Rethyam Gupta

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EDUCATION

Cornell University, College of Engineering, Ithaca, NY
Master of Engineering in Financial Engineering, GPA: N/A **Expected Dec. 2025**

Indian Institute of Technology Guwahati (IIT Guwahati), Guwahati, Assam
Bachelor of Technology in Applied/Engineering Physics, **Gold Medalist**, GPA: 8.01/10 **May 2024**

Academic Achievements: IIT Guwahati Merit-cum-Means Scholarship (2022 and 2023), Mitacs Graduate Fellowship (2023)

Selected Coursework: Advanced Probability, Stochastic Calculus, Derivatives, Fixed-Income Securities, Financial Risk Management

SKILLS

Technical: Python, C++, R, MATLAB, SQL
Frameworks and Libraries: TensorFlow, PyTorch, Scikit-learn, Keras, XGBoost, MXNet

EXPERIENCE

Research Assistant, *Cornell Dyson School of Applied Economics*, Ithaca, NY **July 2024 to Sept. 2024**

- Implemented an NLP pipeline using TF-IDF and cosine similarity to analyze business overviews and risk factors from over 29,000 10-K filings (2001–2023); enhanced competitive overlap detection for venture capital investments by 30%.
- Executed regression analysis on cash-to-asset and debt-to-equity ratios from public companies' 10-K filings; identified financial threats to venture capital firms with 85% accuracy in detecting significant competitive risks.

Quantitative Research Globalink Intern, *Mitacs*, Montreal, Quebec **May 2023 to Aug. 2023**

- Enhanced computational efficiency for option pricing by over 30% using a quantum system with Qiskit, leveraging the amplitude estimation algorithm for a quadratic speedup over classical Monte Carlo methods.
- Simulated and evaluated the Heston and Black-Scholes models for pricing vanilla and exotic options (barrier, lookback) using MATLAB and Python on a classical system.

BRAIN Research Consultant, *WorldQuant*, Remote **Aug. 2022 to July 2023**

- Developed over 500 uncorrelated alphas and merged alphas with high Sharpe ratios, low drawdowns, and low turnover for the top 200, 500, and 1000 liquid stocks in the U.S. and Chinese markets on WorldQuant BRAIN.
- Optimized alpha research by leveraging unique combinations of BRAIN operators and datasets via the BRAIN API; achieved a global rank of 340 in the Merged Alpha Competition 2023; and secured 1st place in the 2023 Consultant Meet New Delhi.

PROJECTS

Comparing Deep Learning and Time-Series Models for GDP Forecasting, *UNSW*, Sydney, NSW **Nov. 2022 to March 2023**

- Assessed deep learning models (LSTM, BD-LSTM, ED-LSTM) against time-series models (ARIMA, VAR) for decadal GDP forecasting across developed and developing economies; identified ED-LSTM as the most effective model.
- Integrated a Recursive strategy with ED-LSTM to develop a novel model for predicting decadal GDP growth rates; demonstrated a 23% improvement in forecasting accuracy compared to LSTM models, ARIMA, and VAR.

Efficacy of Price Action Trading Strategies in Indian Markets, *IIT Kanpur Tech Meet*, Kanpur, U.P. **Nov. to Dec. 2022**

- Formulated a price action-based trading strategy for the Indian market, including stocks and Bank Nifty Index futures; hypothesized that gap-up openings with trend reversal signals indicate bullish sentiment for volatile assets.
- Utilized the Bonferroni test for hypothesis testing and implemented a 5% trailing stop loss and a 35% profit booking strategy for risk management; achieved 48% higher returns than the benchmark over a 3-year backtesting period.

LEADERSHIP EXPERIENCE

Institute Club Secretary, Finance & Economics Club IIT Guwahati **May 2022 to April 2023**

- Established the institute's first club investment fund and organized India's second-largest M&A case competition.
- Global Winner, Nobias Intercollegiate Investment Challenge (2023); India Rank 2, WorldQuant Alphathon Stage-1 (2022)

ACTIVITIES/INTERESTS

Teaching Assistant (Derivatives Securities, SC Johnson College of Business, Cornell University) (Fall 2024)
Poker and Card Games, Table Tennis, Badminton, Trekking, Chess, Toastmasters Sessions

Rethyam Gupta
M.Eng. (Financial Eng.) Class of 2025
Cornell Engineering
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To,
The Hiring Team
SCALP Trade

Respected,

I am writing to express my enthusiasm for the Trader intern role at SCALP Trade. As a Master's candidate in Financial Engineering at Cornell University, I am eager to apply my quantitative and technical skills to contribute to the innovative and impactful work at SCALP Trade. My academic accolades, including the prestigious Dr Shankar Dayal Sharma Gold Medal for overall proficiency and academic excellence, as well as Institute merit-cum-means scholarships, underscore my passion for solving complex challenges with both rigor and creativity.

Before pursuing my undergraduate degree in Physics, I had a profound passion for mathematics, participating in various competitions and Olympiads across India, representing my city and state. This passion for mathematical problem-solving inspired my decision to major in Physics, driven by a desire to solve real-world problems using mathematical principles. It was through this pursuit that I discovered quantitative finance as the best possible career path for me. This field not only demands quick thinking and rigorous problem-solving but also allows individuals to make significant impacts on global financial markets through their decisions.

To further explore the field of quantitative finance, I interned last summer at Mitacs in Montreal, Quebec, where I worked on enhancing the computational efficiency of the Black-Scholes model using quantum systems. Additionally, my roles as a Research Assistant at the Cornell School of Applied Economics and a Deep Learning Intern at UNSW have enriched my expertise in machine learning, financial mathematics, and programming—skills I believe are crucial for success in modern quantitative finance.

What excites me most about SCALP Trade is the opportunity to engage in a fast-paced environment that values innovative thinking and rapid problem-solving, as well as the emphasis it places on collaborative working and ideation. I am confident that my background in programming, advanced mathematics, and statistics, along with my passion for problem-solving, makes me a strong candidate to effectively contribute to the entire firm.

Thank you for considering my application. I look forward to the opportunity to discuss further how I can contribute to the success of SCALP Trade.

Sincerely,

Rethyam Gupta