NYU | COURANT INSTITUTE OF MATHEMATICAL SCIENCES

MARCH 2025

RESUME BOOK

INTERNSHIP 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 looking for summer internships.

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

THE CURRICULUM HAS FOUR MAIN COMPONENTS

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

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.

YUSHAN (CHLOE) CHEN

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EDUCATION

Expected 12/25	**NEW YORK UNIVERSITY**	New York, NY

The Courant Institute of Mathematical Sciences
M.S. in Mathematics in Finance
- ***Expected Coursework:*** object-oriented programming (Java), algorithmic trading, Black-Scholes model, Fama-French, dynamic asset pricing, derivative securities, quantitative portfolio theory

08/20 - 05/24	**UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN**	Champaign, IL

B.S. in Mathematics, B.S. in Statistics
- ***Coursework:*** linear algebra, differential equations, quadratic programming, real analysis, time series analysis, stochastic process, statistical modeling, numerical methods
- ***Honors/Awards:*** Dean's List, highest distinction in mathematics and highest distinction in statistics

EXPERIENCE

06/23 - 08/23	**SINOLINK SECURITIES**	Shanghai, China

Investment Banking Intern (Python, Excel)
- Selected appropriate GARCH model; conducted 10,000 simulation iterations in Python to generate volatility bands of the issuing company's stock, which focused on OLED material R&D
- Forecasted future profitability ratios using linear regression model with factors including total revenue, cost of goods sold, and operating expenses
- Performed due diligence for IPOs; performed walkthrough tests to assess issuing company's financial conditions; drafted and sent external confirmation letters to suppliers and banks

06/21 - 08/21	**JILIN PROVINCE TECHNOLOGY INVESTMENT FUND**	Changchun, China

Project Manager Assistant / Intern
- Executed SWOT analysis and compiled report on background investigation and financial condition; presented findings to investors during roadshow
- Conducted comparable company analysis by evaluating financial metrics such as P/E ratios, EV/EBITDA, and revenue multiples of comparable listed companies
- Undertook asset valuation for targeted companies using data from balance sheets and financial statements; calculated key financial ratios to determine returns on investment

PROJECTS

	UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN	Champaign, IL
08/22 - 12/22	**Time Series Analysis on Global Price of Natural Gas Futures (Python, R)**	

- Crawled websites with Python to extract average global prices of natural gas futures over 3 years; cleaned data by removing duplicates, standardizing formats, and validating data integrity
- Graphed time series plots to analyze reasons for price fluctuations
- Processed differencing to eliminate trends and seasonality to generate stationary models; stabilized variance of series with log transformations
- Predicted prices of natural gas in next 5 months with best fit SARIMA model

09/22 - 08/23	**Research on Quantum Error Correction**

- Represented Kraus representation and Knill-Laflamme condition in quantum error correction with linear algebra and operator theory
- Obtained noncommutative graphs by using operators on finite-dimensional Hilbert spaces and unitary representations of compact groups; constructed stabilizer formalism
- Published paper (A Note on the Stabilizer Formalism via Noncommutative Graphs)

COMPUTATIONAL SKILLS / OTHER

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

SHUNWEI (DAVID) DU

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EDUCATION

Expected 12/25	**NEW YORK UNIVERSITY** — New York, NY

The Courant Institute of Mathematical Sciences
M.S. in Mathematics in Finance
- *Expected Coursework:* stochastic calculus, time series analysis, scientific computing, risk and portfolio management, dynamic asset pricing, algorithmic trading, equity derivatives

09/20 - 05/24   **NEW YORK UNIVERSITY**   New York, NY
B.A. With Honors in Computer Science and Mathematics
- *Coursework:* linear algebra, probability & statistics, ordinary differential equations, real analysis, numerical analysis, data structures, algorithms, machine learning, data management and analysis
- *Honors:* Dean's List (4 years), Cum Laude

