NYU | COURANT INSTITUTE OF MATHEMATICAL SCIENCES

SEPTEMBER 2024

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)

CHAO (RYAN) CHENG

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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:*** alpha finding, machine learning and computation, deep learning, portfolio management, fixed income securities, mortgage backed securities, cryptocurrency and blockchain, alternative data in finance

09/18 - 06/22 **NANJING UNIVERSITY** Nanjing, China
B.S. in Financial Engineering
- ***Coursework:*** feature engineering, data mining, option volatility, data structure and algorithm, OOP
- ***Honors:*** National Scholarship (top 3%), Outstanding Student at Nanjing University (top 5%)

01/21 - 05/21 **UNIVERSITY OF CALIFORNIA, BERKELEY** Berkeley, CA
Exchange Program

EXPERIENCE

06/24 - 08/24 **DEUTSCHE BANK** New York, NY
Rates + MBS, Quantitative Strategist Intern
- Added upcoming bonds into underlying pools to recalculate the CTD probability of treasury futures; developed different buttons and pages in Kannon to visualize figures, tables and data from calculation
- Automated generating TBA weighted average results, empirical duration and hedge ratio reports to traders
- Applied linear regression to backtest FNCL prices' sensitivity to coupon changes to generate incentive charts

07/22 - 06/23 **LINGJUN INVESTMENT** (Top 4 hedge fund in China) Beijing, China
Exchange-Traded Option, Quantitative Researcher Intern
- Constructed 50+ temporal alpha factors of vol and spot at minute level into the alpha pool, and converted them into real transaction using Cython; achieved 0.6- correlation and 1.5+ Sharpe ratio in and out of sample
- Selected features from alpha pool; built alpha combos with tree and deep learning models to generate stronger vol position signals; achieved 3+ SR, 20%+ AAR, 1- turnover rate, 7%- max drawdown (2015 - 2023)
- Developed arbitrage and regression strategies to achieve 2+ profit/loss and 0.7+ winning rate; connected option simulation system to stock simulation system to develop stock alphas and OTC strategies
- Cleaned static and dynamic option data and provided APIs to PM to calculate required information
- Improved option simulation system, like P&L attribution, automating reports and calculating risk ratio

11/21 - 03/22 **GUOTAI JUNAN SECURITIES** (Top 10 investment bank in China) Shanghai, China
Structured Finance, Quantitative Researcher Intern
- Designed 10+ OTC options on ETF with BS model and MC, and calculated their prices and Greeks
- Completed dynamic delta hedging for options to analyze different frequency and volatility risk premium

05/21 - 08/21 **SHENWAN HONGYUAN SECURITIES** (Top 10 investment bank in China) Shanghai, China
Over-the-Counter Option, Quantitative Analyst Intern
- Constructed datasets from raw data and XGBoost models to classify option orders; with 80%+ accuracy
- Extracted options' key information to automate sending confirmation letters to clients; with 70%+ accuracy

PROJECT

08/21 - 10/21 **NANJING UNIVERSITY** Nanjing, China
Research on Backtesting System
- Designed and completed the equity backtesting system to realize the backtesting of different strategies
- Improved backtesting system on computing and visualizing backtesting statistics (e.g., IC, IR, NAV); conducted long and short backtesting; completed 10+ computing operators to process alpha factors
- Collaborated on basic framework of automatic mining alpha factors based on different algorithms

COMPUTATIONAL SKILLS / OTHER

Programming Languages: Python (pandas, numpy, scipy, scikit-learn, pytorch), Cython, C++, MATLAB, Linux, Git
Certifications: C++ for Financial Engineering (QuantNet), with distinction; Deep Learning Specialization (Coursera)

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

SHENGJUN (JAMES) GUAN

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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:*** trading energy derivative, machine learning, computational statistics, local volatility model, fixed-income model, trading equity derivatives, risk management, securitized product

09/18 - 05/23 **ROSE-HULMAN INSTITUTE OF TECHNOLOGY** Terre Haute, IN
B.S. with Double Major in Mathematics and Data Science
- ***Coursework:*** operation research, computational statistics, deep learning, machine learning
- ***Honors/Awards:*** Dean's list 9 quarters, cum laude, Henry Turner Eddy Award for Application of Mathematics (2 students out of class of 2023)

