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 full-stack development. Worked on end-to-end systems spanning edge IoT deployments and web platforms; contributed to a national pension platform, AI-driven aquaculture tools, and multilingual NLP research. Published / accepted research in image forensics and ethical reasoning for compact LLMs. Interested in applied research and engineering roles that bridge ML research and deployed systems.

Education

- **Indian Institute of Technology Palakkad** *Jan 2025 – May 2025*
  - B.Tech (Exchange Semester), Computer Science and Engineering; GPA: 7.61/10.
  - Selected coursework: Introduction to AI, Linear Algebra for Engineers, Compiler Design, Graph Theory & Combinatorics.
- **Kathmandu University, School of Engineering** *Jan 2022 – Feb 2026*
  - B.Eng. in Computer Engineering; CGPA: 3.91/4.00.
  - Selected coursework: Networking, Databases, Computer Architecture, Embedded Systems, Statistics and Probability, Differential Equations, Advanced Calculus, etc.

Research Experience

- **Legal NLP — Nepali–English Translation for Legal Documents** *May 2024 – Present*
  - Built a parallel corpus (≈10k sentence pairs) from Nepali and English legal texts using OCR (PyTesseract) and manual alignment/verification performed with law-student collaborators.
  - Fine-tuned MBART50 and custom Transformer variants for domain adaptation; baseline BLEU ∼0.42 (ongoing improvements focused on formatting, legal phrase preservation, and domain-specific tokenization).
  - Supervisors / advisors — Dr. Rajani Chulyadyo, Prof. Dr. Bal Krishna Bal.
- **Detecting Image Forgeries & Deepfakes: Comparative Study (Published on NCCI Aug 2025)**
  - Assembled a mixed dataset (manipulated + AI-generated) totaling over 140k images across multiple manipulation types for benchmarking image-forensics approaches.
  - Implemented and benchmarked convolutional CNNs (InceptionV3 family) vs Vision Transformers; reported improved accuracy and efficiency for selected CNN baselines in our experiments (InceptionV3: 94% on our test split)
- **Enhancing Ethical Reasoning in Tiny LLMs (Published on NCCI Aug 2025)**
  - Created synthetic ethical-dilemma datasets (≈1k cases) covering utilitarian, deontological, and virtue ethics perspectives for probing small LLMs.
  - Fine-tuned TinyLlama-1.1B using LoRA-based methods to create specialized agents and evaluated consistency and robustness via human & automated metrics.

Technical & Leadership Experience

- **AI and Data Engineer**, Mercuri.world (non-profit initiative) *Jan 2025 – Present*
  - Contributing to a machine-learning-based job recommendation pipeline aimed at improving employment access for people with mental illness. Work includes feature engineering, pipeline orchestration, and API endpoints for recommendations.
  - Worked with multivariate data (project aggregates thousands of job listings across many locations)
  - Collaboration across a distributed volunteer team; contributed to platform improvements that increased available resources (internal reporting: significant growth in 2024).
- **Co-Founder & COO**, Dr.Fish (AI & aquaculture startup, prototype stage) *Jan 2023 – Present*
  - Co-founded and managed operations and product development for an AI + IoT aquaculture solution.
  - Developed a computer-vision pipeline for fish-disease classification trained on a collected image dataset (10k+ images, initial baseline ∼60% accuracy); currently iterating on model architecture (ResNet, ViT variants) and data-quality improvements.

  - Led implementation of edge sensor prototypes and data-collection workflows for early-warning analytics; participated in startup competitions (Hult Prize OnCampus winner; ICT Awards finalist).
- **Full-Stack Developer**, Pension Management System (government project) *Jun 2025 – Present*
  - Contributed to redevelopment of a national pension web platform (600k+ users) with role-based access for pensioners, administrators, and banks.
  - Frontend work: developed a multi-page(60+) Angular UI (modular components, form validation, accessibility considerations) and documented flows and data diagrams. Backend contributions include API design and database schema collaboration (Spring Boot, PostgreSQL).

Technical Skills

Languages & ML:	Python, Java, JavaScript, C/C++; PyTorch, TensorFlow, Scikit-Learn; OpenCV, YOLOv8; Pandas, NumPy.
Backend & Web:	Spring Boot, FastAPI, Flask, Angular, React (basic); REST APIs, JWT/OAuth basics; Docker, Git.
Data & Orchestration:	PostgreSQL, ETL pipelines, Apache Airflow (DAG authoring), data preprocessing & annotation.
Embedded & Edge:	Raspberry Pi, ESP32, sensor interfacing, low-power data collection.
Other:	Basic Solidity (dApp prototyping), Linux shell, CI basics.

Certifications

DAG Authoring & Airflow Fundamentals (Astronomer); Supervised Learning with Scikit-Learn (DataCamp); Unsupervised Learning (DataCamp); AI Fundamentals; Understanding Embeddings for NLP (OpenHPI).

Selected Projects

- **AgniNetra — AI & IoT Forest Fire Detection** *Personal / Team project*
  - Collected and annotated a field dataset (8k images). Deployed a YOLOv8-based detector to Raspberry Pi/ESP32 prototypes for edge inference and GPS-enabled alerts.
  - Focus areas: low-latency detection, energy-efficient inference, and real-world testing pipelines (baseline detection 70% on in-field test sets).
- **MastiskaTrack — GPT-powered Mental-Health Assessment Pipeline** *Personal / Team project*
  - Built an embeddings-based retrieval pipeline (ChatGPT or comparable LLM embeddings) to align user responses with standardized mental-health questionnaires; produced a prototype scoring & recommendation interface.
  - Ethical considerations: anonymization, data minimization in prototype.
- **Insurance Fraud Claims Detection (Nepal context)** *Research / Application*
  - Developed a proof-of-concept full-stack prototype for automated screening of health insurance claims using public datasets and feature engineering.
  - Prototype metrics (on held-out test split): Accuracy 0.94, Precision 0.80, Recall 0.50, F1 0.62 — this was a prototype/experimental result; if using these metrics in applications, include dataset & evaluation details.
- **Cosmira — Interactive Solar System (NASA Space Apps 2024)** *Team project / award*
  - Built an educational web app featuring an orrery model and basic asteroid prediction demo. Received People's Choice award at NASA Space Apps Challenge 2024 (team award).

Awards & Achievements

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

Leadership & Extracurricular

- **Internal Relations & Operations Lead**, KU HackFest 2024
  - Coordinated logistics, judge communication and volunteer coordination for a 48-hour hackathon with 200 team applications.
- **Community Coordinator**, Health Informatics (KU Computer Club)
  - Led two localization sprints to improve the accessibility of open-source health platforms (Bahmni,

DHIS2) for local language users.

Languages

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

References

Available upon request