EXPERIENCE

06/24 - 08/24   **QILIN INVESTMENT**   Shanghai, China
(Hedge fund with $4B AUM)
Quantitative Research Intern (Python)
- Generated alpha signals with alternative datasets, including sell-side analyst estimates and sentiment analysis on market news and public opinion; achieved information ratio of 1.5+
- Built daily-balanced timing signals using MSCI Crowding Models for Barra risk factors, supported by technical indicators, resulting in Sharpe ratio increase of 8.37% for strategy
- Analyzed Level 2 data (e.g., order book and trade data from institutional investors) to generate signals for long/short equity selection within strategies; improved annual return by 13.68%

06/23 - 08/23   **LONGQI INVESTMENT**   Hangzhou, China
(Asset management firm with $2B AUM)
Quantitative Research Intern (Python)
- Developed index rebalance trading strategy based on semiannual rebalancing of CSI 300 and CSI 500 Indexes, incorporating market cap and trading volume criteria; achieved Sharpe ratio of 1.96
- Designed algorithmic trading strategy using natural language processing on alternative datasets from due diligence reports of listed companies; achieved 16.31% annualized excess return
- Created 10+ alpha signals by processing 1-minute intraday data and statistical techniques like regression to model market behavior, each achieving information ratio of 1.6+

PROJECTS

08/23 - Present   **NEW YORK UNIVERSITY**   New York, NY
CS Honors Thesis: Evaluating Vision and Language Models for Radiology (Python)
- Established comprehensive evaluation baseline incorporating BERT-similarity scores, prompt-generated GPT evaluations, and Chexpert labeling
- Conducted comparative analysis of Med-Flamingo, GPT-4/4o, and Gemini, providing insights into performance of commercial and open-source models

01/23 - 05/23   **Fit-finder Application Development (Python, HTML, CSS)**
- Designed and developed Fit-finder web application that provided outfit recommendations based on restaurant dress codes
- Used PyTorch, Torchvision, and FashionCLIP for classification of garment data from Farfetch; developed search engine for users to specify and receive outfit recommendations

10/22 - 12/22   **Robot Hand Fingertip Positions Prediction with RGBD Images (Python)**
- Trained convolutional neural network model to identify robot hands' fingertip movements with RGB+Depth images; achieved mean-squared loss of <0.003 in fingertip predictions

COMPUTATIONAL SKILLS / OTHER

Programming Languages: Python, Java, C/C++, SQL, MATLAB, HTML, CSS, Shell Scripting
Languages: English (fluent), Mandarin (native)
Activities: President of NYU Zen Buddhism Club, Web Design Grader at NYU

MINGBAO (MICHAEL) HE

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EDUCATION

Expected 12/25	**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, Black-Scholes model, VaR, covariance matrix estimation, Monte Carlo simulation, data-driven models

09/20 - 06/24	**UNIVERSITY OF TORONTO**	Toronto, Canada

Bachelor of Science of Mathematics and Its Applications (Probability Stats)
- *Coursework:* machine learning, linear algebra, real analysis, time series
- *Honors/Awards:* Dean's list, graduated with distinction

EXPERIENCE

06/23 - 09/23	**ALLIANZ LIFE INSURANCE**	Shanghai, China

Leadership Development Intern
- Developed comprehensive scientific report detailing key factors influencing life expectancy, using linear regression models and gave visual presentation of report
- Drafted reports, evaluated products, and trained with portfolio manager on investment management fundamentals; gained general understanding of insurance workflow
- Collaborated with senior management to enhance communication among functional groups, identifying inefficiencies and implementing strategies for improved accountability and efficiency

01/23 - 05/23	**HAMILTON HEALTH CENTER**	Hamilton, Canada

Data Analyst Intern (Python, SQL)
- Implemented and managed data cleaning pipeline; improving data quality by 55% and significantly increasing efficiency of data extraction process
- Visualized interactive dashboard of complex product and service data for leaders' critical decision-making; received highly positive feedback from supervisors for process innovation
- Conducted in-depth statistical analyses on patient data; collaborated with team to identify patterns and trends in health outcomes

PROJECTS

09/24 - 12/24	**NEW YORK UNIVERSITY**	New York, NY

Performance Analysis of Hedge Fund Returns using Linear Regression (Python)
- Conducted regression analysis on hedge fund returns using the Fama-French 5-Factor model, validating results through t-tests, F-tests to evaluate factor significance and model fit
- Enhanced predictive accuracy by implementing Elastic Net regularization and expanding regressors with non-linear transformations
- Derived actionable insights on the key drivers of hedge fund performance, linking model results to economic and financial interpretations

