

# Ujjwal Kumar Karn

Electronics & Communication Engineering Student

ujjwalkumarkarn81@gmail.com — +977-9804209993 — Bhaktapur, Nepal

GitHub — LinkedIn

## Professional Summary

---

Electronics and Communication Engineering student with hands-on experience in AI/ML, Retrieval-Augmented Generation (RAG), FastAPI backend development, and Voice AI systems. Skilled in building real-world AI applications using Python, LLMs, vector databases, and REST APIs.

## Education

---

### Nepal Engineering College

2022 – Present

Bachelor of Electronics and Communication Engineering

## Technical Skills

---

**Languages:** Python, C, C++

**AI/ML:** Machine Learning, Deep Learning, LLMs, RAG, Prompt Engineering

**Backend:** FastAPI, REST APIs, PostgreSQL

**Tools:** Docker, GitHub, VS Code, Google Colab, MATLAB

**Systems:** ChromaDB, Vector Databases, STT/TTS, Arduino, IoT

## Projects

---

### AI-Powered RAG Assistant

- Built a RAG chatbot using Python, FastAPI, and vector embeddings for contextual document-based QA.
- Developed REST APIs and semantic search pipeline using ChromaDB.

### Voice AI Assistant (Alex)

- Developed voice assistant integrating Speech-to-Text and Text-to-Speech systems with LLM-based responses.
- Designed real-time conversational workflow and interactive web interface.

### Edge-AI Disease Detection System

- Developed deep learning model for pigeon pea disease classification optimized for edge-device inference.
- Published IEEE-recognized research paper on AI-based crop disease detection.

## Leadership Experience

---

### Secretary, Computer Technology & Robotronix Club (CTRC)

Nepal Engineering College

- Coordinated technical workshops, innovation programs, and student-led projects.
- Promoted collaborative learning and technical skill development.

## Certifications

---

Cisco Networking Essentials — Embedded Systems & IoT — PLC Training — UI/UX Fundamentals — Generative AI & LLM Learning

## Achievements

---

- IEEE-recognized research paper on AI-based crop disease classification.
- Conducted technical workshops and innovation activities at college level.