NYU | COURANT INSTITUTE OF MATHEMATICAL SCIENCES

MARCH 2025

RESUME BOOK

FULL-TIME CANDIDATES

MATHEMATICS IN FINANCE

Master of Science Program

DEAR COLLEAGUE,

We are pleased to share with you the resumes of the graduate students in NYU Courant's *M.S. in Mathematics in Finance* who are on the job market and looking for full-time positions.

We believe our students are the most astute, most capable, and best trained group of students of any program. The resumes you find in this resume book describe their distinguished backgrounds. For the past years we have one of the highest placement records for internships and full-time positions. Our students enter into front office roles such as trading, portfolio or risk management, on the buy and the sell side. Their computing, quantitative modeling, and machine learning skills, as well as their hands-on practical experience, makes them productive from day one.

Our graduate-level curriculum is dynamic and challenging. For example, the first semester investment course does not end with CAPM and APT, but is a serious data- driven course that examines the statistical principles and practical pitfalls of covariance matrix estimation and portfolio construction. As part of our core curriculum, students learn the modern tools of computer science, machine learning and data science as they are used in the financial industry today. Our advanced electives cover cutting-edge topics in alternative data, algorithmic trading, computational statistics, derivatives pricing, financial machine learning, risk and portfolio management, and XVA. Our instructors are senior industry professionals and full-time faculty from NYU Courant, the top ranked department worldwide in applied mathematics. You can find more information about our curriculum and faculty at **math-finance.cims.nyu.edu/**

Sincerely yours,

Petter Kolm
DIRECTOR

Jonathan Goodman
CHAIR

Leif Anderson
INDUSTRY ADVISOR

New York University
Courant Institute of Mathematical Sciences
MS in Mathematics in Finance

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THE CURRICULUM HAS FOUR MAIN COMPONENTS

For more information about the program curriculum and course descriptions, visit math.nyu.edu/financial_mathematics/academics/courses

01. FINANCIAL THEORY, STATISTICS, AND FINANCIAL DATA SCIENCE

These courses form the core of the program, covering topics ranging from equilibrium theory, Black-Scholes, Heath-Jarrow- Morton, linear regressions, covariance matrix estimation to modern machine learning techniques and how they are used in quantitative finance.

02. PRACTICAL FINANCIAL APPLICATIONS

These classes are taught by industry specialists from prominent Wall Street firms. They emphasize the practical aspects of quantitative finance, drawing on the instructor's subject matter experience and expertise.

03. MATHEMATICAL TOOLS

This component provides appropriate mathematical background in areas like stochastic calculus and partial differential equations.

04. COMPUTATIONAL SKILLS

These classes provide students with a broad range of software skills in Java and Python, and facility with computational methods such as optimization, Monte Carlo simulation, EM-type algorithms and the numerical solution of partial differential equations.

PRACTICAL TRAINING

In addition to coursework, the program emphasizes practical experience. All students do a capstone project (the Project and Presentation course), mentored by finance professionals. Most full-time students do internships during the summer between their second and third semesters.

OUR CURRICULUM

	1ST SEMESTER	2ND SEMESTER	3RD SEMESTER
FINANCIAL THEORY, STATISTICS, AND FINANCIAL DATA SCIENCE	Financial Securities and Markets Risk and Portfolio Management Data Science and Data-Driven Modeling	Dynamic Asset Pricing Machine Learning & Computational Statistics Market Microstructure Advanced Topics In Equity Derivatives Interest Rate & Fx Models	Advanced Statistical Inference and Machine Learning Trends in Financial Data Science Time Series Analysis & Stat. Arbitrage Alternative Data in Quantitative Finance
PRACTICAL FINANCIAL APPLICATIONS		Active Portfolio Management Modeling and Risk Management of Bonds and Securitized Products Trading Energy Derivatives Algorithmic Trading & Quantitative Strategies Advanced Risk Management	Fixed Income Derivatives: Models & Strategies In Practice Trends In Sell-Side Modeling: XVA, Capital and Credit Derivatives Cryptocurrency and Blockchains: Mathematics and Technologies Project & Presentation
MATHEMATICAL TOOLS	Stochastic Calculus		
COMPUTATIONAL SKILLS	Computing in Finance Data Science and Data-Driven Modeling	Scientific Computing in Finance	

For more information about the program curriculum and course descriptions, visit [math-finance.cims.nyu.edu/academics.](math-finance.cims.nyu.edu/academics)

QUANQUAN (LYDIA) CHEN

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EDUCATION

Expected 12/24 **NEW YORK UNIVERSITY** New York, NY
The Courant Institute of Mathematical Sciences
M.S. in Mathematics in Finance
- ***Coursework:*** stochastic calculus, machine learning, time series, data science and data-driven modeling, risk and portfolio management, dynamic asset pricing, foreign exchange, interest rate

09/19 - 06/23 **ZHEJIANG UNIVERSITY** Hangzhou, China
B.S. in Mathematics and Applied Mathematics
- ***Coursework***: mathematical statistics, optimization algorithm, interpolated theory
- ***Honors/Awards:*** Outstanding Graduate, 2nd Prize in Chinese Mathematics Competition of College Students, Students' Scholarship, Outstanding Community Service Award

EXPERIENCE

07/24 - present **NUMERIX** New York, NY
Financial Engineering Intern (Python, Excel)
- Developed models (e.g., Black-Scholes, Heston, Bates), applied market data and wrote payoff scripts to price exotic instruments (e.g., barrier options, variance swaps, cliquets, corridors)
- Conducted calibrations for equity and FX models with pricing and Greeks, considered different cases (e.g., time-dependent yield, projection rate, day-count conventions) to ensure accuracy
- Researched and applied pricing algorithms (e.g., backward Monte Carlo for American options) in literature review from academic papers on financial products pricing

06/22 - 11/22 **SHENWAN HONGYUAN SECURITIES RESEARCH CO., LTD.** Shanghai, China
Financial Engineering Intern (Python)
- Extracted fund data, manipulated and validated data through detecting outliers, dropping duplicates values, completed missing values with imputers, and reduce data dimensions
- Applied PCA on portfolio, based on principal components and risk budgeting to build a new one, backtested it and obtained annualized return 7.16% and winning percentage nearly 85%
- Anatomized low-cost fund data, summarized competitive advantages and background as well as business strategies of investment companies; researched other products, produced client reports

PROJECTS

09/23 - 10/23 **NYU COURANT** New York, NY
Regression Models Analysis on Hedge Fund Dataset (Python)
- Applied linear regression on AQR fund data, performed Elastic Net regularization, compared MSE of different models and concluded regularization's power in the case of multicollinearity
- Used grid search to find best parameter, applied time series cross-validation, reduced standard deviation by nearly 35%, and explored advantage of regularization regression model

09/23 - 12/23 **Option Hedging Strategy Analysis with Simulation and Historical Data (Python)**
- Explored a hedging strategy, applied Black-Scholes model to simulate trading path, discussed hedging errors under different scenarios, and explored distribution of break-even volatility
- Used Black-Scholes model on 2K+ pieces of real market data, hedged options considering dividends, conducted back test on P&Ls, and compared break-even volatility with realized one