09/24 - 12/24	**NEW YORK UNIVERSITY**	New York, NY

Machine Learning For Financial Market (Python)
- Built SVR, Decision Trees, and Random Forests to predict Philips (PHG) stock prices and S&P 500 market movements, leveraging technical indicators (EMA, ATR) for feature engineering
- Applied hyperparameter tuning (GridSearchCV) and cross-validation to optimize model performance, reducing overfitting and improving predictive accuracy

COMPUTATIONAL SKILLS / OTHER

Programming Languages: Python, R, SQL, LaTeX
Languages: English (fluent), Mandarin (native)
Activities: VP of Events of Chinese Undergraduate Students' Associations at University of Toronto

PRANAM HEGDE

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EDUCATION

Expected 12/25	**NEW YORK UNIVERSITY**	New York, NY
	The Courant Institute of Mathematical Sciences	
	M.S. in Mathematics in Finance	

- *Coursework:* Portfolio Optimization, derivatives pricing, stochastic calculus

08/19 - 05/24	**BITS PILANI**	Pilani, India
	Dual Major in Electronics & Instrumentation, and Economics	

- *Coursework:* Econometrics, probability & statistics, calculus, linear algebra, deep learning
- *Honors/Awards:* #1 Trader (out of class of 1,000 students)
- *Publication:* "Predicting Multibagger Stocks by Placing a Greater Emphasis on Income Statement," *Asian Journal of Research in Banking and Finance*

EXPERIENCE

07/23 - 06/24	**JPMORGAN CHASE & CO.**	Mumbai, India
	Quantitative Research Intern (Python)	

- Calibrated trigger parameters to align trade initiation and closure rules with firm's strategies
- Enhanced existing quantitative models by redefining conditions, thereby boosting compliance
- Used CGMY for optimizing derivative product portfolio, saving firm $5M
- Designed new statistical framework for handling mispriced positions in North America

06/22 - 07/22	**FUTURES FIRST**	Gurgaon, India
	(Global derivatives trading firm)	
	Quantitative Research Intern (Python)	

- Created pricing models for swing trading strategies that beat market by 7% on average
- Developed proprietary models to generate alphas by using large datasets and parameters
- Improved speed of existing models by 10%, saving organization upwards of $100K

06/21- 07/21	**POWERHOUSE91**	Gurgaon, India
	(M&A firm)	
	Brand Analyst Intern (Python, SQL)	

- Analyzed sales figures, rankings, and ratings of top selling brands on Amazon India
- Collaborated on 5 brand acquisitions, with cumulative deal worth >$6M

PROJECTS

12/22 - 05/23	**BITS PILANI**	Pilani, India
	Sentiment Analysis of Trading Groups on Reddit and Telegram (Python)	

- Used NLP techniques, including tokenization and stemming, to extract and process data from trading groups for analysis
- Implemented VADER and TextBlob to assess sentiments and identify trading opportunities

08/22 - 01/23	**Fixed Income Portfolio Optimization Using Monte Carlo Simulations (Python)**

- Developed optimized fixed income portfolio using Monte Carlo simulations
- Achieved optimized portfolio return of 6.2% with standard deviation of 2.9%, resulting in Sharpe ratio of 2.14

05/21 - 08/21	**Time Series Analysis of IT Stocks (Python)**

- Employed ARMA and ARIMA models to forecast stock prices and optimize model parameters for enhanced predictive accuracy
- Analyzed trends, seasonality, and residuals to identify trading opportunities and maximize risk-adjusted returns

COMPUTATIONAL SKILLS / OTHER

Programming Languages: Python, C++, SQL
Languages: English (native), Hindi (native), Kannada (native), Tulu (native)
Certifications: Deep Learning (Coursera)

ANDRES HSIAO

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EDUCATION

Expected 12/25	**NEW YORK UNIVERSITY**	New York, NY

The Courant Institute of Mathematical Sciences
M.S. in Mathematics in Finance
- *Expected Coursework:* object-oriented programming, stochastic calculus, Black-Scholes, Brownian motion, portfolio optimization, portfolio risk management

