

Sushan Adhikari

Computer Engineering Student

sushan.adhikari2060@gmail.com | +9779810538507 | Nepal

linkedin.com/in/sushan-adhikari | sushanadhikari.com.np

Profile

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 (Exchange Semester) | <i>Jan 2025 – May 2025</i> |
| – B.Tech, Computer Science and Engineering | |
| – Coursework: Intro to AI, Linear Algebra, Compiler Design, Graph Theory & Combinatorics. | |
| • Kathmandu University, School of Engineering | <i>Jan 2022 – Feb 2026</i> |
| – B.Eng. in Computer Engineering (CGPA till 7th Semester: 3.88) | |
| – Coursework: Computer Vision, Databases, Computer Architecture, Advanced Calculus, Statistics, Differential Equations. | |

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. |

Internship Experience

- | | |
|---|----------------------------|
| • Computer Vision Intern , KyraWorks | <i>Oct 2025 – Jan 2026</i> |
| – Deployed multiple models(5+) in Triton Inference server with Docker containerization for production environments. | |
| – Researching and testing NVIDIA DeepStream, GStreamer, and Triton Inference Server for real-time multi-camera(100+) frame processing. | |
| • AI and Data Engineer , Mercuri.world (non-profit, volunteering) | <i>Jan 2025 – Present</i> |
| – Building the backend for the CareerQuest Platform in Django | |
| – Building ML-based job recommendation pipeline (50+ job types) for employment access for people with mental illness in distributed team (150+ volunteers). | |
| • Full-Stack Development Intern , Pension Management System for Nepal | <i>Jun 2025 – Oct 2025</i> |
| – Contributed to national pension platform redevelopment (60+ pages) (600k+ users) with role-based access. | |
| – Implemented first governmental liveliness detection in Nepal with anti-spoofing using Amazon Rekognition. | |

Research Experience & Publications

- | | |
|--|---------------------------|
| • Legal NLP — Nepali–English Translation for Legal Documents | <i>May 2024 – Present</i> |
| – Built parallel corpus (\approx 10k sentence pairs) from legal texts using PyTesseract with manual alignment/verification. | |
| – Working in Active Learning Lab at Kathmandu University for model training and data processing. | |
| – Advisors: Dr. Rajani Chulyadyo(rajani.chulyadyo@ku.edu.np), Prof. Dr. Bal Krishna Bal(bal@ku.edu.np). | |
| • A Comparative Study of Explainability Methods for Hybrid CNN-Transformer Document Layout Analysis | <i>Dec 2025 – Present</i> |
| – Working on enhancing model transparency and provide insights for debugging, improving human-AI trust in document intelligence systems. | |
| – Advisors: Dr. Pankaj Raj Dawadi(pdawadi@ku.edu.np)) | |
| • Physics-Informed Data Augmentation for Sediment Concentration Prediction in Data-Scarce Himalayan Rivers | <i>Nov 2025 – Present</i> |

- Comparison of Traditional and Advanced Physics-based data augmentation strategies for sediment concentration prediction.
- Advisors: Dr. Mukesh Raj Kafle(mkafle@pcampus.edu.np))
- **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 created manually and made it public to automate derivative visualization generation and further research on this area.
- **Detecting Image Forgeries & Deepfakes: Comparative Study** NCCI Aug 2025
 - Assembled mixed dataset (140k+ images) and benchmarked CNNs vs Vision Transformers (InceptionV3: 94% accuracy).
 - Supervisor : Prof. Dr. Gajendra Sharma (gajendra.sharma@ku.edu.np)
- **Enhancing Ethical Reasoning in Tiny LLMs** NCCI Aug 2025
 - Created synthetic ethical-dilemma dataset (\approx 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.
 - Supervisor : Sanjog Sigdel (sanjog.sigdel@ku.edu.np)

Certifications

- Astronomer Certification for Apache Airflow Fundamentals (Astronomer)
- Intermediate SQL , Supervised & Unsupervised Learning with Scikit-Learn, AI Fundamentals (DataCamp)
- Understanding Embeddings for NLP (OpenHPI)

Achievements & Leadership

Competitions:

- Presenter of the team and also developed computer-vision pipeline for fish-disease classification (10k+ images, 60% baseline accuracy); won Hult Prize OnCampus and represented Nepal at Summit in Bangkok, Thailand(2024).
- Finalist — ICT Awards 2024 (Rising Star Innovation).
- People's Choice Winner — NASA Space Apps Challenge 2024 (team award).
- Winner in Health Track in First AI Hackathon of Nepal (AI Crusade 2023)

Scholarships:

- Recipient of Mahatma Gandhi Scholarship provided by Indian Embassy in High School(2019-2021)
- First Semester merit based scholarship in Kathmandu University(2022)

Internal Relations & Operations Lead, KU HackFest 2024

- Coordinated logistics, judge communication, and volunteer management for 48-hour hackathon (200 team applications).

References

Prof. Dr. Bal Krishna Bal

Associate Dean of School of Engineering
Kathmandu University
Email: bal@ku.edu.np Phone: +97711415100

Prof. Dr. Gajendra Sharma

Professor, Department of Computer Science and Engineering
Kathmandu University
Email: gajendra.sharma@ku.edu.np Phone: +9779840093887

Dr. Rajani Chulyadyo

Assistant Professor, Department of Computer Science and Engineering
Kathmandu University
Email: rajani.chulyadyo@ku.edu.np Phone: +9779803293409