Aayush Puri

Bachelors in Computer Engineering
Final year
Pulchowk Campus, IOE, Lalitpur

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A motivated and driven computer engineering student eager to learn and grow.

Education

•Pulchowk Campus, IOE, Lalitpur *Expected 2025 March*

Bachelor's in Computer Engineering. **Average Score: 83%**

∗ Relevant Courses: Artificial Intelligence, Probability and Statistics, Data Structures and Algorithms, Software Engineering, Theory of Computation, Discrete Structures, Microprocessor, C and C++ Programming, Computer Organization and Architecture, Mathematics

•St. Xaviers College, Maitighar *2018-2020*

School Leaving Certificate **3.86 CGPA**

∗ Relevant Courses: Mathematics, C Programming

•Future Brighter Secondary School, Baglung *2007-2018*

Secondary Education Examination **3.90 CGPA**

Projects

•Combating Deepfake: Development of an AI Based Deepfake Detection System *Running*

Final Year Major Project

– The objective is to develop a generalizable system for detecting face-forged "deepfake" images by leveraging the spatial-frequency domain approach.
– The architecture integrates frequency domain learning into a lightweight CNN classifier. The network employs CNN backbone similar to ResNet along with convolutional layers applied to the phase and amplitude spectra between the Fast Fourier Transform and Inverse Fast Fourier Transform operations.
– So far 96 % accuracy has been managed to achieve across GAN based datasets.
– Tools & technologies used: Python, PyTorch, Numpy, Wandb

•Handwritten Document Conversion *2024*

Capstone Project for Fusemachines AI Fellowship

– This project focused on developing a high accuracy OCR model for handwritten nepali text recognition.
– Leveraging advanced models like TrOCR (Transformer-based OCR), the system extracts text from scanned documents, including both printed and handwritten content, with a focus on Nepali language. The model uses a Vision Transformer (ViT) as an encoder to process image features and NepBERT, a variant of RoBERTa, as a decoder to generate text.
– Character Error Rate of 9 % was managed to achieve.
– Tools & technologies used: Python, PyTorch, Transformer models, Wandb

•Cross Platform Fingerprint Matching Using CNN *2023-2024*

Third Year Minor Project

– The objective of this project was to improve the accuracy of matching contactless 2D fingerprint images with their contact-based counterparts to enhance emerging contactless fingerprint technologies.
– Segmenting, enhancing, scaling, and unwarping of contactless fingerprints was done as a preprocessing step. A Siamese VGG16 network was trained and fine-tuned to extract minutiae and texture representations.
– Performance was compared with DenseNet121 model based on similar siamese architecture.
– Tools & technologies used: Python, TensorFlow, Numpy, Pillow
– Github Link

•Logistic Regression from Scratch *2023*

Supervised Learning Project

– Implemented Logistic Regression from scratch to solve a binary classification problem on heart disease dataset.
– Tools & technologies used: Python, Pandas, NumPy, Seaborn, Sklearn, Sklearn metrics
– Github Link

•Energy Demand and Price Prediction *2023*

Time Series Project

– The goal was to forecast the future energy demand and the corresponding price given the weather conditions as input features.
– Tools & technologies used: Pandas, NumPy, Seaborn, Sklearn, RandomForestRegressor, Sklearn metrics
– Notebook-Github

Awards and Achievements

•**Pulchowk Campus, IOE** *2022*

(077 Batch, 1st Year) Scholarship recipient for best academic performance across departments among first year students (Full-Fee).

•**Technergy Hackathon** *2023*

Finalists in the hackathon 'Technergy' organized by Hitachi Energy.

Technical Skills and Interests

Developer Tools: Git, Jupyter Notebook, Google Collab, VS Code, Kaggle
Frameworks and Librarires: TensorFlow, Pandas, Numpy, Scikit-Learn
Cloud/Databases: SQL
Soft Skills: Communication, Problem-solving, Collaboration, Time Management
Areas of Interest: Deep Learning, Computer Vision, Model Deployment, Data Engineering