09/16 - 06/20	**NATIONAL TSING HUA UNIVERSITY**	Hsinchu, Taiwan

B.A. in Economics
- *Relevant Coursework:* econometrics, derivatives market, differential equations, macroeconomics

EXPERIENCE

	NOMURA ASSET MANAGEMENT	Taipei, Taiwan
04/23 - 06/24	**Quantitative Risk Manager (Python, SQL)**	

- Conducted quantitative risk analysis on 50+ portfolios, delivering insights to portfolio managers and senior management, and contributing to overall risk management strategy
- Constructed dynamic risk dashboards with Python and SQL, providing senior risk managers with real-time insights for data-driven decision-making
- Designed and implemented SQL database system for efficient storage, management, and analysis of complex risk data, ensuring fast and accurate data retrieval for quantitative analysis
- Managed and led team of 2 to build ML prediction model forecasting large discretionary account redemptions, enhancing portfolio management in volatile market conditions

05/21 - 03/23	**Quantitative Risk Analyst (Python, SQL, VBA)**

- Implemented Monte Carlo simulations to estimate VaR for portfolios across various market scenarios, strengthening company's ability to assess and manage potential financial risks
- Engineered robust ETL data pipelines integrating multi-source datasets, applying rigorous testing and cleansing, reducing reporting time by 80% and improving data quality for risk assessments
- Delivered performance and attribution analysis on portfolios across various asset classes, generating reports and providing C-suite executives with detailed portfolio insights

06/20 - 04/21	**UBS AG**	Taipei, Taiwan

Reconciliation Specialist (VBA, SQL)
- Partnered with front office to analyze client requirements, delivering customized solutions and ensuring precise settlement of 100+ daily transactions
- Identified operational inefficiencies in SOPs and implemented VBA and SQL solutions, achieving 70% reduction in time-intensive manual tasks
- Contributed to system upgrade project by establishing test data formats and automating data generation, resulting in 25% time savings during UAT testing

PROJECT

09/19 - 12/19	**NATIONAL TSING HUA UNIVERSITY**	Hsinchu, Taiwan

E.Sun Credit Card Machine Learning Competition (Python)
- Ranked in top 2% among 2K+ teams in fraud payment detection machine learning competition
- Led end-to-end process, including feature engineering, data cleansing, parameter fine-tuning, model stacking, and using cross-validation to ensure model generalization and robustness
- Achieved F1 score of >0.8 on final submission, enhancing accuracy and reliability in detecting fraudulent credit card payments

COMPUTATIONAL SKILLS / OTHER

Programming Languages: Python (NumPy, Nandas, scikit-learn, statsmodels), SQL (MS SQL, PostgreSQL), VBA
Languages: English (Fluent), Mandarin (Native)
Certificates: Mathematics for Machine Learning (Imperial College London/Coursera), C/C++ Programming (National Taiwan University)

YUNHO JEON

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EDUCATION

Expected 12/25	**NEW YORK UNIVERSITY**	New York, NY

The Courant Institute of Mathematical Sciences
M.S. in Mathematics in Finance
- ***Expected Coursework:*** data-driven modeling, stochastic calculus, optimization, derivative market, machine learning, scientific computing for finance, equity derivatives

08/22 - 05/24	**STONY BROOK UNIVERSITY**	Stony Brook, NY

B.S. in Applied Mathematics and Statistics
- ***Coursework:*** linear regression, time series analysis, numerical analysis, data mining
- ***Honors/Awards:*** Award of Honor (Graduated #1 of 600 in Applied Math & Science department)

03/17 - 12/19	**AJOU UNIVERSITY**	Suwon, South Korea

B.S. in Financial Engineering
- ***Coursework:*** fixed income securities, options and futures, linear algebra, probability, ODE/PDE
- ***Honors/Awards:*** Daewoo Scholarship (Ranked #1 of 50 in Financial Engineering for 3 years)

