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Amit Raj Pant

Machine Learning Engineer

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SKILLS

Languages and Tools Python, C++, C, SQL, Git, HTML, CSS, JavaScript, Flask, Flutter, SQLite, WordPress, Markdown
ML & Data Science PyTorch, Scikit-learn, NumPy, Pandas, TensorFlow, Keras, Matplotlib, Seaborn, OpenCV
DevOps & Version Control Linux, Docker, Shell Scripting, Git, GitHub

EXPERIENCE

LogicTronix, FPGA Design & Machine Learning Company

May 2024 – Present

Junior ML Engineer — FULL TIME | PyTorch, Numpy, TensorFlow, OpenCV, C++

- Developed a real-time FPGA-based object detection system that achieved 110 FPS on event data by designing a custom network and optimizing inference through threading, leading to 81% faster inference than conventional methods.
- Evaluated and implemented different machine learning models for identifying operational anomalies in live motor systems.
- Implemented and reviewed Spiking Neural Networks (SNNs) for event-based vision applications.

Machine Learning Acceleration — INTERNSHIP | PyTorch, Numpy

3 Months

- Developed a 96% accurate FPGA-based real-time passenger counting system with head tracking, including dataset preparation.
- Reduced inference time of deep learning models by upto 90% through pruning, quantization, and knowledge distillation.
- Implemented and trained YOLO object detection family from scratch (YOLOv2, YOLOv3, YOLOv4, and YOLOv6) on PyTorch.

Fusemachines — AI FELLOWSHIP

6 Months

Capstone Project: Nepali ASR

- Developed a Nepali Automatic Speech Recognition system utilizing Whisper, capable of recognizing multiple Nepali accents.
- Collected, cleaned, and compiled a comprehensive dataset for the project. Achieved a Word Error Rate below 30. — [Demo link](#).

Coursework: Data Mining, Image Processing, CNNs, RNNs, Transformers, NLP, LLMs, RL, MLOps, and Deployment.

PROJECTS

FPGA-Optimized Neural Architecture Search for CNNs to Enhance Real-time Efficiency — [GitHub](#)

2023 — 2024

- Designed and innovated a new algorithm for finding efficient deep learning architectures for real-time deployment on FPGAs.
- Explored 300M architectures in MobileNetV3 search space using **FPGA-derived latency data** to guide an evolutionary algorithm.
- Demonstrated that FPGA-specific neural architecture search outperforms traditional model development methods.

LungVision: Identifying Pulmonary Disease through X-rays — [GitHub](#)

2023

- Developed 87% accurate system to detect TB and Pneumonia through Lung X-rays by training ResNet and Inception networks.
- Created a dataset of lung X-rays (Normal, TB, Pneumonia) for training, and addressed class imbalance problem in the data.

Data Mining Projects — [GitHub](#)

2023 — 2024

- Conducted data analysis on **Go to Collage Dataset** to identify patterns affecting college enrollment and developed an **algorithm (ID3 and C4.5 from scratch)** to predict a student's probability of joining college based on these factors.
- Implemented **Principal Component Analysis (PCA)** from scratch and analyzed it on the Wheat Seed and Irish Flower dataset.
- Conducted analysis on a heart dataset to identify key risk factors, developed a 90% accurate Naïve Bayes system to identify risk.

EDUCATION

Institute of Engineering (IOE), Thapathali Campus

Sept 2019 — May 2024

Bachelor of Computer Engineering — 79.71%

Kathmandu, Nepal

Coursework: Data Structures and Algorithms, Data Mining, Probability and Statistics, DBMS, Operating Systems, Artificial Intelligence, Computer Networks, Discrete Structure, Distributed Systems, Simulation and Modeling.

Capital College & Research Center

2017 — 2019

High School — 3.58 CGPA

Kathmandu, Nepal

PUBLICATIONS

FPGA Optimized Neural Architecture Search for Hardware Efficiency through Evolutionary Search — *Under Peer Review*

HONORS AND ACHIEVEMENTS

Locus Winner (2024) — *Hardware Category.*

Docsumo Dataverse Winner (2024) — *Data Analysis*

Grant Winner (2023) — *Final Year Major Project*

DeerHack Hackathon Participant (2023) — *Recommendation System*

CERTIFICATIONS AND COURSES

Python for Everybody Specialization — *Coursera*, Machine Learning Specialization *DeepLearning.AI*, Hands-on Introduction to Linux Commands and Shell Scripting — *Coursera*, Introduction to Git and GitHub — *Google, Coursera*