Puru Soni

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EDUCATION

University at Buffalo, The State University of New York
Bachelor of Science, Computer Engineering, Anticipated May 2026
Honors Student, Dean's List, **GPA: 3.9/4.0**

EXPERIENCE

Research Assistant, MindVoice, *May 2023 – Present*
Embedded Sensing and Computing (ESC) Lab, University at Buffalo, NY

- Collaborating on a research project to improve performance of Automatic Speech Recognition (ASR) models for people with speech disorders by adopting a combination of Audio and Brainwave (EEG) data.
- Extracted statistical features from EEG with Pandas and MFCC features from Audio with Librosa library.
- Applied feature reduction utilizing scikit-learn KernelPCA and added different levels of noise to audio data.
- Leveraged TensorFlow to train a GRU model and achieved 85% accuracy.
- Converted model to TensorFlow Lite to perform EEG aided ASR on ESP32-S3 microcontroller.

Research Assistant, Last Mile Delivery Drone, *May 2023 – August 2023*
Adaptive Design Algorithms, Models & Systems (ADAMS) Lab, University at Buffalo, NY

- Led a team of 3 in developing a robust Python app for First-Person View (FPV) flight leveraging the Kivy library for GUI and OpenCV for camera feed processing while making extensive use of Git and GitHub.
- Implemented multiprocessing to avoid camera feed lag while retrieving and saving real-time DJI F450 drone state data from Pixhawk through the Pymavlink library.
- Collaborated with team to conduct experiments at UB Structure for Outdoor Autonomy Research (SOAR).

Research Assistant, Human Vision Inference from Brainwaves, *September 2022 – May 2023*
Embedded Sensing and Computing (ESC) Lab, University at Buffalo, NY

- Pre-processed the EEG data and applied ICA for artifact removal utilizing the MNE library in Python.
- Designed a VGG Convolutional Neural Network (CNN) using PyTorch to exploit EEG data's spatial nature.
- Achieved 95% classification accuracy and an F1 score of 0.97.
- Orchestrated design and oversight of project's presentation for the 2023 Celebration of Student Academic Excellence Showcase at UB.

PROJECTS

JobMatch: Job Application App, *September 2023 – September 2023*
University at Buffalo, NY

- Led a hackathon team of 5 to develop a job application app inspired by Tinder utilizing React Native.
- Implemented user-friendly job-post card swiping and collaborated on recruiter-applicant messaging feature.
- Helped integrate with cloud based backend built using Node.js, Moleculer microservices, and MongoDB.

Sentiment Analysis Web App, *August 2023 – August 2023*
Buffalo, NY

- Created web app using Django framework with fine-tuned DistillBERT for text input sentiment analysis.

CERTIFICATIONS

Generative Adversarial Networks Course, *DeepLearning.ai on Coursera, January 2023 - February 2023*
Deep Learning Specialization, *DeepLearning.ai on Coursera, October 2021 – April 2022*
Machine Learning Course, *Stanford Online on Coursera, June 2021 – August 2022*

SKILLS

- **Software Development**: Python, C, Java, JavaScript, HTML, CSS, Git, Linux, SQL, Node.js, React Native
- **Embedded Systems**: Arduino, Raspberry Pi, Pixhawk, Crazyflie, VICON
- **Machine Learning**: PyTorch, TensorFlow, TFLite, Feature Extraction, Image Processing, NLP

ORGANIZATIONS

UB Institute of Electrical and Electronics Engineers (IEEE), *September 2022 – Present*