

Ujjwal Kumar Karn

Electronics & Communication Engineer — Aspiring AI/ML Engineer

✉ karnujjwalkumar5@gmail.com

☎ +977-9712047195

🌐 github.com/ujjwal540

🌐 LinkedIn

🌐 Portfolio

Professional Summary

Electronics & Communication Engineering graduate with hands-on experience in Artificial Intelligence, Machine Learning, Computer Vision, and Retrieval-Augmented Generation (RAG). Skilled in developing AI-powered applications using Python, FastAPI, Docker, Large Language Models, and modern backend technologies. IEEE Best Paper Award recipient seeking opportunities as an AI/ML Engineer.

Technical Skills

Languages: Python, C, C++, SQL

AI/ML: Machine Learning, Deep Learning, Computer Vision, LLMs, RAG, NLP, YOLOv8

Frameworks: FastAPI, LangChain, ChromaDB, Docker, PostgreSQL

Tools: Git, GitHub, VS Code, REST APIs

Education

Nepal Engineering College

Bhaktapur, Nepal

Bachelor of Electronics & Communication Engineering

Projects

Alex Voice RAG Assistant

Python, FastAPI, Docker, ChromaDB

- Developed a voice-enabled Retrieval-Augmented Generation (RAG) assistant integrating Groq LLM, Google Gemini, Whisper, and ChromaDB for intelligent document question answering.
- Engineered scalable FastAPI backend services with semantic search, vector embeddings, Speech-to-Text, Text-to-Speech, and Dockerized deployment.

LLM Document Analyzer

Python, FastAPI, Groq API

- Built an AI-powered document intelligence platform capable of PDF analysis, contextual question answering, semantic search, and automatic summarization using Large Language Models.
- Designed modular REST APIs enabling efficient document processing and scalable backend architecture.

Tomato Disease Detection using YOLOv8

Python, YOLOv8, OpenCV

- Developed a deep learning-based object detection model for automated tomato leaf disease identification using YOLOv8.
- Optimized the trained model for ONNX deployment, enabling efficient cross-platform inference for real-time agricultural applications.

Edge-AI Powered Pigeon Pea Disease Detection

TensorFlow, Computer Vision

- Designed an Edge-AI based crop disease diagnosis system integrating deep learning with a mobile application for automated pigeon pea disease classification.
- Published the IEEE-recognized paper "*An Efficient Deep Learning Based Mobile Application for Pigeon Pea Disease Classification*" and received the IEEE Best Paper Award.

Publication

An Efficient Deep Learning Based Mobile Application for Pigeon Pea Disease Classification

IEEE Conference Publication (Best Paper Award)

Achievements

- IEEE Best Paper Award for research in AI-powered agricultural disease classification.
- Secretary, Computer Technology & Robotronix Club (CTRC), Nepal Engineering College.