

Iype Eldho

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SUMMARY

Driven machine learning engineer specializing in deep learning, time series analysis, and data extraction. Extensive experience in developing models for climate data analysis, audio classification, and anomaly detection, with proficiency in Python, TensorFlow, PyTorch, and cloud tools like AWS and Kubernetes.

TECHNICAL SKILLS

Programming Languages: Python, C, C++, MATLAB, R, SQL, HTML, CSS, OpenAI API

Libraries and Frameworks: TensorFlow, PyTorch, OpenCV, NumPy, Pandas, Keras, Matplotlib, Scikit-Learn

Software Development and Cloud Tools: AWS, Kubernetes, Git, Docker

Generative AI with Large Language Models (LLM) – by DeepLearning.AI (Coursera)

PROFESSIONAL EXPERIENCE

North Carolina Institute for Climate Studies (Remote)

Research and Development Associate (Machine Learning Engineer)

August 2024 – Present

- Conducted data extraction, time series analysis, and dataset comparison of the Standard Precipitation Index for global locations using Python, which improved the accuracy and accessibility of climate data for researchers.

Data Science Student Intern

July 2023 – June 2024

- Created a Python model to generate maps and graphs of the US, illustrating the impact of 8 teleconnection indices on the standardized precipitation index drought using netCDF and Zarr data.
- Developed an R-based KNN and Linear Regression model to predict drought intensity – improved model recall from 79% to 90% by analyzing teleconnection relevance.

Machine Learning Engineer Intern at Samsung Research Institute – Bengaluru, India *January 2022 – June 2022*

- Improved the data compression capabilities of a Convolutional Autoencoder model, from 65% to 98% accuracy used in compressing and transmitting beam values within a 6G-System MATLAB simulator.

Software Developer Intern at Shalaka Connected Devices – Pune, India

May 2020 – August 2020

- Designed a Python-based simulator to mirror light sensor data and upload it via MQTT to a cloud database for real-time analysis. Programmed 9 API functions to access sensor controls, status, and data registers, enhancing system integration and data accessibility.

ACADEMIC AND RESEARCH EXPERIENCE

Machine Learning Researcher at Active Robotics Sensing Lab, NCSU – Thesis ([Link](#))

- Developed a deep learning model to classify audio as speech or cough and detect Out-of-distribution samples using transformer-to-CNN knowledge distillation, improving baseline CNN model accuracy from 91% to 98%.
- Utilized Decoupling MaxLogit and Virtual Logit Matching OOD detection methods using WideResNet and DenseNet, achieving DenseNet AUROCs of 90.85% for OOD-Human and 82.34% for OOD-Other categories

Publication: “Robust Multimodal Cough and Speech Detection using Wearables: A Preliminary Analysis”

- Developed a multimodal cough and speech detection and enhanced it using an Out-of-Distribution algorithm maintaining 92% accuracy after adding the OOD samples. Published in IEEE - EMBC in April 2024 ([Link](#)).

Analysis of Unsupervised Domain Adaptation Models (Python, Transformer Models, PyTorch)

- Modelled Transformers and Neural Networks to assess image classification performance across domains, yielding a top F1 score of 97%, from the baseline of 76%.

Heartbeat Anomaly Detection (Audio Processing, Time-Series Modelling, TensorFlow)

- Generated a TensorFlow-based pipeline to detect arrhythmia in heartbeat sounds using SVM and LSTM models, with 78% F1-Score. Optimized the pipeline through cross-validation and Grid Search with 84% accuracy.

Multilingual Abusive Comment Identification (Natural Language Processing, Transformers, TensorFlow)

- Predicted abusive comments in regional languages using Multilingual Representations for Indian Languages-based Transformers, with a mean F1 score of 0.875.

EDUCATION

North Carolina State University (NCSU), Raleigh, NC

August 2022 – July 2024

Master of Science (MS) in Electrical and Computer Engineering with Thesis

GPA: **3.926/4.0**

Courses: Machine Learning, Imaging System, Computer Vision, Cloud Computing, Embedded System, Data Science

Birla Institute of Technology and Science (BITS) Pilani, Hyderabad, India

August 2018 – July 2022

Bachelor of Engineering (BE) in Electronics and Communication Engineering