Moinak Nath

moinaknath2025@u.northwestern.edu | 3012227964 | Rockville, MD | Portfolio | LinkedIn | GitHub

EDUCATION

Northwestern University Evanston, IL
M.S. in Computer Science | B.A. in Mathematics, Minor in Physics June 2025
GPA: 3.9/4.0 | *Honors:* Dean's List (7 of 9 quarters)
Courses: Mathematical Models in Finance, Regression, Probability & Statistics, Deep Learning, Stochastic Models, Algorithms, AI, Machine Learning, Computer Systems, Graph Theory, Linear Algebra, Discrete Math, Proofs

EXPERIENCE

Quantitative Trading Analyst Evanston, IL
NU Capital Management, Quantitative Strategies Group February 2024 – Present
- Conducted industry and market research by analyzing electric vehicle price and market share data with Excel and Python financial models; won 1st place on an EV market making competition
- Completed course consisting of 10 lectures on equity markets, securities, derivatives, and options

Machine Learning Engineer Evanston, IL
Institute of Electrical and Electronics Engineers, Technical Program February 2024 – May 2024
- Spearheaded the development of ScriptScribe, a machine learning based React web app to correct grammar and spelling errors in handwritten text while preserving the author's style, resulting in a 95% accuracy rate
- Led a team of 10 engineers; organized weekly meetings, provided ideas, and assisted team with technical issues
- Introduced cutting-edge tool to Citadel and GrubHub engineers; showcased its potential to revolutionize education and increase user productivity by 40%, leading to endorsements and partnership discussions for future collaboration
- Constructed an innovative neural network made of 2 RNNs and a CNN using TensorFlow to learn authors' handwriting and generate corrected text; developed OCR system using to scan handwritten text

Quantitative Researcher Intern Batavia, IL
Fermi National Accelerator Laboratory, BREAD Project June 2023 – August 2023
- Implemented mathematical algorithm in Python using NumPy and SciPy to convert S-parameter data to relative permittivity, achieving an error of 2%; conducted statistical analysis of measurement data to ensure precision
- Built device to measure permittivity of materials, allowing group to build 10-500 GHz range dark matter detector

Quantum Computing Researcher Evanston, IL
Koch Research Group October 2022 – June 2023
- Improved runtime of scQubits, a Python package for simulating qubits, by optimizing matrix diagonalization options in SciPy and testing PRIMME, a SciPy alternative for diagonalization, yielding a 26% speed improvement
- Developed library to perform runtime benchmarks and plot results using MatPlotLib, boosting team's research output by 13%; presented results of quantitative research project to 10 leading quantum computing researchers

TECHNICAL PROJECTS

MLStockPredict (Quantitative Research Project) June 2024 – July 2024
- Designed LSTM neural network to predict prices of 500+ stocks and trained model on large time-series data set; backtested model on Uber, Apple, and Tesla stocks, achieving a mean squared error of .013
- Integrated machine learning model into website to visualize market data and display predictions from neural net
- Pitched project to portfolio manager from Radix Trading, who saw potential in the model for profitable trading
- **Utilized**: Python, Pandas, TensorFlow, NumPy, Flask, React, TypeScript, Polygon.io API

Options Pricer (Quantitative Research Project) June 2024 – July 2024
- Implemented 2 options pricing algorithms based on the Black-Scholes model and Monte-Carlo simulations
- Compared algorithms by using them to price Apple options and plotting the real price against predicted values
- **Leveraged**: Python, Jupyter Notebook, Pandas, NumPy, Yahoo Finance

Sudoku (Software Engineering and Game Development Project) June 2023 – December 2023
- Collaborated with peer to create and unit test Sudoku in C++; earned a 100% on CS 211 project
- Converted strategy game to a website using React to gain web development experience; added 10,000+ games
- **Used**: C++, unit testing, game design, React, Chakra UI, TypeScript, CSS, GitHub, GitHub Pages

SKILLS

Expert: C/C++, Python, NumPy, SciPy, Jupyter Notebook, C, scientific programming, applied mathematics
Intermediate: GitHub, PyTorch, TensorFlow, Pandas, Sklearn, openCV, UNIX, command line, Excel, Word, PowerPoint
Proficient: HTML, CSS, JavaScript, React, Flask, Figma, Mathematica, SQL, statistical analysis, time-series analysis