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**
  Data Scientist | Advisor - Prof. Plinio Morita — *Sep, 2022 - Present*
  - 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 scikit-learn data pipeline to facilitate sequential loading, wrangling, feature engineering, and modeling, resulting in a 2x faster experiment iteration, followed by deployment on Azure DS Virtual Machine.
- **Image & Vision Computing Lab - University of Waterloo**
  Graduate Research Assistant | Advisor - Prof. Zhou Wang — *Sep, 2022 - Dec, 2022*
  - 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**
  Machine Learning Researcher | Advisor - Prof. Dr.-Ing Muhammad Shafique — *May, 2020 - May, 2021*
  - 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 (Sklearn, TensorFlow, PyTorch, NumPy, Scipy, Pandas, Matplotlib), R, SQL, Spark, Docker, Bash, Git
- **Cloud**: AWS (EC2, S3, RDS, QuickSight), Azure (Data Science VM, Databricks)
- **Data Science & ML**: Statistical Analysis, Clustering, Classification, Regression, NLP, Computer Vision