

Samir Poudel

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EDUCATION

Middle Tennessee State University (TN, USA)

Aug. 2023 – Present

M.S. in Computer Science; GPA: 3.8

Gandaki College of Engineering and Science (Pokhara, Nepal)

Aug. 2018 – Dec. 2022

Bachelor in Software Engineering; GPA: 3.30

EXPERIENCE

• **Graduate Research Assistant, MTSU, Murfreesboro, TN**

Aug. 2023 – Present

- Architected and optimized ML/NLP pipelines (BERT, SVM, XGBoost), improving model accuracy by **32%** while reducing processing time by **28%**.
- Published **17 peer-reviewed papers** (IEEE, ACM, Journal of Marketing Analytics, Machine Learning with Applications) on federated learning, blockchain security, and big data optimization.
- Engineered distributed ML pipelines using PySpark and Airflow, scaling data processing to **10M+ rows** and cutting runtime by **45%**.
- Led federated learning research for satellite imagery deforestation detection, achieving **0.85 IoU** while reducing cross-border data transfer by **97.3%**.
- Formulated a spectral audit test and game-theoretic mechanism to verify differential privacy guarantees in federated LoRA LLM fine-tuning; achieved **100%** non-compliant client detection with under 6% false-alarm rate.
- Developed HetLoRA-M, a federated LLM fine-tuning framework with adapter-space momentum across 50 heterogeneous clients (5 rank tiers); achieved **44.6% AUC** on Yelp, outperforming FlexLoRA by **+5.2 pp** ($p=0.032$) using PyTorch and Hugging Face.
- Built RBBD, a representation-based federated learning defense framework reducing adversarial attack success to **<15%** with under 2% accuracy degradation.

• **Data Analyst, Urja Tech, Pokhara, Nepal**

Feb. 2018 – Mar. 2022

- Spearheaded analytics projects that enhanced operational efficiency by **27%**, saving **240+ work hours annually**.
- Deployed SQL databases and Tableau dashboards for 50+ KPIs, accelerating decision-making by **40%**.
- Identified customer behavior trends across **10k+ records**, driving campaigns that lifted conversion rates by **18%**.
- Developed predictive models for business forecasting, optimizing resource allocation by **22%** and reducing cost overruns.

PROJECTS

- **Personal AI Assistant:** Multi-model AI assistant with tool-calling (Gmail, finance, docs) and Telegram bot; Next.js, TypeScript, OpenRouter.
- **I-140 Insights:** Automated USCIS I-140 receipt number tracker with PostgreSQL analytics dashboard; FastAPI, React.
- **Academic Tracker:** Grade tracker with AI syllabus extraction (Groq), live GPA calculator, and animated progress charts; Next.js, Supabase.
- **Personal Portfolio (samirpoudel.com.np):** Research portfolio with publication tracker, finance dashboard, and AI chat; Next.js, TypeScript, Supabase.
- **QuadraCode AI:** Multimodal transformer (source code + opcode + bytecode) for smart contract vulnerability detection (ICCCN 2024).
- **Cloud Fake News Detection:** AWS SageMaker + Lambda; BERT/LSTM achieving **94.9% accuracy** and under 400ms latency.
- **Credit Card Fraud Detection:** PySpark + Airflow; Random Forest/GBT achieving **94.9% accuracy** on imbalanced data.

SKILLS

- **Languages:** Python, JavaScript, TypeScript, C/C++, SQL, Solidity, LaTeX
- **ML/Frameworks:** PyTorch, TensorFlow, Hugging Face, Flower FL, PySpark, Airflow, React, Next.js
- **Cloud & Tools:** AWS (SageMaker, Lambda, S3), GCP, Docker, Git, Power BI
- **Domains:** Federated Learning, Differential Privacy, LLM Fine-Tuning, Blockchain Security, NLP, CV

AWARDS

- **ACM Mid-Southeast Conference (2nd Place):** Blockchain + AI for healthcare data management.
- **Design Thinking Workshop (1st Place):** Tourist Rental App with 95% user satisfaction.