SAMRAT KUMAR ADHIKARI

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 SamratAdhikari | ubermensch | R⁶ Samrat-Adhikari | marcusdayounger

Lalitpur, Bagmati, Nepal

OBJECTIVE

I am a passionate Computer Engineering graduate with experience in cross-domain projects ranging from Computer Vision and Audio Classification to Natural Language Processing. I enjoy building intelligent systems that solve real-world problems and scale efficiently. My goal is to join a team where I can keep learning, push boundaries, and build products or research that make a real impact.

EXPERIENCE

Skin Cancer Detection (Research Grant)   *2024 - Present*
Researcher | Funded Academic Grant Project   [ ]

◦ Led the development of a multi-stage deep learning system for detecting and classifying skin lesions as benign or malignant, including subcategory differentiation.

◦ Engineered preprocessing pipelines using OpenCV for dermoscopic images—implementing hair removal, contour-based mole extraction, and image enhancement to boost model performance.

◦ Trained and evaluated CNN-based models using TensorFlow; best-performing models were deployed on Hugging Face for scalable public access.

◦ Built and deployed an end-to-end diagnostic web application using FastAPI and Streamlit for real-time lesion classification with a user-friendly interface.

PROJECTS

SignScribe: ASL Classification   *2023*
Tools: [TensorFlow, OpenCV, MediaPipe]   [ ]

◦ Developed a real-time sign language classification model for recognizing American Sign Language (ASL) hand signs

◦ Implemented background subtraction techniques using OpenCV to enhance model accuracy, achieving robust classification performance

◦ Applied MediaPipe for hand tracking and feature extraction, optimizing the system's ability to accurately interpret hand signs

FeatherFind: Bird Call Classification   *2024*
Tools: [Librosa, TensorFlow]   [ ]

◦ Developed a model to classify bird species based on audio recordings, with a focus on real-world application for accurate bird identification

◦ Leveraged Librosa for sophisticated audio processing and feature extraction to enhance classification accuracy

◦ Implemented data augmentation techniques to enrich the training dataset, ensuring model robustness

Rainfall Trend Prediction in Kathmandu Valley   *2024*
Tools: [Kriging, SARIMA, XGBoost, BiLSTM, Prophet]   [ ]

◦ Collected and preprocessed multi-station rainfall data from 17 locations in the Kathmandu Valley, applying Kriging-based geospatial interpolation to address missing values

◦ Implemented and compared multiple time-series forecasting models, including Moving Averages, SARIMA, XGBoost, BiLSTM, and Facebook Prophet for long-term rainfall trend analysis

◦ Discovered that BiLSTM consistently outperformed other methods, demonstrating superior predictive accuracy and robustness for capturing complex temporal dependencies

- **UniFinder: University Course Recommendation System** *2025*

  Tools: [LangChain, FastAPI, FAISS, Gemini Embeddings, ReactJS] [🖸]
  - Built a recommendation engine that leverages Gemini Embeddings to convert structured JSON course data into dense vector representations for efficient semantic search
  - Designed and integrated a FAISS vector database for fast similarity-based retrieval, enabling personalized and scalable course recommendations
  - Developed a FastAPI backend to serve the recommendation service and a ReactJS frontend for a user-friendly, interactive interface

PUBLICATIONS
C=CONFERENCE

[C.1] Samrat Kumar Adhikari, et al. (2024). **American Sign Language Classification using CNNs: A Comparative Study**. In *International Journal on Engineering Technology (InJET*, pp. 283-295. Kantipur Engineering College. April 2024, Kathmandu. DOI: 10.3126/injet.v1i2.66704

[C.2] Giri, G., KC, I., Khatiwada, P., Adhikari, S. K., & Shakya, S. (2025). **CNN-Based Bird Sound Detection: A Comparative Performance Study**. In *International Journal on Engineering Technology (InJET)*, 2(2), pp. 176–187. Kantipur Engineering College. June 2025, Kathmandu. DOI: 10.3126/injet.v2i2.78615

SKILLS

- **Programming Languages:** Python, C++, JavaScript
- **Web Development:** HTML, CSS, React, Express.js, FastAPI
- **Database Technologies:** PostgreSQL, MongoDB
- **Machine Learning & Data Science:** TensorFlow, Scikit-learn, Pandas, NumPy, Matplotlib, Seaborn
- **Specialized Domains:** NLP, Computer Vision, Audio Signal Processing, LangChain
- **Cloud & DevOps:** AWS, Linux, Bash, Git
- **Tools & IDEs:** VS Code, Jupyter Notebook, Power BI
- **Research Skills:** Literature Review, Academic Writing, Statistical Modeling

EDUCATION

- **Kantipur Engineering College** *2025*

  Bachelor of Computer Engineering Dhapakhel, Lalitpur
- **Motherland Secondary School** *2020*

  Higher Secondary Level Education Pokhara, Kaski
- **Global Collegiate School** *2017*

  Secondary Level Education Pokhara, Kaski
  - GPA: 3.80/4.00

REFERENCES

1. **Er. Pralhad Chapagain**
   Division Assistant, Research, Training and Consultancy Division (RTCD)
   Kantipur Engineering College
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