EXPERIENCE

11/23 - 08/24 **SIMO Capital Holding, LLC** New York, NY
Quantitative Researcher
- Applied statistical, machine learning techniques to analyze option trades and quote data, measuring informational imbalances to predict underlying asset directionality
- Researched major U.S. equity events, especially FOMC meetings, and incorporated volatility premium anticipation into a derived metric, integrating it with the proprietary greek model to enhance the option market-making strategy
- Engineered a macro metric for systematic volatility by integrating cross-market trading activity, optimizing risk management in short-volatility option market-making strategies
- Developed and optimized a market-making strategy for U.S. equity index options, consistently capturing profits from volatility premium
- Developed a theta model leveraging tick-level trade data, offering a more efficient alternative to the traditional Black-Scholes model for measuring time-value premium, and demonstrating superior efficiency in capturing event-driven time-value premiums
- Designed and backtested a portfolio trading strategy utilizing options buying and selling to enhance returns and optimize risk management according to client risk appetite, resulting in higher portfolio returns, lower volatility, and reduced rebalancing costs
- Designed and implemented integrated high-frequency multi-asset research/trading platform for backtesting and real-time analysis, enhancing and robustifying strategy R&D

PROJECTS

03/24 - 03/24 **NEW YORK UNIVERSITY** New York, NY
High-Frequency Oil Trading Strategies Research and Backtesting (Python)
- Designed multiple sentiment-driven volatility trading strategies on USO (oil strategy ETF)
- Backtested strategies at high-frequency framework including traded quote and quote prices
- Optimized volatility strategies with delta-gamma signals on future (contract) and fundamentals

05/24 - 05/24 **Wavelet Transformation Option Volatility Analysis (Python)**
- Used wavelet transformation on GameStop implied volatility to extract insight
- Measured call-put imbalance information using entropy metrics for trading signal use

01/21 - 02/21 **Machine Learning Trading Signal Development (Python)**
- Used time-series modeling, KNN, random forests, and PCA on SPY500 and VIX data to predict binary daily return, with 56% accuracy
- Infused risk management signals generated by VaR and ES models with ML for prediction

COMPUTATIONAL SKILLS / OTHER

Programming Languages: Python, Java, R, MongoDB, NoSQL, MATLAB, Maple
Languages: English (fluent) and Mandarin (native)
Affiliations/Certifications: Passed FRM Level 1, Deep Learning Specialization on Deeplearning.ai, AI for Trading on Udacity Program, Golden Level in WorldQuant Challenge (alpha research)

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, scientific computing, risk and portfolio management, market microstructure, stochastic calculus, equity derivatives, convex optimisation

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 (GPA:3.8/4)
- ***Coursework:*** Python programming, econometrics, microeconomics, macroeconomics, accounting, game theory, money and banking, public finance
- ***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 & exit signals based on China stock market
- Developed and constructed multiple crowded risk indicators based on trading data, designed ML training models to screen and generate exit signals
- Delivered an automated multi-signals risk 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

01/24 - Present **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

02/22 - 05/22 **UNIVERSITY OF BIRMINGHAM** Birmingham, UK
Research on the Potential Function of Bitcoin in Portfolio Hedge (Python, MATLAB)
- Optimized portfolio and managed risks based on the Sharpe Model, MVA, and VAR
- Developed short-term forecasting models(ARIMA, LSTM) on gold prices and return volatility
- Introduced sensitivity analysis on trading costs and interest rates to inform trade timing and related strategies (e.g., margin trading)

COMPUTATIONAL SKILLS / OTHER

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

Affiliation/Certification: Certificates of Completion for Akuna Capital Options 101 & 201 Courses
Interests: Texas hold'em, Soccer games statistical analysis

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)

JU HYUNG KANG

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EDUCATION

NEW YORK UNIVERSITY New York, NY
The Courant Institute of Mathematical Sciences *Expected Dec 2024*
Master of Science in Mathematics in Finance

- ***Coursework:*** Algorithmic Trading, Energy Derivatives, Data-Driven Modeling, Machine Learning, Market Microstructure, Dynamic Asset Pricing, Securitized Products, Risk Management, Stochastic Calculus

