Dipesh Thapa

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Portfolio | GitHub | LinkedIn

Professional Summary

Software Engineering undergraduate with hands-on experience in machine learning, speech recognition, computer vision, data preprocessing, model fine-tuning, and evaluation. Experienced in building ML-backed APIs, tracking experiments, and deploying containerized services. Co-authored a research paper on machine learning-based weather forecasting.

Technical Skills

Machine Learning: PyTorch, Hugging Face Transformers, Whisper, EfficientNet, scikit-learn, fine-tuning, Grad-CAM, LLM integration (Ollama, Groq)
Data: Python, Pandas, NumPy, SQL, data cleaning, dataset annotation (Label Studio), audio and image preprocessing
MLOps and Backend: MLflow, FastAPI, Docker, Django REST Framework, Celery, Redis, PostgreSQL, REST APIs
Other: JavaScript, React, Git, Linux, Google Colab, AWS (Academy certified)

Experience

WorldLink Communications Ltd. — ML Intern, AI/ML Team May 2026 – Aug 2026

- Fine-tuned **Whisper-small** for Nepali speech recognition using Google Colab T4 GPU; reduced Word Error Rate (WER) from **384.6% to 10.1%** on a held-out test set of 301 samples.
- Prepared and annotated approximately **1,600 audio samples** using Label Studio to support dataset preparation and model training.
- Built a Dockerized **FastAPI** transcription endpoint and used **MLflow** to track experiments.
- Contributed to a near-real-time call analytics workflow integrating transcription with an LLM layer for sentiment, CSAT, and call summaries.

Selected Projects

Nepali Automatic Speech Recognition (ASR)

Python, Whisper, Hugging Face Transformers, MLflow, FastAPI, Docker **GitHub**

- Developed an end-to-end Nepali speech recognition pipeline, covering audio preparation, model fine-tuning, evaluation, and API serving.
- Evaluated model performance using **Word Error Rate (WER)** and compared fine-tuned results against the baseline.

TruthLens: Explainable Deepfake Detection

Python, PyTorch, EfficientNet-B0, OpenCV, Grad-CAM, FastAPI **GitHub**

- Collaborated in a three-person team to develop a deepfake detection system using **EfficientNet-B0** and the FaceForensics++ dataset.
- Worked on frame extraction, face isolation, data cleaning, and dataset splitting, and implemented **Grad-CAM** visualizations to help explain model predictions.
- Explored image enhancement techniques including CLAHE, unsharp masking, and high-pass filtering; used Pytest for testing.

WeatherWave: ML-Based Weather Forecasting

Python, scikit-learn, Random Forest, React, Django REST Framework, PWA **GitHub**

- Co-developed a weather forecasting web application covering **77 districts of Nepal**, using NASA POWER weather data.
- Built a machine learning forecasting pipeline and integrated it with a Django REST API and React progressive web application.
- Reported model performance of approximately **0.424°C MAE** and **0.9934 R^2** in the research work.

Research & Publications

WeatherWave: ML-Based Weather Forecasting **DOI**

R. Nepal, **D. Thapa**, et al. *[Full name of ICICSET]* (ICICSET), Vol. 2, Issue 1, December 2025.

- Contributed to the ML forecasting pipeline and model evaluation for weather prediction across 77 districts of Nepal, reaching approximately 0.424°C MAE and 0.9934 R^2.

Education

Nepal College of Information Technology (NCIT) 2022 – 2026

B.E. in Software Engineering, Pokhara University

Trinity International College 2020 – 2022

+2 Science

Licenses & Certifications

- **AWS Academy Graduate – Data Engineering** *Jan 2026*
- **Postman API Fundamentals Student Expert** *Jan 2026*
- **AWS Academy Graduate – Cloud Architecting** *Jan 2026*
- **AWS Academy Graduate – Cloud Foundations** *May 2025*