03/23 - 06/23 **ZHEJIANG UNIVERSITY** Hangzhou, China
Thesis: Extreme Value Distribution of Censored Samples and Its Applications (Python)
- Developed 2 Bayesian models to estimate parameter, each with 2 loss functions, and conducted simulation study to assess and compare accuracy of 4 estimations
- Reduced MSE by nearly 20% based on real-world case, which can provide insights for financial data to improve accuracy of predicting extreme outcomes when there is missing information

COMPUTATIONAL SKILLS

Programming Languages and Software: Python (Pandas, Numpy, Scipy, Matplotlib, Sklearn), LaTeX, Excel
Languages: English (fluent), Mandarin (native)

SICHEN (FRODO) GU

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EDUCATION

Expected 12/24 **NEW YORK UNIVERSITY** New York, NY
The Courant Institute of Mathematical Sciences
M.S. in Mathematics in Finance
- ***Coursework:*** risk management, Fama-French, machine learning, derivatives pricing, VaR, optimization, Monte Carlo simulation

09/19 - 05/23 **NEW YORK UNIVERSITY** New York, NY
B.A. in Mathematics and Economics, Minor in Computer Science
- ***Coursework:*** linear regression, statistics, econometrics, ODEs, macroeconomic analysis
- ***Honors/Awards:*** Mathematical Association of America Problem of the Month Winners Circle, Dean's List (all academic years), NYU Founders Day Award, NYU CAS/GSAS Scholarship

EXPERIENCE

06/24 - 08/24 **JENNISON ASSOCIATES** New York, NY
Quantitative Research Intern (Python)
- Analyzed the RavenPack Whitepaper on Earnings Intelligence equity factors and presented findings to the team, illustrating the application of these factors in portfolio rebalancing
- Extracted data from Snowflake, mapped stock identifiers with company stock databases, and analyzed the correlation between earnings intelligence factor scores and stock returns
- Backtested daily and weekly portfolio rebalancing strategies based on earnings intelligence factors, experimenting with different decay days and delta periods to optimize performance
- Developed daily rebalancing strategies for the Russell 2000 universe, achieving an annualized return of 18.67%

06/23 - 08/23 **CHUANG YUAN FUTURES** Shanghai, China
Investment Research Intern (Python)
- Analyzed and processed diverse dataset comprising 127 monthly variables and 1 quarterly variable (GDP) from FRED-MD / FRED-QD dataset
- Executed data transformation, including outlier removal, to ensure variable stationarity
- Leveraged dynamic factor models on nowcasting model to produce accurate forecasts and nowcasts of economic variables
- Enabled proactive decision-making by providing early estimates of critical economic indicators
- Initiated research on hierarchical risk parity (HRP) model, including in-depth analysis of academic papers and facilitation of plans for HRP's future implementation at firm

05/22 - 08/22 **ASTOR REALTY CAPITAL** New York, NY
Private Equity Intern
- Conducted quantitative and qualitative due diligence for potential investments by computing net operating income, yield on cost, and waterfall structure profits
- Leveraged financial modeling techniques like discounted cash flow (DCF) analysis and pro forma modeling to assess projected cash flows and evaluate investment scenarios

PROJECTS

10/23 - 12/23 **Comparative Analysis of Correlation Dynamics in Financial Markets (Python)** New York, NY
- Analyzed correlations among equity indices, currency pairs, and interest rates using EWMA and GARCH models, examining market trends and VIX's role in forecasting volatility
- Evaluated asset distribution patterns of S&P 500 and other indices by calculating rolling statistics (variance, skew, kurtosis); studied asset returns against Gaussian and alternative distributions
- Compared implied and realized distributions in financial indices; employed butterfly and kernel regression methods to analyze volatility smiles and assess statistical measures of volatility trends

COMPUTATIONAL SKILLS / OTHER

Programming Languages: Python (Numpy, Pandas, Scikit-learn, PyTorch), Java, R programming, MySQL
Interests: highest amateur rank in Go (chess game), Travel (251 cities in 32 countries)
Activities: Teaching Assistant, Grader, and Peer Mentor for undergraduate math majors at NYU Courant

SHUPENG (WAYNE) GUAN

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EDUCATION

08/23 - 01/25 **NEW YORK UNIVERSITY** New York, NY
The Courant Institute of Mathematical Sciences
M.S. in Mathematics in Finance
- ***coursework:*** object-oriented programming, deep learning, machine learning, data-driven modelling, time-series, statistical arbitrage, cryptocurrency and blockchain, scientific computing, mortgage-backed securities, market microstructure, stochastic calculus, equity derivatives

09/21 - 07/23 **UNIVERSITY OF BIRMINGHAM** Birmingham, UK
B.S. in Mathematics With Honours (First Class)
- ***Coursework:*** applied statistics, statistics in economics, integer programming and combinatorial optimisation, numerical methods and programming, differential equations, real and complex analysis, multivariable calculus, linear algebra, mathematical finance (options theory)

09/19 - 06/21 **HUAZHONG UNIVERSITY OF SCIENCE AND TECHNOLOGY** Wuhan, China
B.S. in Finance
- ***Coursework:*** econometrics, microeconomics, macroeconomics, accounting, money and banking, public finance, game theory
- ***Award:*** Freshman Award scholarship (50% tuition)

EXPERIENCE

06/24 - 09/24 **EASTMONEY SECURITIES CO., LTD** Shanghai, China
Quantitative Researcher Intern (Asset Management)
- Conducted research project on crowded trading risks, analyzed crowded trends to understand market mechanics, performed portfolio optimization under different rebalancing frequencies
- Developed multiple crowded risk features based on mid-frequency trading data, generated high risk-adjusted return exit signals with strong statistical significance
- Delivered an automated multi-signals risk monitoring model to alert for crowded trading risks

08/22 - 09/22 **CHINA SECURITIES CO., LTD** Shanghai, China
Data Analyst Intern (Python)
- Mocked market-making automation mechanics, revisited delta-neutral, beta hedging, grid trading and arbitrage trading algorithms; implemented dynamic hedging algorithms for OTC derivatives
- Backtested structured derivatives (auto-callables) historical win rates under various P/B ratios
- Adjusted institutional clients' portfolios based on Sharpe models; attained significant Sharpe ratio increases (25%+ average)

PROJECTS

09/24 - Now **BANK OF AMERICA MERRILL LYNCH** New York, NY
Capstone Project
- Explore high-frequency intraday correlations among return volatility, trade volumes and intensity
- Build a stochastic multiplicative error model(SMEM) to capture a latent common factor which accounts for the positive simultaneity between volatility and trade volume substantially
- Extend the SMEM framework to improve forecasting accuracy on volumes to a systematic portfolio level which is fundamental for alpha generation

01/24 - 05/24 **NYU CENTER FOR DATA SCIENCE** New York, NY
Deep Learning (Pytorch)
- Developed and trained energy-based deep neural networks within the Graph Transformer Network(GTN) framework, achieved high performance on text transcription from images
- Developed and trained Vision Transformer(ViT) on image classification tasks, demonstrated high accuracy on open-source large datasets (cats and dogs)
- Developed and trained a Mixture of Experts(MoE) on large-scale nonlinear classification tasks

