

Abhiyan Dhakal

Nepal itsabhiyandhakal@gmail.com

Systems researcher focused on efficient and predictable computing

abhiyan.me GitHub ORCID

Research Interests

Resource-efficient systems; operating systems and memory management; adaptive resource control; systems performance evaluation.

Education

B.E. in Computer Engineering

Kathmandu University School of Engineering

2021–2026

Research Experience

Linux Memory Pressure and PSI Signal Validation

Ongoing independent systems research

2026–present

- Investigating whether memory PSI exposes early, repeatable pressure windows before reclaim and swap activity dominate.
- Built controlled workloads and measurement infrastructure for PSI, memory availability, reclaim, page faults, swap, zswap, cgroups, and workload timing.
- Current work focuses on baseline validation and signal characterization before policy comparison.

Publications

An Empirical Comparison of Embedding Models for Nepali Legal Document Retrieval

Abhiyan Dhakal, Kausik Paudel, Pranish Kafle, Sugat Sujakhu, Prakash Poudyal, and Anita Jadhari. ICAIL 2026, short paper; presented 9 June 2026. Programme.

- Empirically compares embedding choices for Nepali legal retrieval under low-resource language constraints.

An Artificial Intelligence Driven Semantic Similarity-Based Pipeline for Rapid Literature

Abhiyan Dhakal, Kausik Paudel, and Sanjog Sigdel. arXiv:2509.15292, 2025. DOI | Code companion.

- Evaluates three embedding models in a preliminary-review workflow without claiming uncollected ground-truth relevance labels.

Feasibility of Artificial Intelligence Driven Analysis in the Context of Nepalese Legal System

Abhiyan Dhakal, Sugat Sujakhu, Pranish Kafle, Kausik Paudel, and Prakash Poudyal. Proceedings of ICAIL 2025, pp. 498–499. DOI.

- Studies retrieval-augmented legal analysis for Nepali documents through rule-recall, rhetorical-understanding, and interpretation-oriented questions.

Research Infrastructure and Systems Software

Research infrastructure

Linux, C, PSI, zswap, cgroups

PSI Memory-Pressure Experiment Harness

Measurement and workload infrastructure for controlled Linux memory-pressure experiments, with stable output for PSI, reclaim, faults, swap, zswap, cgroup observations, and workload timing. Repository private while the study is in progress.

Systems software

Rust, TUI, Jupyter

Strata

Terminal-first notebook system with human-editable Markdown notebooks, kernel and environment management, Jupyter interchange, and checkpointed execution state.

Rust, PTYs, TOML

admux

Terminal multiplexer with declarative workspace manifests, persistent sessions, and best-effort restoration across shareable project configuration and machine-local runtime state.

Professional Experience

2025–present

DevOps Engineer (Freelance), National Innovation Center, Nepal

- Operate VPS-based deployments, reverse-proxy routing, TLS, server hardening, and release workflows for research and innovation services.
- Design continuous-delivery pipelines and deployment procedures across constrained infrastructure.

2024–present

Full Stack Developer (Part-time), Peakvoyage

- Design backend services and MQTT/TLS device-notification flows integrated with AWS IoT Core.
- Work across FastAPI, PostgreSQL, TypeScript, React, and Three.js in an IoT-backed product stack.

Leadership and Service

2025

President, Kathmandu University Computer Club

Led the executive board and programs supporting the university technology community.

2024–2025

Advisor, KU HackFest

Advised organizers on technical, operational, and financial decisions for a large student hackathon.

Research Methods

Controlled systems experiments; workload design; performance analysis; reproducible evaluation; information retrieval evaluation.

Technical Skills

Linux; C; Rust; Python; Docker; cgroups; PostgreSQL; AWS; TypeScript.