

Sumit Lasiwa

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Professional Summary

Final-year Computer Engineering student with strong interest in Artificial Intelligence and Deep Learning. Experienced in building and fine-tuning transformer models for NLP and computer vision tasks, particularly for low-resource languages like Nepali. Interested in applied AI research and developing scalable ML systems.

Education

B.E. in Computer Engineering

Final Year

Khwopa College of Engineering, Libali, Bhaktapur

Technical Skills

- **Programming:** Python, C, C++
- **Machine Learning:** Deep Learning, NLP, Computer Vision, Transfer Learning, Fine-tuning
- **Frameworks:** PyTorch, Hugging Face Transformers, Scikit-learn
- **Data Tools:** NumPy, Pandas
- **Deployment:** FastAPI, Streamlit, Docker
- **AI Systems:** Retrieval Augmented Generation (RAG), LangChain, Vector Databases
- **Tools:** Git, GitHub, Weights & Biases, SQL, redis, MongoDB

Projects

- **Nepali Grammar Error Correction using Transformer Models**
Fine-tuned a multilingual T5 model for Nepali grammatical error correction using a synthetic parallel corpus and additional LLM-generated corrections. Fine-tuned a BERT as a reranker which further improved the score. Conducted experiments to improve model performance and deployed the system via FastAPI.
Tech: PyTorch, Hugging Face Transformers, FastAPI
- **Modular RAG-based Chatbot with Chat History**
Built a scalable RAG chatbot system with modular components for document processing, retrieval, and generation. Integrated Redis for persistent chat history and context-aware conversations. Applied LangChain for orchestration and designed the architecture to support easy extension and deployment.
Tech: LangChain, FastAPI, Redis, Vector Databases, Python
- **Nepali Image Captioning with Attention Mechanism**
Built an encoder-decoder image captioning model using EfficientNet-B0 as encoder and LSTM with attention as decoder. Trained on a Nepali caption dataset derived from Flickr30k.
Tech: PyTorch, Attention Mechanism, Computer Vision
- **RAG-based YouTube Question Answering System**
Developed a Retrieval Augmented Generation system allowing users to query information from specific YouTube videos. Implemented document retrieval using vector embeddings and generation using LLM APIs.
Tech: LangChain, ChromaDB, Vector Databases, LLM APIs
- **Dialogue Summarization using FLAN-T5**
Fine-tuned a FLAN-T5 transformer model on the SAMSum dataset for dialogue summarization. Tracked experiments using Weights & Biases and deployed an interactive demo using Streamlit in a Docker container.
Tech: PyTorch, Hugging Face, Docker, Streamlit

Certification

Data Science Training – DeepMind Creation Pvt. Ltd

Languages

English, Nepali, Newari, Hindi

Interests

Artificial Intelligence Research, Machine Learning Systems, Low-Resource NLP