DEVIKA GUMASTE

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Education

Columbia University	**Expected December 2024**
Master of Science - Electrical Engineering (3.9/4.0)	*New York, NY*
Birla Institute of Technology and Science	**August 2021**
Bachelor of Engineering - Electronics and Communication Engineering (8.3/10)	*Goa, India*

Relevant Coursework

- Advanced Deep Learning
- Deep Learning on the Edge
- Statistical Learning
- Mathematics of Deep Learning
- Algorithms for Data Science
- Applied Machine Learning
- Natural Language Processing
- Computer Architecture
- Embedded System Design

Experience

ZS Associates — **May 2023 – July 2023**
Business Technology Solutions Associate Consultant — *Pune, India*

- Led a team of developers to design and develop an application with RESTful APIs using Flask, integrating it with the frontend framework of Angular JS. Built, monitored, and maintained databases using PostgreSQL, writing optimized queries to ensure data integrity and security.
- Executed an Agile workflow with JIRA, gathered requirements, set up timelines, and ensured execution of the project towards a deliverable. Utilized Jenkins to create a continuous integration service to automate the production process.

ZS Associates — **June 2021 – May 2023**
Business Technology Solutions Associate — *Pune, India*

- Collaborated with a 5-member team on the Intelligent Layer of a pharmacy application, creating an Algorithm as a Service (AaaS) with Amazon SageMaker. Crafted and launched key analytics solutions with advanced capabilities pertaining to pattern recognition and forecasting.
- Generated a key analytics-focused solution in Python – Test & Control - using machine learning techniques for pharma analysts to determine a two-dimensional review for an event impact.

Asteria Aerospace — **June 2020 – December 2020**
Embedded Software Intern — *Bengaluru, India*

- Developed a solution for Autonomous Indoor Navigation in the absence of GPS Signals for Quadcopter drones with visual-inertial odometry and SLAM Algorithms on Intel T265 camera using NVIDIA Jetson Xavier NX edge device.
- Created a system to process and transmit spatial information from the RealSense camera to the simulation software to enable self-navigation utilizing ROS as an abstraction between the camera hardware and the simulation software.

Projects

Arrhythmia detection using Vision Transformers — **January 2024 - Present**

- Implementing a vision transformer-based model for arrhythmia detection from ECG images.
- Adopting knowledge distillation methods to condense the model from 12-lead ECG classification into one suitable for single-lead ECG data while preserving accuracy.
- Designing a system for live inference, using single-lead ECG recordings from a portable device facilitating real-time arrhythmia detection and contributing to proactive interventions in clinical practice.

Semantic Segmentation of Brain Tumor MRI scans — **December 2023**

- Developed and implemented a deep learning model with U-Net neural network architecture for semantic segmentation of brain tumor MRI scans, enhancing feature extraction and precise localization through deep layers and skip connections.
- Augmented the dataset to increase variability and optimized training using SGD + momentum and dynamically adjusted learning rates, fine-tuning hyperparameters including dropout rates and batch sizes to achieve optimal performance.

MLP Mixer: Analyzing and Implementing an all-MLP Architecture for Vision — **December 2023**

- Implemented the MLP-Mixer Architecture in Tensorflow. Evaluated the performance of this architecture against convolution-based and attention-based models. Conducted a thorough analysis to estimate MLP-Mixer's performance as an alternative for image classification tasks.

Technical Skills

Languages: Python, R, SQL, C, C++, HTML/CSS, Assembly x86, Shell Script
Technologies/Frameworks: Git, Amazon Web Services (S3, SageMaker, ECS, EC2, Lambda), Google Cloud Platform, PostgreSQL, MySQL, Access DB, Flask, FAST, ROS, RestAPI, Jenkins, Docker, Nexus, TeamCity, Excel, Jupyter Lab, ONNX, Nvidia Jetson SDK
Libraries: Tensorflow, PyTorch, NumPy, Pandas, TensorRT, CUDA, Dask, Matplotlib, Sklearn, SQLAlchemy, Geopandas, Seaborn