COMPUTATIONAL SKILLS / OTHER

Programming Languages & Software: Python, R, MATLAB, SQL, LaTex, Excel

Interests/Certification: Sports games betting prediction; Texas hold'em(SIG Poker Tournament NY final); Certificates of Completion for Akuna Capital Options 101 & 201 Courses

TIANBI HU

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EDUCATION

Expected 12/24 **NEW YORK UNIVERSITY** New York, NY
The Courant Institute of Mathematical Sciences
M.S. in Mathematics in Finance
- ***Coursework:*** interest rate & FX models, market microstructure, trading energy derivatives, modeling and risk management of bonds and securitized products, financial securities and markets, risk and portfolio management, scientific computing in finance, data science and models

09/18 - 06/22 **CAPITAL NORMAL UNIVERSITY** Beijing, China
B.S. in Mathematics and Applied Mathematics
- ***Coursework:*** multivariable calculus, probability theory, mathematical statistics, linear algebra, ODE, complex analysis, graduate-level econometrics; intermediate macroeconomics
- ***Honors/Awards:*** Dean's List with Distinction (Top 4%), Outstanding Graduate Thesis, Award for Outstanding Research & Innovation, Chinese College Mathematics Competition (1st Place)
- ***Thesis:*** Parameter Calibration of SVJ Option Price Model Based on COS Method and Neural Network

EXPERIENCE

03/23 - 05/23 **RENAISSANCE ERA INVESTMENT MANAGEMENT CO., LTD** Beijing, China
Sales Associate
- Spearheaded sale of $30M in OpenAI shares to family offices, engaging in personal outreach and advisory, and crafting tailored trust product structures to meet specific investor needs
- Conducted daily market analysis to identify high-net-worth clients; maintained relationships with them; offered tailored portfolio updates, contributing to firm's growth to its $1.5B AUM goal
- Managed and updated confidential client portfolio data in firm's CRM systems, ensuring accuracy and efficiency in tracking client interactions and portfolio performance

01/23 - Present **CRYPTOCURRENCY TRADER** New York, NY
Freelance
- Communicate cryptocurrency market and performance updates with investors by interpreting crypto news, data, and regulations; clearly convey logic behind strategy that leads to profits
- Designed and backtested trading strategy for over $5M in cryptocurrencies, with average monthly return of 4.77%, by using technical data
- Constructed multi-factor model and factor analysis structure that analyzed performance of technical factors of multiple cryptocurrencies' performance

03/22 - 05/23 **PEOPLE'S BANK OF CHINA, SCHOOL OF FINANCE** Beijing, China
Research Assistant (Python, R, MATLAB)
- Collaborated with 3 colleagues to conduct macro-finance research on impact of carbon emissions on corporate profitability
- Processed data and built models, and monitored model derivation and proofs as key programmer
- Chose multiple cutting-edge and influential entrepreneurial finance and economic growth papers; summarized relevant ones for colleagues and professors

04/20 - 10/20 **FOUNDER SECURITIES CO., LTD** Beijing, China
Industry Research Intern
- Investigated industry and value chains of Chinese military and defense industry through company reports, field research, and interviews with executives
- Partnered with cross-functional teams on consulting with mutual fund and private equity clients to provide asset management strategy

COMPUTATIONAL SKILLS / OTHER

Programming Languages: Python, R, MATLAB
Languages: English (fluent), Mandarin (native)

RUNQIAN (ELVIS) LI

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EDUCATION

NEW YORK UNIVERSITY — New York, NY
The Courant Institute of Mathematical Sciences
Expected 12/24 **M.S. in Mathematics in Finance**
- ***Coursework:*** stochastic calculus, statistical inference and machine learning, risk and portfolio management, interest rate & fx models, market microstructure, dynamic asset pricing

UNIVERSITY OF CALIFORNIA, LOS ANGELES — Los Angeles, CA
09/19 - 06/23 **B.S. in Mathematics of Computation**
- ***Coursework:*** probability theory, stochastic processes, statistics, data science, machine learning, ODE, PDE, optimization, numerical methods, data structures and algorithms, algebra (honors)
- ***Honors:*** Dean's Honors List (12 consecutive quarters)

EXPERIENCE

TECHSHARPE QUANT CAPITAL MANAGEMENT — Beijing, China
(Quantitative hedge fund with $1B AUM)
06/24 - 09/24 **Quantitative Research Intern**
- Developed 30+ alpha signals using alternative data from the ChinaScope database, incorporating financial statement notes, customer-supplier relationships, and primary company products
- Combined signals with random forest and XGBoost; backtested on long-short portfolio and achieved an annualized Sharpe ratio of 1.6+ and maintaining a maximum drawdown below 7.5%
- Constructed a trading portfolio by integrating risk controls on factor and industry exposures, inspired by the Barra USE4 model
- Designed and implemented a dynamic mechanism to determine optimal constraints for factor and industry exposures based on past volatility, improving the portfolio's annualized Sharpe ratio by 0.5+ and reducing maximum drawdown by over 1%

12/21 - 01/22 **Data Analyst Intern**
- Constructed 20+ alpha signals from daily stock prices and quarterly financials, including growth, momentum, and value signals; evaluated signals using IC, IR and WLS regression methods

CDH INVESTMENTS — Beijing, China
(Leading alternative asset management firm with $20B AUM)
07/21 - 09/21 **PE Analyst Intern**
- Facilitated investment in a biotech company by arranging and conducting interviews to gather insights on surgical products; analyzed business model and evaluated relevant risks
- Built DCF model from scratch by projecting cash flows; calculated WACC and terminal value

PROJECTS

NYU COURANT — New York, NY
05/23 - 06/23 **SABR Model Validation**
- Implemented and calibrated the SABR model on European options across various equity names and foreign currency pairs, achieving consistency between theoretical and market option prices
- Validated the SABR model in accordance with SR 11-7, performing sensitivity analysis and robustness checks under various market conditions to ensure reliable model performance

05/23 - 06/23 **Strategy Backtesting for Oil Futures**
- Applied signal blending to improve carry and momentum strategies on 12 years of WTI futures data, adjusted for expiration and roll,
- Tuned hyperparameters using grid search, backtested the strategy over 1-year out-of-sample period, achieving an annualized Sharpe ratio of 0.8+

COMPUTATIONAL SKILLS / OTHER

Programming Languages & Softwares: Python, C++, MATLAB, R, C++, LaTeX
Languages: English (fluent), Mandarin (native)

YUQIAN (TRUDY) LI

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EDUCATION

Expected 12/24 **NEW YORK UNIVERSITY** New York, NY
Courant Institute of Mathematical Sciences
M.S. in Mathematics in Finance

- ***Coursework:*** stochastic calculus, dynamic asset pricing, machine learning, time series analysis, risk & portfolio management, interest rate & FX models, market microstructure, cryptocurrency
- ***Teaching Assistant:*** calculus, linear algebra, ODE, and math modeling

09/19 - 06/23 **NANKAI UNIVERSITY** Tianjin, China
B.S. in Mathematics and Applied Mathematics, Concentration: Mathematical Finance

