

Samir Poudel

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Education

Middle Tennessee State University

Ph.D. in Computational and Data Science
M.S. in Computer Science; GPA: 3.8

In progress
Dec. 2025

Gandaki College of Engineering and Science

B.S. in Software Engineering

Dec. 2022

Experience

Middle Tennessee State University

Aug. 2023 - Present

Graduate Research Assistant

- Developed and evaluated machine-learning and NLP pipelines using BERT, SVM, and XGBoost.
- Developed methods to audit differential-privacy guarantees in federated LoRA fine-tuning of large language models, using spectral analysis and game-theoretic mechanisms.
- Built representation-based defenses against backdoor attacks in federated learning; evaluated attack success and model accuracy to assess robustness.

DataInsight | Franklin, TN

May 2025 - Aug. 2025

Software Engineering Intern - Backend and Data Engineering

- Built HomeInsight Core, a real estate API serving **2.4 million Tennessee property records**.
- Integrated credit, criminal-background, and employment-check APIs into tenant screening; built database support for payments, maintenance requests, and messaging across 100+ properties.

TwoAce Solutions

Mar. 2022 - Jul. 2023

Full Stack Developer

- Built and deployed React and TypeScript applications with Python, FastAPI, and PostgreSQL; designed database schemas and REST APIs for reporting and data analysis.

Urja Tech

Feb. 2018 - Mar. 2022

Software Engineer - Data and AI

- Built Python and scikit-learn models to analyze 10,000+ customer records, and SQL reporting pipelines tracking 50+ business KPIs.

Projects

Distributed Data Processing | MTSU; Python, PySpark, Airflow

- Built data pipelines for **10 million+ rows**; helped compare Spark Map and Airflow Dynamic Task Mapping on execution speed and memory usage as part of a collaborative benchmarking study.

Parallel Data Preprocessing and ML Modeling | MTSU; Python, MPI4Py

- Contributed to evaluating parallel preprocessing and deep-learning modeling against non-parallel approaches in collaborative work on computational cost and runtime.

Personal AI Assistant | Next.js, TypeScript, OpenRouter

- Built a multi-model assistant with tool calls for Gmail searches, finance, and document lookup, plus a Telegram interface; implemented function schemas, duplicate-call filtering, and streamed responses.

Generative AI on AWS | Amazon Bedrock, PartyRock, FAISS

- Built a mood-based book recommender in PartyRock and explored Titan text/image models; implemented document Q&A using Titan embeddings, FAISS retrieval, and Claude 3 Sonnet in Bedrock.

Academic Tracker and Syllabus Automation | Next.js, Supabase, Groq

- Built a grade tracker with LLM-based syllabus extraction, converting grading components, weights, and cutoffs into structured JSON for course tracking and grade calculation.

Technical Skills

Languages: Python, SQL, TypeScript, JavaScript

ML and data: PyTorch, Hugging Face, scikit-learn, PySpark, Airflow

Engineering: FastAPI, React, Next.js, PostgreSQL, Docker, Git, AWS (SageMaker, Lambda, S3)