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, Mind Voice,
Embedded Sensing and Computing (ESC) Lab, University at Buffalo, NY, May 2023 – Present

- 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,
Adaptive Design Algorithms, Models & Systems (ADAMS) Lab, University at Buffalo, NY, May 2023 – August 2023

- 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,
Embedded Sensing and Computing (ESC) Lab, University at Buffalo, NY, September 2022 – May 2023

- 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, *University at Buffalo, NY, September 2023 – September 2023*

- 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 feature and recruiter-applicant messaging functionality.
- Helped integrate with cloud based backend built using Node.js, Moleculer microservices, and MongoDB.

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

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

ORGANIZATIONS

Student Member, UB Institute of Electrical and Electronics Engineers (IEEE), *September 2022 – Present*
Student Member, UB Outdoor Adventure Club (OAC), *October 2022 – Present*

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, GitHub, GCC, Linux, SQL, Node.js
- **Embedded Systems**: Arduino, Raspberry Pi, Pixhawk, Crazyflie, VICON
- **Machine Learning**: PyTorch, TensorFlow, TFLite, Feature Extraction, Image Processing, NLP