- ***Coursework:*** mathematical analysis, advanced algebra, probability, statistics, ODE, operations research, data structure & algorithms, financial engineering, actuarial science, investments
- ***Honors & Fellowships:*** Graduate with Honors (top 3%), 5 fellowships in 3 years (top 5%)

EXPERIENCE

06/24 - 08/24 **SINOLINK SECURITIES** (Asset management firm with $17B AUM) Shanghai, China
Quantitative Developer Intern (Python, SQL)

- Computed 10+ metrics for ~3,000 funds with convertible bonds; improved code efficiency by 4x
- Developed 9 dataframes to evaluate performance and traits of swing trading strategies, strategy groups, and market on multiple levels (individual securities, pairs, etc.), dimensions (styles, sectors, index components, etc.), and time intervals (monthly, rolling monthly, since launch, etc.)
- Measured fund's duration by bond indices' based on relationship between 3-day rolling sum of fund's NAV and indices' close found by stepwise regression and K-means clustering algorithm
- Designed program to price vanilla options (European, American, vertical spread) and exotic options (digital, Asian, knock-in, shark fin, snowball, phoenix, airbag) and calculate Greeks

CINDA SECURITIES (Asset management firm with $10B AUM) Beijing, China
03/23 - 05/23 **Quantitative Analyst Intern (Python, MATLAB)**

- Investigated trends of ~700 convertible bonds from 2017 to 2022; weighted their implied volatility (IV) to monitor market IV; updated it daily for department's decision-making
- Drew and updated IV surface of SSE 50 ETF options daily; designed timing strategies based on volatility risk premium, in collaboration with managers

01/22 - 03/22 **Investment Management Intern (Python, VBA)**

- Researched ~250 bonds and REITs and wrote reports on them; co-developed system to calculate trading performance; completed multiple data processing, analysis, and visualization work

PROJECTS

09/21 - 05/24 **Projects in Quantitative Finance (Python)** New York, NY

- FX Volatility Curve Construction: Used SABR model to construct vol curves, given ATM vol, 25d RR, 25d Mkt Strangle quotes; calculated everyday vols considering weekend effect
- Down-and-out Barrier Call Pricing: Used Monte Carlo simulation, Finite Difference, and PDE analytical method to price down-and-out call; reached same result; compared accuracy and speed
- Snowball Structured Product Pricing: Used binomial model with 3,000 layers to price snowball VWO issued by Barclays Bank; co-authored and published paper; improved algorithm with GARCH vol and Monte Carlo simulation; analyzed return scenarios, sensitivity, and Greeks
- Option Hedging with Historical Data: Hedged Apple's 6M options considering dividends; back-tested P&L; rolled by 1 day for 2 years and repeated; researched break-even volatility and skew
- Trinomial Model Construction: Hedged trinomial model by minimizing quadratic risk; compared its P&L with binomial models under equal initial endowment and equal delta conditions
- Data Analysis of Indices, Currency Pairs & Interest Rates: Computed time series and distribution of correlation and volatility; compared VIX and vol indicators modeled in EWMA and GARCH

COMPUTATIONAL SKILLS / OTHER

Programming Languages & Software: Python, SQL, C++, MATLAB, VBA, SPSS, Stata, EViews, LaTeX, MS Office
Certificates & Awards: CFA Level II candidate, NCRE Level II, MCM Finalist (top 2% globally)

WENSHENG LIN

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EDUCATION

Expected 12/24 **NEW YORK UNIVERSITY** New York, NY
The Courant Institute of Mathematical Sciences
M.S. in Mathematics in Finance
- ***Coursework:*** OOP and data structure, stochastic calculus, risk & portfolio management, machine learning, Black-Scholes, algorithmic trading, interest rate & FX models, market microstructure, trading energy derivatives

08/19 - 08/23 **STONY BROOK UNIVERSITY** Stony Brook, NY
B.S., Double Major in Applied Mathematics & Statistics and Business Management
- ***Coursework:*** differential equations, probability theory, data mining, statistics, numerical analysis, data analysis, stochastic processes, time series, portfolio optimization, Lévy process, normal tempered stable distribution
- ***Honors/Awards:*** Dean's List (7 semesters)

EXPERIENCE

06/24 - 09/24 **GUOYUAN SECURITIES**
Financial Engineering Intern Shanghai, China
- Developed and tested new factors to enhance funds of funds (FOF) factor library; implemented and backtested a CSI 300 index trading strategy
- Analyzed mutual funds' stock-selection timing ability utilizing Carhart four-factor, Fama-French five-factor (with momentum), and Treynor-Mazuy models, complemented by Newey-West adjustments, instrumental variable approaches
- Applied machine learning techniques (gradient boosting, random forests) to identify mutual funds with superior stock selection ability, leveraging 12 fund characteristics including alpha t-stats, value added, and R-squared

06/21 - 08/21 **RUISI CONSULTING**
Financial Risk Intern (Python, Excel, Visio) Shanghai, China
- Cleaned and visualized data with Python (pandas, matplotlib) to fuel managers' decision making in advising major hospital and state-owned asset management clients for their internal audits
- Created internal documents (e.g., financial accounting spreadsheet) for $2B listed company client

PROJECTS

01/24 - 05/24 **NYU COURANT** New York, NY
Efficient Monte Carlo Option Pricing for Log-Uniform Jump-Diffusion Models (Python)
- Verified log-uniform jump-diffusion European option pricing formula under risk-neutral valuation, and confirmed it has higher option prices than Black-Scholes model
- Implemented Monte Carlo option pricing algorithm for log-uniform jump-diffusion model
- Reduced standard error by 2x to 10x using antithetic and control variates (ACV) in Monte Carlo simulation

01/23 - 05/23 **STONY BROOK UNIVERSITY** Stony Brook, NY
Applying Deep Learning in Option Pricing (Python)
- Applied neural networks in Black-Scholes to predict option prices; achieved low MAE
- Compared and analyzed model against Black-Scholes, demonstrating superior predictive capabilities of neural networks in option pricing

08/22 - 12/22 **Portfolio Optimization on Multivariate Normal Tempered Stable Distribution (R)**
- Outperformed S&P 500 by 12% in 2022 by dynamically calibrating tangency portfolio
- Performed mean-CVaR portfolio optimization on multivariate NTS market model
- Analyzed and obtained NTS parameters of S&P 500 and 10 selected stocks; validated suitability of applying NTS distribution to market model

COMPUTATIONAL SKILLS / OTHER

Programming Languages: Python, R, MATLAB ***Languages:*** English (fluent), Mandarin (native)
Activities: Day trading options; Teaching Assistant at Stony Brook University for Differential Equations and Introduction to Economics course; Grader at New York University for Probability and Statistics and Analysis courses

NIDISH NARSIPUR

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EDUCATION

Expected 05/25 **NEW YORK UNIVERSITY** New York, NY
The Courant Institute of Mathematical Sciences
M.S. in Mathematics in Finance
- ***Coursework:*** time series analysis, risk and portfolio management, dynamic asset pricing, algorithmic trading, machine learning and computational statistics, interest rates and fx models

