

MELINA THAPA

Bhaktapur, Nepal | thapamelina96@gmail.com | +977-9805264205
linkedin.com/in/melina-thapa-09665b211 | github.com/Melina123456

Research Interests: MLOps, software engineering for AI systems, distributed data infrastructure

EDUCATION

Bachelor of Computer Science and Information Technology (BSc CSIT) 2019 – 2024

Tribhuvan University — Bhaktapur Multiple Campus | Aggregate: 82%

Relevant Coursework: Artificial Intelligence, Data Warehousing & Data Mining, Statistics I & II, Design & Analysis of Algorithms, Database Management System, Information Retrieval

RESEARCH PROJECT

Multi-Service Credit & Entitlement Anomaly Detection 2026

Go ingestion service + Python ML pipeline, fully Dockerized (one-command setup) | github.com/Melina123456

- Designed and built an end-to-end anomaly detection system for multi-tenant credit/entitlement events: Go service for high-throughput event ingestion, Python (scikit-learn, PyOD) for modeling.
- Isolation Forest model achieved precision 0.753, recall 1.0, F1 0.859 on held-out evaluation data.
- Diagnosed and corrected a mean/std z-score scaling bug by switching to a median/MAD (robust) estimator, improving detection stability on skewed distributions.
- Added SHAP-based explainability per anomaly type, exposed through a FastAPI `/analyze/{event_id}` endpoint for per-event, human-readable justification.
- Maintained disciplined version control throughout: incremental commit-per-piece history, branch-per-feature workflow with rebase into dev.

PROFESSIONAL EXPERIENCE

Software Engineer I — AITC International May 2026 – Present

Mercury 360 ERP — multi-tenant enterprise SaaS platform

- Work across a production backend stack (NestJS, Go, Kafka, Debezium CDC, Redis, PostgreSQL) supporting a live multi-tenant ERP system.
- Designed a multi-tier subscription/entitlement enforcement system distributing plan data across services via Redis.

Associate Software Engineer — AITC International Nov 2024 – May 2026

Mercury 360 ERP — multi-tenant enterprise SaaS platform

- Implemented Debezium CDC and Kafka event streaming for real-time, cross-service data synchronization in a multi-tenant environment — direct precursor to the ingestion design used in the anomaly detection project.
- Designed multi-tenant data isolation using tenant-scoped access control enforced across services.
- Built asynchronous background processing with BullMQ for notification delivery and long-running tasks.

Backend Developer Intern — Veda Studios, Bhaktapur Jul 2024 – Nov 2024

- Built an internal admin dashboard (Node.js, AdminJS, Prisma ORM); first exposure to production Git workflows and Scrum.

Backend Developer Intern — Redwire Pvt. Ltd. Jan 2024 – Mar 2024

- Developed REST APIs (Express.js, MongoDB) for a citizen-services platform; implemented OTP authentication and notification integrations.

TECHNICAL SKILLS

Systems & Backend: TypeScript, JavaScript, Go, Node.js, NestJS, Express.js, PostgreSQL, MongoDB, Redis, Apache Kafka, Debezium (CDC), Docker, RESTful APIs, Microservices, Event-Driven Architecture

Infrastructure & DevOps: AWS EC2, systemd, PM2, Docker, Docker Compose

ML & Data: Python, scikit-learn, PyOD, SHAP, FastAPI, Isolation Forest, Anomaly Detection, Model Evaluation (Precision/Recall/F1)