

Rohit Khadka

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Portfolio — GitHub — LinkedIn

Research Interests

Financial econometrics and macro-financial modeling; systemic risk and stress testing; stochastic processes and volatility modeling; computational methods for financial systems; machine learning and NLP applications in financial markets.

Education

BSc (Hons) Computer Science

Herald College Kathmandu (Affiliated with University of Wolverhampton)

Expected Graduation: Nov 2026

Research Experience

Research Intern, Nepal Rastra Bank

Mar 2026 – May 2026

- Developed a Bayesian Vector Autoregression (BVAR) model to analyze the impact of remittance shocks on banking-sector stability within a macroprudential stress-testing framework.
- Conducted scenario design for stress testing by identifying key drivers of systemic risk.
- Conducted Impulse Response Function (IRF) analysis revealing a delayed transmission mechanism: peak adverse NPL response occurred at Quarter 3 under an adverse scenario and Quarter 6 under a severe combined remittance–GDP shock

Research Projects

Market Microstructure & Portfolio Optimization (NEPSE)

[Project Link](#)

- Built a broker network model using graph theory to identify influential market participants and detect anomalous trading behavior.
- Developed a portfolio optimization engine using Monte Carlo simulation and Markowitz Model estimate efficient frontiers and risk-adjusted returns.
- Designed a sentiment analysis pipeline to extract signals from financial news and integrate them into market models.

TradeNiti: AI Powered Backtesting Platform for NEPSE traders

- Developed a system where natural language trading strategies are converted into executable backtesting code using large language models.
- Built a secure sandboxed environment to evaluate generated strategies and ensure reproducibility.
- Designed performance analytics tools for evaluating trading strategies using risk-adjusted metrics.

Current Research Focus

Exploring how macroeconomic shocks and financial signals can be modeled using a combination of econometric methods (e.g., VAR frameworks) and machine learning approaches (e.g., LLM-based information extraction and agent-based simulations).

Technical Skills

Programming: Python, SQL, MATLAB

Quantitative Methods: Time-series modeling, Bayesian methods, Monte Carlo simulation

Machine Learning: PyTorch, Scikit-learn, Transformers

Tools: FastAPI, Docker, PostgreSQL

Additional Experience

AI Fellow, Fusemachines

Apr 2025 – Oct 2025

Completed a competitive program focused on machine learning, deep learning, and generative AI with applied projects.

Data Fellow, Sunway Student Research Council

Feb 2024 – Feb 2025

Worked on statistical analysis, A/B testing, and data visualization in applied research settings.

Achievements

- Silver Medalist, American Mathematics Olympiad — Country Rank #3 (2023)
- National Delegate, MILSET Expo Sciences Asia (2022)

Languages

English (Advanced), Nepali (Proficient)