09/19 - 05/23 **RUTGERS UNIVERSITY** New Brunswick, NJ
B.S. in Physics and minor in Mathematics and Computer Science
- ***Coursework:*** quantum algorithms, linear algebra, ordinary differential equations, stochastic processes, computer programming, probability theory, linear regression
- ***Honors/Awards:*** Paul Robeson Thesis Scholar, awarded High Honors in the Physics major
- ***Thesis:*** "Mitigation of Noise in Quantum Computations for Solving the Fermi-Hubbard Model"

EXPERIENCE

05/24 - 08/24 **RICOH USA** Exton, PA
Digital Services Center
Machine Learning Engineering Intern (Python)
- Built machine learning model using a combination of regressions and autoregressive methods to forecast future revenue
- Demonstrated over 80% accuracy for future predictions of high volatile revenue
- Improved forecasting accuracy of existing revenue model 3-fold
- Analyzed raw finance data to engineer features for machine learning algorithms
- Deployed model to Snowflake for future implantation by the finance team

04/22 - 08/23 **RUTGERS UNIVERSITY** New Brunswick, NJ
School of Arts and Sciences
Research Assistant (Python)
- Used linear regression analysis to reduce errors in technical/quantum computations, result: 20-fold improvement in computation
- Demonstrated 99% mitigation of errors on IBM quantum computers
- Took initiative to create error mitigation techniques in quantum computations
- Authored senior thesis and presented key results to faculty board; awarded High Honor

09/21 - 12/21 **RUTGERS UNIVERSITY** New Brunswick, NJ
School of Arts and Sciences
Learning Assistant, Analytical Physics II & Analytical Physics Lab
- Facilitated undergraduate student groups, improving their data modeling and data analysis skills
- Collaborated with multiple student groups, enhancing their problem solving and technical skills
- Conducted research on communicating multiple topics clearly and concisely

PROJECTS

08/24 - 08/24 **JPMorgan Chase & Co. Quantitative Research Virtual Experience Program on Forage** Remote
- Completed a simulation focused on quantitative research methods
- Analyzed a book of loans to estimate a customer's probability of default
- Used dynamic programming to convert FICO scores into categorical data to predict defaults

05/23 - Present **BASKETBALL PLAYOFFS SIMULATION (Python)** Remote
- Constructed algorithm in Python that takes in large set of parameters and runs Monte Carlo simulation that predicts NBA playoffs winner

COMPUTATIONAL SKILLS / OTHER

Programming Languages: Java, Python, C/C++, LaTeX, JavaScript, HTML, SAS, SQL, R, MATLAB, Maple, Origin
Languages: English (fluent), Spanish (Conversational), Kannada (native)
Affiliation/Certification: SAS Certifications: Programming on Reports, Tables Generation, Clinical Programming

SIMAR OBEROI

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EDUCATION

09/23 - 12/24 **NEW YORK UNIVERSITY** New York, NY
The Courant Institute of Mathematical Sciences
M.S. in Mathematics in Finance
- ***Coursework:*** object-oriented programming (Python), algorithmic trading, machine learning models, order-book dynamics, time series, Monte Carlo methods, Black Scholes
- ***Activities:*** Graduate Teaching Assistant for Mathematics of Finance (MATH-UA 250) and Mathematics for Economics I (MATH-UA 131)

09/18 - 08/22 **UNIVERSITY OF WATERLOO** Waterloo, Canada
B.Math in Mathematical Finance & Statistics (GPA: 3.7)
- ***Coursework:*** ODE/PDE/SDE, CAPM, DCF, portfolio optimization models, Ito's lemma, VaR, EVT, stochastic processes, Markov chains, GLMs
- ***Honors:*** Graduated with Distinction (Cumulative Grade > 85%), President's Scholarship

EXPERIENCE

02/25 - 03/25 **SNORKEL AI** New York, NY
Quantitative Problem Designer / AI Model Stumper (Proprietary AI Platform)
- Crafted 50+ challenging mathematical problems to train Snorkel's AI models using rigorous quantitative reasoning and proper LaTeX formatting
- Evaluated and refined intricate quantitative challenges to ensure adherence to high academic and industry standards
- Conducted 100+ detailed quality reviews for questions crafted by other contributors by identifying and correcting ambiguous phrasing and inconsistencies of logic

06/24 - 07/24 **MORGAN STANLEY** New York, NY
Private Wealth Management and Quantitative Analysis Intern (Python)
- Constructed hedging strategy involving rolling AAPL calls using Black-Scholes and implied volatility analysis, achieving more than 9% return within 1 month of implementation
- Designed DCF models and prepared comprehensive reports on Salesforce, Nike, and Walt Disney to inform investment decisions for clients with portfolios exceeding $100M
- Collaborated with team to service portfolio of 40+ clients, each investing more than $5M, ensuring personalized strategies to meet individual objectives in US and international markets
- Researched investment opportunities including US Treasuries, ETFs, real estate funds, hedge funds, and private equity funds, tailoring recommendations to disparate client needs

PROJECTS

09/24 - 12/24 **NYU COURANT** New York, NY
Empirical Analysis of Closing Auction Dynamics on NYSE and NASDAQ (Python)
- Analyzed imbalance data and reference price trends for S&P 500 stocks during closing auctions
- Compared auction volume ratios, imbalance behavior, and volatility between NYSE and NASDAQ, highlighting structural differences
- Explored auction quality metrics, price drift, and ETF rebalancing effects, enhancing understanding of market dynamics

04/24 - 05/24 **Guaranteed VWAP Contract Pricing (Python)**
- Developed guaranteed VWAP pricing algorithm, using Almgren-Chriss optimization model to minimize risk-adjusted costs, achieving 15% reduction in execution costs
- Implemented market impact, volume, and trading models, analyzing 100,000+ tick trade and quote data points to dynamically optimize for trading trajectories
- Regressed volume errors and liquidity proxy against trading model predictions to derive pricing formula for guaranteed VWAP contract

COMPUTATIONAL SKILLS / OTHER

Programming Languages: Python, C++, R, MATLAB, LaTeX
Languages: English (fluent), Hindi (native), Punjabi (fluent)
Certification: C++ Programming for Financial Engineering (Baruch College, CUNY)

XINQIAO (RINSTER) TONG

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EDUCATION

Expected 12/24 **NEW YORK UNIVERSITY** New York, NY
The Courant Institute of Mathematical Sciences
M.S. in Mathematics in Finance
- ***Coursework:*** derivatives valuation and hedging, bonds and MBS, machine learning, deep learning

09/19 - 06/23 **XI'AN JIAOTONG - LIVERPOOL UNIVERSITY** Suzhou, China
B.S. in Applied Mathematics with Honors (First Class)
- Dual degree from University of Liverpool
- Ranked #1 (out of 144); Best Overall Academic Performance Award
- National Scholarship, Provincial Outstanding Student
- ***Coursework:*** real and complex analysis, probability and statistics, ODE and PDE, optimization

EXPERIENCE

06/24 - 08/24 **GAOHUA SECURITIES** Beijing, China
Quantitative Research Intern (Python)
- Applied CNN-LSTM on limit order book to predict milli-second level price movements (3-category classification) with 57% accuracy; customized loss function to improve precision of up/down to 68%
- Constructed 236 features by volume clock from time, volume, size, and active/passive transaction using transaction messages from exchange
- Used attentive LSTM structure on level 2 features to pick stocks and added adversarial training; attained 16.7% annual excess return and 2.69 IR against CSI 1000 (long top 10%)
- Estimated SDF with GAN using weekly macroeconomic and company accounting data and fitted exposure to SDF; attained 36.3% annual excess return and 2.73 IR against CSI 1000 (long top 10%)

