

Himalaya Sharma

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EDUCATION

- **University of Waterloo** Waterloo, Canada
*Master of Engineering - Electrical & Computer (Major: AI & ML); **Grade: 88%*** *Jan, 2022 - Apr, 2023*
- **Birla Institute of Technology & Science** Goa, India
*Bachelor of Engineering - Electronics & Communication; **CGPA: 8.30*** *Aug, 2016 - May, 2021*
Master of Science - Biological Sciences

EXPERIENCE

- **Ubiquitous Health Technology Lab - University of Waterloo** *Sep, 2022 - Present*
Data Engineer | Advisor - Prof. Plinio Morita
 - Performed Human Activity Recognition (HAR) for 20+ scenarios, achieving a mean F1 score of 0.81, by utilizing classical and ensemble machine learning classification models.
 - Automated data loading and annotation for 40+ participants, obtaining a 70% time reduction, by leveraging Python scripts to extract sensor data from Web APIs, JSON & Excel files and SQL dumps.
 - Constructed a Spark data pipeline on Databricks to facilitate loading, wrangling, feature engineering, and modeling, resulting in a 2x faster experiment iteration, followed by Dockerized deployment on Azure DS Virtual Machine.
- **Image & Vision Computing Lab - University of Waterloo** *Sep, 2022 - Dec, 2022*
Graduate Research Assistant | Advisor - Prof. Zhou Wang
 - Identified 3+ deep learning models for performance evaluation, by conducting a literature survey of state-of-the-art Image Quality Assessment (IQA) algorithms.
 - Wrote bash scripts to benchmark PyTorch & TensorFlow models on 5+ authentic & synthetic distortion image databases.
 - Deployed batch jobs on multi-GPU compute nodes on High Performance Computing (HPC) clusters, resulting in a 50% reduction in overall training and evaluation time.
 - Evaluated 40+ metrics for incorporation in a submission to **IEEE Transactions on Image Processing**.
- **Vienna University of Technology & New York University, Abu Dhabi** *May, 2020 - May, 2021*
Machine Learning Researcher | Advisor - Prof. Dr.-Ing Muhammad Shafique
 - Experimented with TensorFlow sequential models to forecast arrhythmic electrocardiogram data, achieving a mean absolute percentage error of 2.80%.
 - Built a data formatter to filter, preprocess, and transform data, resulting in a 30% increase in productivity by utilizing object-oriented programming principles.
 - Implemented data generators to facilitate real-time data feeding to models, resulting in a 80% reduction in memory consumption.
 - Leveraged Google's attention-based Temporal Fusion Transformer (TFT) to improve forecasting performance by 37%, compared to established baselines using classical methods from Python's Statsmodels.

PROJECTS

- **Google's Reverse Image Search Engine Clone** [🐙 GitHub]
Utilized pre-trained TensorFlow VGG-16 network front-end for feature extraction and generated 60k image encodings to compute similarity scores against query image for obtaining top 5 matches.
- **Siri Clone** [🐙 GitHub]
Recorded monophonic audio clips containing questions and employed AssemblyAI's API to generate speech to text transcripts. Utilized OpenAI's API with a GPT-3 backend to produce answers to those questions.
- **Sensor Data Compression using Dimensionality Reduction** [📺 Video] [🐙 GitHub]
Employed 6 feature extraction and 3 feature selection techniques from Scikit-learn on wearable physiological sensor data, leading to a maximum compression of 99.25% with minimal accuracy loss of 6.7%.
- **Elementary Blockchain** [📲 App] [🐙 GitHub]
Implemented a Python blockchain model using OOP, and developed a web app with HTML & CSS front-end and Flask back-end. App features functionalities to view chain, mine blocks, evaluate validity, and trace any illegal modifications.
- **Adidas US Sales BI Dashboard** [🐙 GitHub]
Designed a BI dashboard using AWS QuickSight by leveraging Adidas's US sales data consolidated in an AWS RDS PostgreSQL database.

CERTIFICATIONS

- **Certified TensorFlow Developer**, by TensorFlow | Issued: **Aug, 2022**
- **Certified Cloud Practitioner**, by Amazon Web Services (AWS) | Issued: **Aug, 2022**
- **Building Transformer-based Natural Language Processing Apps**, by NVIDIA | Issued: **Jul, 2021**

SKILLS SUMMARY

- **Tools:** Python, R, Docker, Bash, Git, Confluence
- **Cloud:** AWS (EC2, S3, RDS, QuickSight), Azure (Data Science VM, Databricks)
- **Data Engineering & Big Data:** ETL, Data Modeling, Data Warehousing, Spark, Kafka, Hadoop, Relational Databases (MySQL, PostgreSQL, Oracle), NoSQL Databases (MongoDB), Airflow