Mukul Aryal

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Professional Summary

Applied AI Engineer specializing in Computer Vision and NLP, with experience designing, training, and deploying deep learning models across mobile, backend, and embedded systems. Currently an L1 Software Engineer (AI/ML) at Vivasoft Nepal, skilled in PyTorch, Ultralytics/YOLO, OpenCV, and optimizing models for real-world performance. Experienced in SCRUM workflows and active in research with multiple accepted papers, along with a strong record of leadership in organizing major technical events such as KU HackFest 2024 and NCCI 2025.

Skills

Programming Languages & Tools: Python, PyTorch, Transformers, Unsloth, Docker, Django, FastAPI, Git

Domains: Deep Learning, Image Processing, Data Analysis, Natural Language Processing, Backend, Automation

Soft Skills: Leadership, Problem Solving, Creativity, Communication, Teamwork, Adaptability, Event Management

Experience

L1 Software Engineer (AI/ML), Vivasoft Nepal – Kathmandu — Dec 2025 - Present

- Currently involved in several agentic AI projects.

Associate AI/ML Engineer, Vivasoft Nepal – Kathmandu — Aug 2025 - Dec 2025

- Worked on variety of in house systems, especially in LLM finetuning, RAG system and AI Memory Management
- Reduced the inference time of an LLM Inference server from 1000s to less than 3s.
- Designed and built a concept for an AI powered job interview agent.
- Collaboration with overseas teams.

Backend Developer, Techore Solutions – Remote — Jul 2023 – Oct 2023

- Built a robust and reliable backend using ExpressJS.
- Designed and implemented the entire database in PostgreSQL.
- Set up CI/CD pipeline using GitHub Actions.
- Wrote clear and excellent documentation for future reference.
- Developed experience with SCRUM tools such as Jira, Confluence, and Slack.

Research

A Novel Approach to News Aggregation and Recommendation Using Clustering Algorithms and Graph Theory — May 2025

Mukul Aryal, Bigya V. Dhungana, Harish C. Bhandari

- Presented at: *International Conference on Non-Linear Analysis and Optimization (ICAN OPT NEPAL 2025)*, Kathmandu University, May 8-10, 2025.
- Demonstrated 15.9% redundancy reduction using clustering algorithms.
- Developed a graph-based recommendation engine achieving 40% CTR.

TikhoFormer: A Two-Stage Blur Classification and Transformer-Based Deblurring Framework — August 2025

Mukul Aryal, Bigya V. Dhungana, Suyog Ghimire, Shreyash Poudel

- Presented at: *National Conference on Computer Innovations (NCCI 2025)*, Kathmandu University, August 24, 2025.
- Designed a novel two-stage framework combining a feature-based classifier with specialized deblurring networks.
- Achieved a state-of-the-art Structural Similarity Index (SSIM) of 0.982, prioritizing perceptual quality and outperforming larger architectures.

A Computationally Efficient Method for Road Segmentation and Statistics-Based Classification on Low-Power Devices November 2025

Mukul Aryal, Bigya V. Dhungana, Suyog Ghimire, Shreyash Poudel, Sudan Jha

- Presented at: *2nd International Conference on Computational Technologies and Electronics (ICCTE 2025)*, University of North Bengal, November 20, 2025.
- Developed a complete Computer Vision pipeline to segment and classify road conditions from images without any Machine Learning.
- Achieved an IoU of 0.7 for segmentation and an Accuracy of 0.75 for classification.

Projects

1. **Hulaki** – *News Aggregation and Recommendation Using Machine Learning and Graph Theory*

Flutter, Firebase, BeautifulSoup4, Scikit-Learn, NetworkX, SQLite, Flask

- Scraped and clean data from prominent Nepali news websites.
- Fine-tuned an ML model to cluster similar news topics to reduce data duplication.
- Implemented a novel graph-based recommendation system.
- github.com/mukulboro/graph-news-recommender

2. **Superveyes** – *Machine Learning Driven Parking Solution*

OpenCV, Ultralytics, PyTorch, FastAPI, Tkinter

- Collected and wrangled images of Nepali license plates.
- Utilized Ultralytics' YOLO tool to train a Number Plate Recognition model.
- Built a computer vision pipeline to pre-process images to pass through an OCR model.
- github.com/mukulboro/parking-system-utils

3. **SadakVision** – *Road Condition Mapper*

Flutter, Google Maps, Ultralytics, Auth0

- Utilized Ultralytics' YOLO tool to train an object detection model.
- Created the complete application using the Flutter framework.
- Made use of Google Maps to plot the relevant coordinates.
- github.com/mukulboro/road-condition-detection-mobile-app

You can view other projects built by me on my GitHub.

Achievements

Lead Organizer, KU HackFest 2024 November 2024

- Spearheaded the planning, coordination, and execution of the largest annual hackathon at KU.
- Directed a multidisciplinary team to oversee event logistics, technical preparations, and participant experience.
- Ensured effective communication between stakeholders, sponsors, and team members.

General Secretary, Kathmandu University Computer Club January 2025 - Present

- Handled all major internal and external club communications.
- Contributed in the smooth operation of various seminars and workshops.
- Coordinated with club executives and members to execute technical events, and community initiatives

Conference Secretary, National Conference on Computer Innovations 2025 June 2025 - Present

- Facilitated communication among committees, speakers, and participants.
- Prepared official invitations, reports, and correspondence.
- Managed documentation, and schedules,to maintain organizational transparency and efficiency.

Education

Kathmandu University, Dhulikhel, Kavre, NP Feb 2022 – Present

BSc. Computer Science

Uniglobe SS/College, Kamaladi, Kathmandu, NP 2018 – 2021

+2 Science with Maths and Physics

Bagmati Boarding School, Sukedhara, Kathmandu, NP 2005 – 2018

SEE with Maths and Computer Science