06/22 - 08/22 **RUISHENG INVESTMENT** Qingdao, China
Quantitative Research Intern (Python, MATLAB)
- Designed sell put strategy: chose strike based on VIX, used Greeks to calculate return-risk ratio as trading signal, attaining 8.7% annual return, 3.5% maximum drawdown, and 90.3% winning rate
- Hedged with calendar spread based on support levels to reduce maximum drawdown, with 2:1 spread achieving 8.9% annual return, 3.0% maximum drawdown and 83.9% winning rate
- Backtested and selected double moving averages for 40+ commodities at daily level for CTA, with 8 selected commodities realizing 15.7% annual return and 4.9% maximum drawdown

PROJECTS

09/22 - 06/23 **XI'AN JIAOTONG-LIVERPOOL UNIVERSITY** Suzhou, China
Kou's Jump Diffusion Model for Option Pricing (MATLAB)
- Added jump part to geometric BM where jump sizes follow log double exponential distribution; derived pricing formula (Kou, 2002) through risk-neutral pricing method
- Calibrated Kou's model against options on S&P 500 via fixing maturity and fixing option contracts
- Reduced prediction errors by 50.3% under Kou's model when fixing option contract

06/22 - 11/22 **PURDUE UNIVERSITY** Suzhou, China (Remote)
Research Assistant (Python)
- Studied LassoNet to select among 63 factors from dataset of 150+ stocks since 1963; fitted another DNN using selected factors and formed long short portfolio based on predicted excess returns
- Rolled over dataset with window length of 5 years and attained portfolio monthly return and Sharpe ratio on test sets; experimented with different window lengths to study changes in selected factors
- Refitted DNN using all factors and constructed similar portfolios as benchmark, discovered that top 5 factors explained over 75% of return generated by all 63 factors

COMPUTATIONAL SKILLS / OTHER

Programming Language: Python (Numpy, Pandas, Scipy, Sklearn, Pytorch), MATLAB, Java, SQL
Deep Learning Toolkits: CNN, LSTM, GRU, Attention, Transformer, VAE, GAN

WEI (OLIVIA) WANG

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EDUCATION

Expected 12/24 **NEW YORK UNIVERSITY** New York, NY
The Courant Institute of Mathematical Sciences
M.S. in Mathematics in Finance
- ***Coursework:*** Black-Scholes, Fama-French, Hull-White model, object-oriented programming (Java), statistical inference, algorithmic trading, deep learning, Monte Carlo simulation, portfolio optimization, penalized regression, Ito's lemma, risk-neutral valuation

09/18 - 06/22 **THE CHINESE UNIVERSITY OF HONG KONG, SHENZHEN** Shenzhen, China
B.B.A. in Financial Engineering
- ***Coursework:*** linear algebra, ODEs, calculus, probability and statistics, time series, stochastic process, Python, discrete mathematics, data analysis, econometrics, microeconomics, finance
- ***Honors/Awards:*** Dean's List Honor (2019, 2020); Academic Performance Scholarship 2019-2020

10/20 - 06/21 **UNIVERSITY OF OXFORD** Oxford, UK
Visiting Program
- ***Coursework:*** probability measures, mathematical models of financial derivatives, statistical machine learning, game theory, macroeconomics

EXPERIENCE

11/21 - 12/21 **UBS** Beijing, China (remote)
Quantitative Analyst Assistant (Python)
- Coded pricing formulas using different methodologies (e.g., Black Scholes, Bachelier)
- Generated European and American options pricing formulas
- Found implied volatility of each pricing formula; drew volatility smile curve and Greeks graph of each option

10/21 - 11/21 **GUANGFA SECURITIES CO., LTD** Guangzhou, China (remote)
Quantitative Analyst Assistant
- Researched quantitative finance trading in China and characteristics of each strategy
- Identified several features with strong past performance; built models for feature combinations using data and fundamental factors

PROJECTS

09/21 - 10/21 **NEW YORK UNIVERSITY** New York, NY (remote)
Valuation of Google's Snowball Option
- Built pricing model and created price expressions for variety of snowball option scenarios
- Simulated 1,000 paths for Google's stock price; calculated snowball option price for each one; obtained average to determine snowball option price (using Monte Carlo simulation)
- Presented sensitivity analysis about relationships among knock-out price, knock-in price, sigma, and option price

12/19 - 05/20 **THE CHINESE UNIVERSITY OF HONG KONG, SHENZHEN** Shenzhen, China
Econometrics Model: Influence of Violent Films on Violent Behaviors (STATA)
- Built econometrics model that determined causal effect of different levels of violence in movies on real-world assaults; used movie attendance in 1 week before and after as instrument variables
- Calculated model parameters; tested multicollinearity, validity of instrument variables, and autocorrelation of error terms
- Concluded that moderately violent movies decrease number of assaults; articulated argument for that and policy recommendations in paper and presentation

COMPUTATIONAL SKILLS / OTHER

Programming Languages: Python, Java, R, STATA, Julia
Languages: English (fluent); Mandarin (native)

SICHENG (TONY) WANG

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EDUCATION

Expected 12/24 **NEW YORK UNIVERSITY** New York, NY
The Courant Institute of Mathematical Sciences
M.S. in Mathematics in Finance
- ***Coursework:*** machine learning, data analysis, time series, portfolio management, stochastic calculus, statistical arbitrage, dynamic asset pricing, IV models, fixed income & FX derivatives
- ***Course Assistant:*** Mathematical Finance, Mathematical Modeling
- ***GPA:*** 3.9/4

09/19 - 06/23 **THE CHINESE UNIVERSITY OF HONG KONG, SHENZHEN** Shenzhen, China
B.S. in Financial Mathematics
- ***Coursework:*** linear algebra, real analysis, numerical analysis, optimization, probability theorem, stochastic calculation, derivatives pricing, Monte Carlo, econometrics, data structure, C++
- ***Honors:*** First Class Degree; Dean's List Honor; Academic Performance Scholarship (top 1%)

EXPERIENCE

06/24 - 08/24 **MOODY'S** New York, NY
DeFi and Digital Asset Team, Quantitative Analyst Intern
- Established assumptions and conducted sensitivity tests to estimate how implied amount of staked ETH varies with ETH price and evaluate impacts on system's security; research further applied to other PoS systems; simulated and decomposed staking and mining revenue
- Quantified impact of ETH ETF approval on decreasing staking yields; identified staking SR
- Investigated factors influencing ETH staking return, which could be utilized as risk indicators

06/23 - 05/24 **ALGORITHMS TRADING CRYPTOCURRENCY** New York, NY
- Developed crypto backtesting system integrated with exchange APIs for low-frequency crypto selection and mid-frequency market timing; generated 27 factors, achieving correlation of 0.6-
- Implemented long-short cross-sectional strategy between crypto, refined and combined factors by PCA, regression, and ML to create enhanced trading factor; achieved 1.93 SR, 74% APR, 1.8 P/L
- Implemented mean-reversion and momentum-based timing strategy on hourly data; incorporated optimized stop-loss/take-profit indicators to reduce volatility from 31% to 24%