SUNGKYUNKWAN UNIVERSITY Seoul, South Korea
Bachelor of Economics in Statistics *Graduated Aug 2022*

- ***Coursework:*** Stochastic Processes, Derivative Securities, Bayesian Statistics, Multivariate Statistics, Analysis
- ***Honors/Awards:*** Sungkyun Talent Training Scholarship (merit-based; granted stipend and full tuition for all semesters), Magna Cum Laude (GPA: 3.9/4.0. top 4% in graduating class)

EXPERIENCE

HANWHA FINANCE (Korean Finance Conglomerate) Seoul, South Korea
AI Investment Strategy Developer Intern *Jun 2024 - Aug 2024*

- Developed cryptocurrency investment strategy utilizing Qlib library, evaluating performance across multiple machine learning models (boosting/linear); achieved maximum drawdown of 13.6% and Sharpe ratio of 3.26
- Engineered sentiment factors by employing large language models (LLMs) with advanced prompt engineering techniques, improving prediction accuracy by analyzing 117M+ tokens of unstructured social media data
- Deployed scalable, high-performance infrastructure on AWS using SageMaker and S3, optimizing quantitative trading models with advanced machine learning techniques; streamlined ML Ops processes with MLflow

NYU COURANT New York, NY
Graduate Teaching Assistant, Mathematics of Finance *Jan 2024 - May 2024*

- Enhanced students' understanding of advanced financial/mathematical concepts, including Black-Scholes model, finite difference methods, and stochastic calculus, mentoring them at weekly recitation and office hours

DQ LAB PTE. LTD. Singapore, Singapore
Data Analyst *Jun 2021 - May 2022*

- Managed global index data from 25+ sources for COSI project; performed comprehensive correlation analysis on 850+ indicators, mitigating referential interdependence issues across data sources to enhance data integrity

AMINO Seoul, South Korea
Software Developer, Founder & CEO *Sep 2019 - Jun 2021*

- Developed and operated dropshipping e-commerce website, strategically capturing bid-ask spreads to generate over $28K in revenue within 6 months, demonstrating strong market analysis and optimization skills
- Engineered and implemented fully automated program that scraped and updated product data using bs4 and selenium libraries, processing 10K+ products hourly; reduced order cancellations due to stock shortage by 90%+

PROJECTS

NYU COURANT New York, NY
Fundamental Factor Model Analysis *Jan 2024 - May 2024*

- Analyzed dataset with 18M+ entries, implementing fundamental factor model using 9 factors to evaluate factor returns and risks; estimated factor covariance matrix and idiosyncratic volatilities with various half-lives
- Assessed model performance using QLIKE, MSE, and Min Variance Portfolio for orthogonalized factor clusters

Guaranteed VWAP Execution Analysis *Jan 2024 - May 2024*

- Developed pricing algorithm for Guaranteed VWAP service for 300+ US stocks, leveraging Almgren-Chriss optimization to minimize risk-adjusted costs and ensure optimal execution relative to VWAP benchmark
- Built dynamic volume and impact model for intraday trading, integrating volume tick data to optimize trading strategies; derived formula for Guaranteed VWAP contracts, supported by rigorous statistical analyses

COMPUTATIONAL SKILLS / OTHER

Programming Languages: Python (pandas, numpy, MLflow, pytorch/scikit-learn), C++ (STL, Boost), R, Excel
Certifications/Awards: IMC Prosperity Trading Competition (04/24, top 4.1%), Akuna Capital Options 201 (Akuna Capital, 02/24), Probability Theory for Financial Applications (Baruch College, 03/23, Certification with Distinction)

SOOHAN KIM

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EDUCATION

NEW YORK UNIVERSITY (Courant Institute of Mathematical Sciences) **New York, NY**
M.S. in Mathematics in Finance *Expected Dec 2024*

- ***Coursework:*** Data-driven Modeling, Computational Statistics & Machine Learning, Quantitative Portfolio Management, Algorithmic Trading, Market Microstructure, Dynamic Asset Pricing, Equity Derivatives

SUNG KYUN KWAN UNIVERSITY **Seoul, South Korea**
B.S. in Mathematics and Computer Science *Graduated Aug 2023*

