Saroj Poudel

sarojpoudel201@gmail.com | sarojpoudel.com | github.com/IamSarojPoudel | linkedin.com/in/iamsarojpoudel

RESEARCH INTERESTS

Adversarial machine learning • Out-of-distribution robustness • ML for intrusion detection • Security of ML systems

EDUCATION

Bachelor of Engineering (B.E.) in Computer Engineering Nov 2019 – Jul 2024
Institute of Engineering, Pashchimanchal Campus, Tribhuvan University *Pokhara, Nepal*

- **Relevant coursework** in Artificial Intelligence, Distributed Systems, Operating Systems, Computer Networks, Database Management Systems, Computer Organization and Architecture, Enterprise Computing.

PUBLICATIONS & MANUSCRIPTS

[1] **S. Poudel**, N. Lamichhane, N. Paudel, P. Lamichhane, T. Khatri. "Re-Cyclo: An AI-Powered Waste Management System Using YOLOv8 and Large Language Models." *Manuscript in preparation*, 2025. **[Code]**

RESEARCH EXPERIENCE

Undergraduate Researcher, Re-Cyclo May 2023 – Mar 2024
Dept. of Electronics and Computer Engineering, Pashchimanchal Campus, Tribhuvan University *Pokhara, Nepal*

- As first author, built a system that detects household waste in a phone photo and suggests ways to reuse each item.
- Built the YOLOv8 detection pipeline for 19 household waste classes, combining four annotated datasets and adding brightness, rotation, scaling and flip augmentation for messy real-world photos.
- Ran 11 controlled experiments across datasets, model sizes, training lengths and transfer-learning setups, which showed that careful data curation improved results more than longer training.
- Connected detection to a local LLaMA 2 (7B, Ollama) that turns detected items into reuse suggestions offline.
- Designed centroid-fixed clustering to assign pickups to waste collectors and released the system as open source.

PROFESSIONAL EXPERIENCE

BlueStone Africa Jun 2024 – Present
Cloud-based enterprise asset management platform for facilities and property portfolios *Remote*
Senior Software Engineer May 2025 – Present

- Lead a team of developers building a multi-tenant platform for two enterprise clients (about 1,000 users).
- Designed Go microservices linked by a message broker, keeping each client's configuration and data separate.
- Led the design of PostgreSQL partitioning and Redis caching so queries stay fast as client data grows.
- Run services on Kubernetes, with CI/CD pipelines that test changes before they deploy to Azure.
- Set up monitoring and alerting, introduced role-based access control and fixed authentication vulnerabilities.
- Built the mobile app for asset verification and maintenance, with offline mode, QR scanning and planned inspections.
- Review code, mentor developers and plan upcoming work with product and leadership.

Software Engineer Jun 2024 – Apr 2025

- Built the platform from scratch as its first developer, using React, Node.js and MongoDB.
- Shipped features in short release cycles driven by feedback from early facilities teams.
- Launched the platform in production for its first enterprise clients.

ACADEMIC PROJECTS

Larko, Distributed Queue Management System Feb 2023 – May 2023
Built with Flutter, Django, PostgreSQL, React and WebSockets

- Designed FIFO scheduling with capacity planning based on Little's Law, real-time WebSocket updates and QR code check-in, handling 200 concurrent sessions in load testing.

TECHNICAL SKILLS

Languages	Python, Go, TypeScript/JavaScript, C++, Dart, SQL
ML & Data	PyTorch, Ultralytics YOLOv8, scikit-learn, OpenCV, NumPy, Pandas, LLMs (LLaMA 2, Ollama)
Systems	Microservices, gRPC, REST, PostgreSQL, Redis, Docker, Kubernetes, Azure, CI/CD, Linux
Research	Experimental design, ablation studies, performance evaluation, literature review, LaTeX