06/22 - 08/22 **SHENZHEN CAPITAL GROUP** (Top 2 VC in China) Shenzhen, China
Real Estate Fund, Data Analyst Intern
- Grabbed and cleaned dataset from intermediary website; analyzed housing rentals across different regions in Shenzhen with PCA; compared performance of regression and Random Forest
- Constructed ML model that forecasted housing rentals with 86% accuracy for REIT investment

PROJECTS

12/23 - 04/24 **TRADING COMMODITY FUTURES** New York, NY
- Enhanced carry momentum strategy for WTI and RBOB futures with daily data; carry momentum threshold increased SR from 0.98 to 1.22, and ROD 0.66; carry momentum convexity increased SR to 1.02 and ROD 0.88; explained performances in different market regimes
- Pairs trading RBOB futures curve to capture relative carry momentum and reduce volatility, optimized rebalancing frequency; achieved 2.63 SR, 23% APR, and 5.1% MDD out of sample

03/22 - 06/22 **LOAN DEFAULT DETECTION** Shenzhen, China
- Adjusted weighting manually to address data imbalance in decision tree model; combined tree with XGBoost and SVM in ensemble method to vote on probability of debt default
- Enhanced performance of designed model by 6% accuracy, achieved 85% F1 score, 0.6 K-S

COMPUTATIONAL SKILLS / OTHER

Programming Languages: Python, C++, MATLAB, SQL, R, STATA, MS Office
Languages: English (fluent), Mandarin (native)
Certification: Akuna Capital Options 101 & 201, Introduction to SQL on Coursera, FRM Part 1

RUI YANG

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EDUCATION

Expected 12/24 **NEW YORK UNIVERSITY** New York, US
The Courant Institute of Mathematical Sciences
M.S. in Mathematics in Finance
- ***Expected Coursework:*** dynamic asset pricing, Monte Carlo simulation, data-driven models, penalized regression, decision trees, Black-Scholes, stochastic processes, Hull-White model

09/20 - 06/23 **UNIVERSITY COLLEGE LONDON** London, UK
B.Sc in Mathematics
- ***Coursework:*** real analysis, complex analysis, stochastic process, linear algebra, computational methods, financial mathematics, applied statistics, fluid mechanics, applied mechanics
- ***Honors/Awards:*** First-Class Honors Degree (Top 5%)

EXPERIENCE

06/23 - 08/23 **CITIC SECURITIES NATIONAL INVESTMENT BANK** Beijing, China
Quantitative Research Intern (Python, Windy)
- Extracted industry fund data and summarized strategies of tech firm clients to create detailed profit reports for IPOs
- Gathered product data from 120 funds through web crawling, contributing valuable information to build strategic allocations from Shanghai STAR Board (science, technology, and innovation)
- Researched and compiled specific STAR stocks' volatility to determine stability for client investment recommendations; quantitatively calculated volatility variations and related factors

04/21 - 07/21 **BYTEDANCE** Hangzhou, China
Data Operations Intern (SQL, Python, Excel)
- Designed and analyzed numerous A/B and multivariate tests for personalized ads strategies on apps using Python and SQL
- Traced and counted QA conversion rate for AB testing and completed data distribution analysis weekly
- Contributed to speeding up rollout time of app by 1 month by continuously improving its functionality, based on customer feedback
- Developed a machine learning model in Python to mitigate fraudulent activities in the ad recommendation system, achieving 90% training accuracy
- Implemented rule-based punitive measures to reduce ecological degradation.

PROJECTS

11/23 - 01/24 **NYU COURANT** New York, NY
Discovery of Main Asset Classes' Performance Trends and Volatility Distribution (Python)
- Compared BM and BS model stock price paths; hedged options with self-financing portfolio and plotted P&L; calculated historical and break-even volatility
- Hedged trinomial model by minimizing quadratic risk; compared its P&L with binomial models under equal initial endowment and equal delta conditions
- Summarized VIX and vol indicators modeled in EWMA and GARCH

06/21 - 07/21 **UNIVERSITY COLLEGE LONDON** London, UK
2nd Year Algebra / Number Theory / Combinatorics Projects (R)
- Led team to compile and analyze reference materials based on Artin's primitive root conjecture
- Applied equations and modeling graphs that team derived from conjectures to determine whether conclusion was true

COMPUTATIONAL SKILLS / OTHER

Programming Languages: Python, R, SPSS, SQL, C++
Languages: English (fluent), Mandarin (native), German (beginner)

ZEHAO YANG

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EDUCATION

Expected 12/24 **NEW YORK UNIVERSITY** New York, NY
The Courant Institute of Mathematical Sciences
M.S. in Mathematics in Finance
- ***Expected Coursework:*** active portfolio management, feature engineering, statistical arbitrage, scientific computing in finance, alternative data in quantitative finance, deep learning

09/18 - 09/22 **WASEDA UNIVERSITY** Tokyo, Japan
School of Political Science and Economics
B.A. in Economics
- ***Coursework:*** linear algebra, calculus, real analysis, entrepreneurial finance, machine learning

08/21 - 05/22 **PURDUE UNIVERSITY** West Lafayette, IN
Study Abroad
- ***Coursework:*** object-oriented programming (Java), ODE & PDE, Markov chain, probability, time series models, C++ programming, financial mathematics, statistical analysis with R

EXPERIENCE

05/24 - 08/24 **PAVUS AI** New York, NY
Data Science Intern (Python, SQL)
- Built and maintained prediction frameworks and data pipelines using machine learning models (e.g., regressions, XGBoost, LightGBM, SARIMAX, Prophet) on commodities and financial data
- Developed Python-based ETL tools for feature engineering in financial data analysis, implementing log returns calculation, data standardization, and creation of lag features
- Built robust data handling mechanisms, including missing data imputation (comparing median imputation and KNN imputation, with median imputation proving more effective) and error logging system for manual interruption
- Optimized SARIMAX models for financial data; used PCA algorithm to reduce multicollinearity in exogenous variables; improved MSE from 0.083 to 0.007

02/23 - 03/23 **SHENZHEN CAPITAL GROUP** Shenzhen, China
Data Science Intern (Python, SQL)
- Developed machine learning model using logistic regression to forecast corporate financial fraud in publicly listed Chinese companies
- Applied lasso regression for industry-specific feature optimization in predictive modeling, identifying key factors influencing corporate financial fraud; backtested forecasting models

11/22 - 01/23 **BOSERA ASSET MANAGEMENT** Shenzhen, China
Quantitative Research Intern (Python, R)
- Worked at China's 3rd largest asset management company (AUM >$200B); Created and backtested multi-factor stock selection strategy to validate factors on CSI300 stocks
- Evaluated correlations and lag-correlations between risk factors across multi-asset portfolios to optimize performance and enhance risk management strategies
- Performed periodic PnL attribution analysis using PCA approach to understand main driven sectors of portfolio growth