- ***Honors:*** Magna Cum Laude (top 5% in graduating class)
- ***Coursework:*** Linear Algebra, Real/Numerical Analysis, Probability/Statistics, ODE/PDEs, Measure Theory, Data Structures, Algorithms, Databases, Machine Learning, Deep Neural Networks, OS, OOP & DevOps

EXPERIENCE

BROOKLYN INVESTMENT GROUP **New York, NY**
Quantitative Research Intern *Jun 2024 - Aug 2024*

- Created portfolio with 2.43 Sharpe ratio via combining Barra style factors with low/negative correlation; used cap-weighted least squares to replicate underlying factor returns with <2% tracking error & obtain asset weights
- Developed production code to validate diverse inputs for alpha signals; built pipeline for daily index holdings updates with ticker integrity in Postgres DB; automated backtest report generation for client presentations

HERMES CAPITAL ADVISORS, LLC **New York, NY**
Quantitative Research Intern *Mar 2024 - May 2024*

- Engineered Dilated Convolutional Attention for capturing Level-2 order book dynamics; incorporated survival analysis of limit orders in model & loss design, predicting fill events within 5-minutes with 85%+ accuracy
- Augmented Avellaneda-Stoikov algorithm with Temporal Fusion Transformers and Soft Actor-Critic method, producing 70%+ limit orders that avoid immediate execution and fill in predefined future time interval

PUBLICATIONS

"Physics-informed convolutional transformer for predicting volatility surface", 2024, *Quantitative Finance*.

"An adaptive dual-level RL approach for optimal trade execution", 2024, *Expert Systems with Applications.*

PROJECTS

Factor Model Analysis & Robust Covariance Portfolio Selection

- Implemented flexible 9-factor model on changing universe of 700+ equities; formed risk clusters via K-means & orthogonalization; evaluated factor/idiosyncratic risk with QLIKE, MSE & Min Variance Portfolio method
- Enhanced mean-variance optimal weights' 3-year cumulative returns from 27% to 85% & Sharpe ratio from 0.58 to 1.65 on test data (2015-2018) for NASDAQ100 universe via Kernel PCA & covariance matrix filtering

Portfolio Construction & Optimization

- Applied Adversarial Inverse Reinforcement Learning & Graph Neural Nets to construct U.S. equities portfolio rebalancer; achieved 23.9% CAGR & 1.52 Sharpe ratio on out-of-sample backtest (2018-2021)

Volatility Surface Prediction with Physics-informed Neural Networks

- Proposed and developed Physics-informed Convolutional Transformer network for predicting evolution of volatility surfaces and inferring future prices of SPX European call/put options
- Achieved prediction mean absolute percentage error of 4.92 (volatility surface) & 3.85 (option price) on test data including COVID-19, reducing error by 4~28%+ vs. ARIMA, Vector Autoregression & other neural nets

Optimal Trade Execution with Deep Reinforcement Learning

- Developed execution models currently used for real-time trading South Korean equities by Meritz Securities**;** customized Proximal Policy Optimization algorithm to distribute large daily institutional orders efficiently
- Optimized Transformer network to predict intraday volumes, enhancing results from generating 64%+ to 88%+ buy/sell order prices <10 bps of VWAP; processed tick data & wrote scripts to run on multiple GPUs in parallel

COMPUTATIONAL SKILLS / OTHER

Programming Languages: Python (pandas, numpy, scipy, sklearn, pytorch), C/C++, Java, SQL, Unix shell
Certifications/Awards: IMC Prosperity Trading Competition Rank Top 4.1%, Army Achievement Medal (U.S. Army)

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, Courant Institute of Mathematical Sciences** New York, NY
M.S. in Mathematics in Finance
- ***Coursework:*** stochastic calculus, dynamic asset pricing, machine learning, risk & portfolio management, financial securities & markets, interest rate & FX models, market microstructure

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

09/23 - Present **NYU Courant** New York, NY
Teaching Assistant
- Support *Math for Economics II* and *Intro to Math Modeling* courses; lead 2 recitation sessions weekly; hold office hours; proctor exams; grade papers for 100+ students

