Himalaya Sharma

Email: himalaya.sharma@uwaterloo.ca
Portfolio: https://himalayasharma.github.io/
Mobile: +1-548-333-4032
Github: github.com/himalayasharma

Education

- **University of Waterloo** — Waterloo, Canada
  Master of Engineering - Electrical & Computer Engineering; Percentage - 92% — *Jan 2022 - Present*
  Relevant Coursework: *Deep Learning, Machine Learning, Statistics for Data Analysis*

- **Birla Institute of Technology & Science** — Goa, India
  Bachelor of Engineering - Electronics & Communication Engineering; GPA - 8.30/10 — *Aug 2016 - May 2021*
  Master of Science - Biological Sciences; CGPA - 8.30/10
  Relevant Coursework: *Linear Algebra, Calculus, Probability & Statistics, Digital Signal Processing, Introduction to Bioinformatics*

Experience

- **Vienna University of Technology & New York University, Abu Dhabi**
  Research Internship (CARE-Tech. group) | Advisor - Prof. Dr.-Ing Muhammad Shafique — *August, 2020 - May, 2021*
  Machine Learning for wearable healthcare
  - Investigated and optimized the Temporal Fusion Transformer, a state of the art multi-horizon time series forecasting deep learning model, for bio-signals (primarily ECG).
  - Integrated data generators in the workflow to handle large datasets and analyzed forecasts made by 100+ variants of above mentioned model, for pre-emptive heart diagnosis.
  - Evaluated performance of model variants using visual plots and added 3 forecast KPIs (key performance indicators) namely - MAPE, MSE and MAE.
  - Experimented with modified loss functions to enhance forecast capability of TFT.

Projects

- **Reverse Image Search Engine:** Gives top 5 matches for input query image [Github]
  - Constructed **content-based image retrieval** system using **VGG-16 deep learning model** and **CIFAR-10** dataset.
  - Trained model (initialized with **ImageNet weights**) for **multi-class classification** and obtained **accuracy** of **89%** on **stratified validation set** and **90%** on **test set**.
  - Utilized network front-end for **feature extraction** and generated **60k** image encodings to compute similarity scores against query image for obtaining **top 5 matches**.

  Tech Stack: *Python, TensorFlow*

- **Sensor Data Compression:** Exploration of compression using **dimensionality reduction** [Video] [Github]
  - Employed **6 feature extraction** and **3 feature selection** techniques on **wearable physiological sensor data**.
  - Evaluated classification performance on reduced data using **K-Nearest Neighbors, Decision trees, Support Vector Classifier & Random Forest**.
  - Achieved **maximum compression** of upto **99.25%** with an **accuracy percentage loss** of only **6.7%**.

  Tech Stack: *Python, Scikit-learn*

- **Elementary Blockchain:** Demonstration of how a blockchain works [Web App] [Github]
  - Employed an **object-oriented approach** to implement a **blockchain model** and constructed a **web application** to demonstrate its features.
  - Built functionality to **view** chain, **mine blocks** (using a simple **proof of work algorithm**) and evaluate its **validity**.
  - Illustrated **tracaebility** of any **illegal modification** made to the chain thereby exhibiting it's **secure** nature.

  Tech Stack: *Python, Flask, HTML, CSS, Heroku*

Skills Summary

- **Languages & Tools**: Python, R, SQL, Git
- **Frameworks & Packages**: Scikit-Learn, TensorFlow, Keras, NumPy, SciPy, Pandas, Matplotlib
- **Data Science & Machine Learning**: Data Collation & Wrangling, Statistical Analysis, Model Development & Enhancement, Visualization & Interpretation, Clustering, Classification, Regression

Certifications

- **Deep Learning Specialization, by deeplearning.ai on Coursera | Issued August, 2020**:
- **Python, by HackerRank | Issued June, 2020**:
- **Getting started with Tensorflow 2, by Imperial College London on Coursera | Issued May, 2020**:
- **Neural Network from Scratch in Tensorflow, by Rhyme.com on Coursera | Issued May, 2020**:
- **Python for Data Science and AI, by IBM on Coursera | Issued March, 2020**:
- **Introduction to the Internet of Things and Embedded Systems, by UC, Irvine on Coursera | Issued July, 2019**: