ai — *Remote*

- Created a **Singing Voice Synthesis** model by training and fine-tuning DiffSinger, achieving realistic vocal outputs in multiple languages.
- Leveraged a public vocals dataset to train the acoustic and variance **Diffusion** models, enhancing the naturalness and expressiveness of generated vocals.
- Engineered a **Python** script to accurately split lyrics into phonemes and generate corresponding note patterns and durations. Utilized **GPT-4 API** for inference, resulting in drastically improved melodic coherence.
- Developed a novel technique for time allocation in text-to-vocal synthesis, ensuring phoneme durations accurately mirror natural speech patterns with **95%** reliability.

ML Research Assistant — June 2024 – Present
Embedded Sensing and Computing Lab, University at Buffalo — *Buffalo, NY*

- Performed **Speech Diarization** using **Pyannote** and **WhisperX** on DementiaBank speech corpora, incorporating silhouette scoring for verification.
- Applied **Mel-Frequency Cepstral Coeff.** (MFCC) and **K-means clustering** to enhance diarization accuracy by **80%**.
- Developing a **Alzheimer's disease binary classification model**, currently focusing on acoustic feature extraction. Planned steps include conducting feature set selection, exploring **ASR systems** and **feature fusion** for improved performance.

Software Engineer Intern — Dec 2023 – Mar 2024
Soundverse.ai — *Remote*

- Designed a **MERN-stack** data analytics platform integrating Google Analytics 4, **MongoDB**, and a custom **REST API** for visualizing in-depth performance metrics.
- Integrated secure login using **Google OAuth2** and enhanced metric generation speed by over **50x**, ensuring secure real-time access to performance indicators.
- Integrated the **Google Analytics Data API** with **Mongoose** and user input, creating a unified dashboard for data analysis.

Teaching Assistant (Discrete Maths) — Aug 2023 – Present
University at Buffalo — *Buffalo, NY*

- Led office hours for **20+** students, providing personalized assistance and clear explanations.
- Graded large volume of homework and exams, providing detailed feedback to promote students' academic growth.
- Demonstrated active engagement on Piazza, ensuring prompt responses and guidance to students' questions.

Projects

Spotilyzer | *React, Spotify API, HTML/CSS/JS, Git, ChartJS* — June 2023 – July 2023

- Developed Spotilyzer, a **React** app analyzing Spotify playlists with **ChartJS** for visualizing user listening habits, artist rankings, and genre insights.
- Implemented React to enhance app efficiency and navigation, ensuring component reusability and seamless user experience.
- Integrated **Spotify REST API** for in-depth data extraction, employing secure authentication methods with access tokens to ensure user privacy and data security.

Sudoku! | *Python, Pygame, SQLite3* — Nov 2021 – Mar 2022

- Created "Sudoku!", a **Python**-based board game. for an A-level computer science project.
- Utilized **Pygame** to build the **GUI** and Implemented secure logins with **SHA-256** hashing and salting, using **SQLite3** for efficient user data storage and retrieval.
- Engineered a **recursive** backtracking algorithm to automate puzzle solutions, allowing users to upload custom boards and get solutions

Technical Skills

Languages: Python, JavaScript, Java, C/C++, SQL, HTML/CSS, Assembly
Frameworks: React, Node.js, Flask, Pygame, MongoDB, ChartJS, TensorFlow, Keras, Scikit-Learn, Pyannote, WhisperX, Pandas, Numpy, Keras, Vue, Vercel, Vite
Concepts: Machine Learning, NLP, Speech Processing, Data Analysis, MERN, Diffusion, Optimization, Full Stack