PROJECT

09/23 - 12/23 **NEW YORK UNIVERSITY** New York, NY
Dynamic Options Hedging Strategy Based on BlackScholes Model
- Created dynamic options hedging strategy based on Black-Scholes with S&P 500 data
- Analyzed hedging errors for options portfolios to optimize hedging strategies; developed statistical visualizations, including histograms, to depict hedging error distribution

COMPUTATIONAL SKILLS / OTHER

Programming Languages: C++ (STL, boost), Java, Python (pandas, numpy, matplotlib, scikit-learn, PyTorch), Git, SQL
Languages: English (fluent), Japanese (fluent), Mandarin (native), Cantonese (conversational)

MENG YUAN

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EDUCATION

Expected 12/24 **NEW YORK UNIVERSITY** New York, NY
The Courant Institute of Mathematical Sciences
M.S. in Mathematics in Finance
- ***Coursework:*** stochastic calculus, derivatives pricing, data-driven modeling, portfolio management, machine learning & statistical inference, market microstructure, fx & interest rates, cryptocurrency

09/18 - 06/22 **SICHUAN UNIVERSITY** Chengdu, China
B.Econ. in Financial Engineering
- ***Coursework:*** time series analysis, financial stochastic processes, machine learning, OOP in Java, data structure and algorithms in C++, database system, numerical methods, econometrics

EXPERIENCE

09/21 - 01/22 **SHANGHAI KAFANG INFORMATION TECHNOLOGY**
Quantitative Research Intern Shanghai, China
- Constructed high-frequency CTA signals (e.g., step order imbalance ratio and mid-price basis) using fundamental analysis, technical analysis and deep learning models like CNN and LSTM
- Developed high-frequency CTA market-making strategies based on LGBM, incorporating high-frequency signals with low-frequency signals
- Backtested strategies on 50+ types of commodity futures and obtained annualized return over 30% with max drawdown < 5%, winning ratio of 70% and Sharpe ratio of nearly 3
- Calculated fill rate of algorithmic trading orders and futures' price receiving time lags to optimize strategies

07/21 - 08/21 **SHENYIN & WANGUO FUTURES**
Quantitative Research Intern Chengdu, China
- Calculated delay of every second between local and exchange servers with linear regression model
- Predicted probability of stock prices declining from surged limit with technical analysis and machine learning models (e.g., neural networks, decision trees), achieving 80% accuracy
- Constructed timing strategy by predicting half-month stock returns based on decision trees, with annualized alpha return reaching 20% and max drawdown of 10% in bear markets

07/20 - 08/20 **Chengdu Zefu Institute of Financial Engineering**
Financial Engineering Intern Chengdu, China
- Designed several CTA Breakout strategies based on 1-minute K-line, 5-minute K-line, and Vertical Line on the pyramid decision trading platform with the pyramid PEL language, obtaining an average annualized return of more than 15% under simulated trading

PROJECTS

05/24 - 05/24 **NEW YORK UNIVERSITY** New York, NY
Volatility Smile Construction Based on SABR
- Implemented SABR model to calculate implied volatilities, strikes and volatilities for different maturities
- Adjusted ATM-forward volatilities using the event-weighting scheme for weekend effects, and constructed daily volatilities over a 6-month period

05/24 - 05/24 **NEW YORK UNIVERSITY** New York, NY
Optimal Portfolio Construction with Trading Costs
- Calculated daily returns for 100 stocks and determined the Markowitz portfolio
- Incorporated trading costs using an impact model based on average daily volume and determined the optimal trading strategy with dynamic programming and reinforcement learning

COMPUTATIONAL SKILLS / OTHER

Programming Languages: Python, Java, C/C++, MATLAB, SQL
Languages: English (fluent), Mandarin (native)

TAOYING ZHAO

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EDUCATION

Expected 12/24 **NEW YORK UNIVERSITY** New York, NY
The Courant Institute of Mathematical Sciences
M.S. in Mathematics in Finance
- ***Coursework:*** risk and portfolio management, stochastic calculus, machine learning, interest rate and Fx models, dynamic asset pricing, equity models, market microstructure, time series analysis, alternative data in Finance, Cryptocurrency And Blockchains, Ph.D. level probability

08/18 - 06/23 **UNIVERSITY OF CALIFORNIA, SAN DIEGO** La Jolla, CA
Bachelor of Science in Mathematics, Bachelor of Science in Psychology/Social Psychology
- ***Undergraduate Coursework:*** Discrete mathematics, abstract algebra, algebraic topology, ODE analysis, probability, stochastic process
- ***Graduate Coursework:*** Real analysis (abstract measure and integration theory; linear functionals; Lebesgue spaces; Fourier analysis); PDE analysis (heat equations; Hamilton-Jacobi theory; linear elliptic, parabolic, hyperbolic equations; Monge-Ampère equation)
- ***Psychology Coursework:*** judgment and decision-making, game theory, behavioral economics, social cognition
- ***Computer Science Coursework:*** OO programming (Java), algorithms, data structures, computer organization and systems programming

EXPERIENCE

06/24 - 08/24 **JPMORGAN CHASE & CO.** New York, NY
Associate, Quant Analytics Summer Intern (T/CIO ALM analytics)
- Developed a Python-based workflow for calculating duration of TBA mortgages in forward space in various scenarios for monitoring interest rate risk and optimizing balance sheet, leveraging internal firm tools to optimize and automate the process
- Presented topics of duration and prepayment behavior for TBA, and intern project
- Received all positive feedbacks from manager and team leads for the internship

09/21 - 06/23 **DEPARTMENT OF MATHEMATICS, UCSD** La Jolla, CA
Teaching Assistant and Grader
- Reinforced students' learning of fundamental knowledge and problem solving skills for multivariable calculus through weekly discussion sessions and office hours
- Built strong working relationships with 100 students (as TA, rated 10 of 10 by 2 professors)
- Provided timely and detailed feedback on homework for honors multivariable calculus, honors linear algebra, and abstract algebra (as grader, rated 10 of 10 by 3 professors)

07/19 - 08/19 **CHINA CITIC BANK** Chengdu, Sichuan China
Information Technology Intern (Java, SQL Server, HTML)
- Collaborated on web projects' entire development cycles; developed over 1K lines of code
- Constructed SQL server database, designing tables that suited management system requirements and MyBaits structure, transferring necessary data from other databases
- Implemented back-end with SQL read and write in Java
- Constructed verification code function with bank SMS service on sign-up page

OTHER PROJECTS

04/22 - Present **UCSD COGNITIVE DEVELOPMENT LAB** La Jolla, CA
PLeaSE - Probability Learning in Social Environments (Python, JavaScript)
- Led PLeaSE project team; designed and trained avatars' strategies for experiment, using reinforcement learning model via Python for avatars to simulate real-people actions
- Maintained project's online platform in JavaScript; standardizing source code

COMPUTATIONAL SKILLS / OTHER

Programming Languages: Java, Python, C, MATLAB; SQL server; R; Bash Shell Script, Java Script, HTML
Languages: English (fluent), Mandarin (native)

THE MOST ASTUTE. THE MOST CAPABLE. THE MOST PREPARED.

OUR STUDENTS ARE READY TO GET WORK.

Connect with the students directly, or contact MathFin's Office of Career Services at:
cims-mathfin-careerservices@nyu.edu