Cinda Securities (Asset management firm with $10B AUM) Beijing, China

03/23 - 05/23 **Quantitative Analyst Intern (Python, MATLAB)**
- Investigated trends of 680+ 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 240+ bonds and REITs and wrote reports on them, supplying comprehensive analysis to senior management to inform their trading decisions
- Took initiative to meet wide range of data processing, analysis, and visualization needs; completed proprietary system to calculate trading performance

PROJECTS

09/21 - 05/24 **7 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 analytical method to price down-and-out call; reached same result; compared accuracy and speed
- Snowball Structured Product Pricing: Used binomial model with 3K layers to price snowball VWO issued by Barclays Bank; co-authored and published paper; improved pricing algorithm with GARCH volatility model and Monte Carlo simulation method; conducted comprehensive analysis on return scenarios, sensitivity, and Greeks
- Option Hedging Simulation: Simulated BM and BS model stock price paths; hedged options with self-financing portfolio and plotted P&L; calculated historical and break-even volatility
- 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: Set up 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

Expected 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), machine learning models for financial modeling, data-driven modeling, time series, Monte Carlo methods, Fama-French, Black Scholes

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

EXPERIENCE

06/24 - 07/24 **MORGAN STANLEY** New York, NY
Private Wealth Management Intern
- Constructed hedging strategy involving rolling AAPL calls using Black Scholes and implied volatility analysis, achieving more than 9% return within 1 month of implementation
- Conducted financial analysis and prepared comprehensive reports on Salesforce, Nike, and Walt Disney, focusing on fundamental ratios, revenue projections, and profit forecasts to inform investment decisions for clients with portfolios exceeding $100M
- Collaborated with team to service portfolio of 40+ clients, each investing > $5M, ensuring personalized investment 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 diverse client investment needs

09/23 - 12/23 **NEW YORK UNIVERSITY** New York, NY
The Courant Institute of Mathematical Sciences
Teaching Assistant
- Led recitation sessions and taught multiple concepts including time value of money, risk-neutral probabilities, binomial and Black-Scholes models in mathematics of finance course
- Researched and implemented different learning techniques, resulting in 11% increase in students' average midterm scores
- Collaborated with course professor to create valuable and applicable homework assignments

PROJECTS

04/24 - 05/24 **NEW YORK UNIVERSITY** New York, NY
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

04/23 - 07/23 **BARUCH COLLEGE, CUNY** New York, NY
Options Pricing Course (C++)
- Applied OOP techniques in conjunction with C++ Boost and STL libraries to construct class structure for pricing European and American perpetual options
- Used exact pricing methods (e.g., Black Scholes and Monte Carlo) as well as Explicit and Implicit Euler finite difference methods

COMPUTATIONAL SKILLS / OTHER

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

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

YUHENG (FITZ) 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
- ***Expected coursework:*** OOP and data structure, stochastic calculus, deep learning, algorithmic trading, market microstructure, fixed income and foreign exchange model, time series analysis

08/18 - 06/22 **SOUTHEAST UNIVERSITY** Nanjing, China
B.Econ. in Financial Engineering

EXPERIENCE

06/24 - 08/24 **HERMES CAPITAL** New York, NY
Quantitative Research Intern – Commodity Trading Advisor
- Constructed GAN and LSTM models with self-attention mechanism and class-balanced Focal Loss on predicting minute-level Hurst Exponential on Crude Oil contract as trend indicator, with accuracy, precision, and recall all above 75%
- Improved minute-level Crude Oil strategy execution for live trading with asynchronous communication between strategy, database, and brokers, minimizing latency from data processing and network communication

07/22 - 11/22 **KAFANG TECHNOLOGY** Shanghai, China
Quantitative Research Intern – High Frequency Trading
- Constructed high-frequency factors based on volume and price data from limit order books; improved 2- and 5-second price dynamic predictions by 1% more than XGBoost benchmark
- Created data processing tools that received and cleaned backtesting system's tick-level daily exchange data; generated information about main contracts for all Chinese commodity exchanges

09/21 - 01/22 **CAUSIS INVESTMENT** Wuhan, China
Quantitative Research Intern – Commodity Trading Advisor
- Developed new trend trading strategy with volume-price data from steel and chemical future contracts; backtested strategy, resulting in 45% annualized return and Sharpe ratio of 2.1
- Built minute-level strategy based on whole commodities market; backtesting resulted in Sharpe ratio of 1.3

