Sushan Adhikari

Computer Engineering Student
sushan.adhikari2060@gmail.com | +9779810538507 | Nepal
linkedin.com/in/sushan-adhikari | sushanadhikari.com.np

Summary

Computer Engineering student with practical experience in AI, Machine Learning, Computer Vision, and data processing. Contributed to a national pension platform, multilingual NLP research, LLMs, and Computer Vision. Published research in various fields spanning DL, NLP, CV, LLMs, and RAG.

Education

- **Indian Institute of Technology Palakkad** *Jan 2025 – May 2025*
  - B.Tech (Exchange Semester), Computer Science and Engineering
  - Coursework: Intro to AI, Linear Algebra, Compiler Design, Graph Theory & Combinatorics.
- **Kathmandu University, School of Engineering** *Jan 2022 – Feb 2026*
  - B.Eng. in Computer Engineering
  - Coursework: Computer Vision, Databases, Computer Architecture, Advanced Calculus, Statistics, Differential Equations.

Technical & Leadership Experience

- **Computer Vision Intern**, KyraWorks *Oct 2025 – Present*
  - Deployed YOLOv8 object detection pipeline with Docker containerization for production environments.
  - Researching and testing NVIDIA DeepStream, GStreamer, and Triton Inference Server for real-time multi-camera frame processing.
- **AI and Data Engineer**, Mercuri.world (non-profit) *Jan 2025 – Present*
  - Built ML-based job recommendation pipeline (50+ job types) for employment access for people with mental illness in distributed team (150+ volunteers).
- **Presenter & COO**, Dr.Fish (Hult Prize) *Jan 2023 – Present*
  - Developed computer-vision pipeline for fish-disease classification (10k+ images, 60% baseline accuracy).
  - Presented for the team and Won Hult Prize OnCampus and attended Summit in Bangkok, Thailand.
- **Full-Stack Development Intern**, Pension Management System for Nepal *Jun 2025 – Oct 2025*
  - Contributed to national pension platform redevelopment (600k+ users) with role-based access.
  - Implemented first governmental liveliness detection in Nepal with anti-spoofing using Amazon Rekognition.
  - Developed 60+ page Angular UI and collaborated on database schema (Spring Boot, PostgreSQL).

Research Experience

- **Legal NLP — Nepali–English Translation for Legal Documents** *May 2024 – Present*
  - Built parallel corpus (≈10k sentence pairs) from legal texts using PyTesseract with manual alignment/verification.
  - Advisors: Dr. Rajani Chulyadyo, Prof. Dr. Bal Krishna Bal.
- **RAG for Theoretical CS Education: Algorithm Analysis & Complexity Theory** *USC Nov 2025*
  - Developed AlgoRAG system with knowledge base of 847 lecture slides, 312 practice problems, and 156 proof templates.
  - Implemented domain-specific optimizations for mathematical entity recognition and proof-related query handling.
- **Automated Calculus Animation Generation Using Fine-Tuned LLMs** *USC Nov 2025*
  - Fine-tuned LLM on 537 Manim code snippets using curriculum learning to automate derivative visualization generation.
  - Addressed educational equity gap by reducing animation creation time from 8-12 hours to under 5 minutes.
- **Detecting Image Forgeries & Deepfakes: Comparative Study** *NCCI Aug 2025*
  - Assembled mixed dataset (140k+ images) and benchmarked CNNs vs Vision Transformers (InceptionV3: 94% accuracy).
- **Enhancing Ethical Reasoning in Tiny LLMs** *NCCI Aug 2025*

  - Created synthetic ethical-dilemma dataset (≈1k cases) covering utilitarian, deontological, and virtue ethics.
  - Fine-tuned TinyLlama-1.1B using LoRA to create 3 specialized agents; evaluated via philosophical consistency metrics.

Technical Skills

Languages & ML:	Python; PyTorch, Scikit-Learn; OpenCV, YOLOv8; Pandas, NumPy.
Deployment & Inference:	NVIDIA DeepStream, Triton Inference Server, Docker, Git.
Backend & Web:	FastAPI, Flask, REST APIs, JWT/OAuth basics.
Data & Tools:	PostgreSQL, data preprocessing & annotation; Overleaf, LaTeX.
Other:	CI/CD basics, MS Office.

Certifications

- Supervised & Unsupervised Learning with Scikit-Learn, AI Fundamentals (DataCamp)
- Understanding Embeddings for NLP (OpenHPI)

Selected Projects

- **AgniNetra — AI & IoT Forest Fire Detection** *Personal / Team project*
  - Collected and annotated field dataset (≈8k images). Deployed YOLOv8 detector to Raspberry Pi/ESP32 for edge inference with GPS-enabled alerts (≈70% detection on field tests).
- **MastiskaTrack — GPT-powered Mental-Health Assessment** *Personal / Team project*
  - Built embeddings-based retrieval pipeline using ChatGPT embeddings and 10+ medical journals to align user responses with 5 standardized mental-health questionnaires; developed prototype scoring interface with anonymization and data minimization.

Awards & Achievements

- Hult Prize Campus Winner (represented Nepal at Hult Prize Summit, Bangkok).
- People's Choice Winner — NASA Space Apps Challenge 2024 (team award).
- Winner — AI Crusade 2023 (Health Track).

Leadership & Extracurricular

- **Internal Relations & Operations Lead**, KU HackFest 2024
  - Coordinated logistics, judge communication, and volunteer management for 48-hour hackathon (200 team applications).

Languages

English (Proficient), Nepali (Native), Hindi (Conversational)

References

Available upon request