06/21 - 09/21 **HUATAI SECURITIES** Shanghai, China
Quantitative Research Intern – Stock Trading Strategy
- Predicted log-return on CSI 300 Financials constituent stocks using generative adversarial networks (GAN) with over 70% direction prediction and low RMSE
- Used Fama-MacBeth regression, PCA, and lasso to portfolio that mimicked 3 macro factors with major asset classes or Citic Industry Index constituent stocks
- Replicated index performance; selected stocks with more than 0.8 correlation compared to actual index return according to Citic High-Dividend Strategy Index compiling method

PROJECTS

06/24 - 08/24 **DistilBERT-based Transformer Adapter on Text Classification Tasks**
- Constructed adapters with adapter fusion on pre-trained DistilBERT model, achieving accuracy of 94% on IMDB dataset

02/24 - 03/24 **Reinforcement Learning Solution for Lunar Lander Game with Deep Q-Learning Network**
- Implemented Deep Q-Learning Network to solve Lunar Lander Game in OpenAI Gym environment with scores over 200

11/21 - 06/22 **First Passage Time (FPT) and Its Application in Finance**
- Deduced closed-form solution for FPT of one-dimension, time-homogeneous diffusion process
- Built commodity strategy by modeling asset price dynamics via exponential O-U

COMPUTATIONAL SKILLS / OTHER

Programming Languages and Tools: Python, C, C++, Git, Linux, Make, GDB

XIAOXI (SUSIE) XU

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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:*** scientific computing, stochastic calculus, derivatives pricing, statistical inference and machine learning, portfolio management, market microstructure, time series analysis

09/15 - 06/18 **FUDAN UNIVERSITY** Shanghai, China
M.S. in Economics

09/11 - 06/15 **FUDAN UNIVERSITY** Shanghai, China
B.S. in Economics

EXPERIENCE

06/24 - 08/24 **BANK OF AMERICA** New York, NY
Summer Associate Quantitative Strategist, Rates
- Derived an iterative semi-analytical solution for timing options (i.e. carry option, wild card option, and end-of-month option) under simplifying assumptions
- Calibrated a short rate stochastic grid by revising Hull-White trees to Markov transition densities to price the timing options and switch option via a dynamic programming approach

06/21 - 07/23 **GALOIS ASSET MANAGEMENT** Shanghai, China
Quantitative Researcher (Python)
- Applied machine learning models (bagging, boosting, neural networks, reinforcement learning) to construct trading signals; programmed with sklearn, PyTorch and TensorFlow
- Designed genetic programming algorithms, generating and testing millions of alpha factors; utilized financially meaningful operators to reduce overfitting
- Identified arbitrage opportunities by calibrating option implied volatility surfaces and applying them to market making strategies for Chinese listed option markets
- Streamlined factor management procedures and generated factor performance report weekly
- Built backtesting system, maintained MySQL database, designed data ETL pipeline, monitored daily batch jobs

08/19 - 05/21 **CHINA CONSTRUCTION BANK** Shanghai, China
Quant Developer (Java, Python)
- Developed backend interfaces for foreign exchange and interest rate derivatives pricing system
- Applied tension spline to calibrate interest rate yield curve
- Used Bayesian update to predict cash flows for 6 types of ABS underlying asset pools
- Devised approach to convey complex ABS waterfall structures (e.g., multi-tranche products with payouts based on triggers)
- Simulated tranches' cash flows using expected asset pool cash flows and waterfall structure data; calibrated ABS yield curves using smoothing filters and spline methods
- Constructed machine learning based trading strategies (SVM, GBDT) for FX market

07/18 - 08/19 **ELECTRIFAI (Formerly OPERA SOLUTIONS)** Shanghai, China
Junior Data Scientist (Java, Python, MySQL)
- Developed portfolio analysis platform for asset management firm clients
- Applied machine learning algorithms to time series data and built predictive models

COMPUTATIONAL SKILLS / OTHER

Programming Languages: Python, Java, SQL, Linux
Languages: English (fluent), Mandarin (native)
Certification: Passed CFA Level III Exam

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