EXPERIENCE

06/24 - 07/24	**ALPHA BETA**	Tel Aviv-Yafo, Israel

Quantitative Research Intern (Python, Excel)
- Developed innovative return forecasting model for risk arbitrage strategy using random forest and DNN; attained 31% increase in explanatory power over existing methods
- Analyzed financial statements using large language model (LLM) with prompt engineering to predict future earnings; achieved 4% higher prediction accuracy than financial analysts'
- Designed Python package to automate LLM-based analysis using OpenAI API, receiving and processing LLM outputs into structured and usable data; enhanced processing speed by 4 times

02/24 - 07/24	**STONY BROOK UNIVERSITY**	Stony Brook, NY

Undergraduate Research Assistant (Python, Excel)
- Developed Python package to dynamically extract statistical factors that explain relationships between individual stock returns and characteristics using Instrumented PCA method
- Constructed investment strategy for statistical factors, maximizing Sharpe ratio with L1 and L2 regularization and factor number optimization; achieved rolling Sharpe ratio of 1.5
- Performed periodic alpha research by analyzing fitted I-PCA model over past 10 years; verified momentum effect through multiple linear regressions, obtaining alpha of 3% and $p\text{-value} < 0.01$

01/23 - 05/23	**Teaching Assistant**	

- Enhanced students' understanding of probability and statistics, including probability axioms, law of large numbers, and hypothesis testing, by holding weekly office hours for 100+ students

PROJECTS

02/24 - 05/24	**STONY BROOK UNIVERSITY**	Stony Brook, NY

Alternative Market Beta Research
- Researched academic papers for alternative to market beta, better reflecting market downside risk
- Conducted comparative analysis of conditional drawdown-at-risk (CDaR) beta and traditional market beta using hedge fund indices and S&P 500; verified CDaR beta's superior effectiveness

09/19 - 12/19	**AJOU UNIVERSITY**	Suwon, South Korea

Equity-Linked Security Pricing Analysis
- Structured step-down payoff based on 2 stock prices, incorporating early redemption conditions and knock-in, knock-out barriers
- Derived fair price of structured security by solving 2-dimensional BSM PDE with FDM

COMPUTATIONAL SKILLS / OTHER

Programming Languages: Python (Pandas, Numpy, Pytorch, Scikit-learn, SciPy), C++, Excel, SQL
Languages: English (fluent), Korean (native)

LUCHEN (TOM) SHI

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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:* stochastic calculus, risk and portfolio management, dynamic asset pricing, time series analysis, machine learning, computational statistics, market microstructures

09/19 - 05/23 **CORNELL UNIVERSITY**   Ithaca, NY
B.A. in Mathematics, Concentration in Statistics
- *Coursework:* mathematical statistics, probability theory, stochastic calculus, stochastic processes, real analysis, machine learning, OOP and data structures, statistical learning theory
- *Honors/Awards:* 2023 Alibaba Global Mathematics Competition Finalist (Top 1%); 2022 Cornell Summer Mathematics Research Grants Recipient; 2022 Cornell Deloitte Innovation Competition, 1st place

EXPERIENCE

01/24 - 07/24 **KAFANG TECHNOLOGY**   Shanghai, China
(AI-driven, algorithmic trading firm)
Quantitative Research Intern (Python)
- Analyzed stock order data to build factors with information coefficients (IC) that increased by ~17%, with Sharpe ratio of strategy increased by ~11%, covering frequencies from 10s to 90s
- Studied market microstructures of convertible bonds to construct signals with IC increasing by ~25% with Sharpe ratio of strategy increasing by ~13%, covering frequencies from 90s to 1,800s
- Developed and implemented singular value decomposition (SVD) entropy method on stock logarithmic return correlation matrices, deriving stock factors that improved average IC by ~12%
- Applied multivariate Hawkes process to model self-excitement effects of marketable large order arrivals, achieving 95%+ accuracy in distribution comparisons using Kolmogorov–Smirnov tests
- Adapted micro-price return model to predict mid-price returns over 3s windows for 50+ China A shares, enhancing predictive accuracy by 19% with cubic-fitted curves

PROJECTS

04/23 - 08/23 **CORNELL UNIVERSITY**   Ithaca, NY
Geodesics Optimal Transport Between Gaussians for Wasserstein GAN
- Developed Geodesic Optimal Transport-Wasserstein GAN between Gaussians, ensuring theoretical convergences of generator parameters under gradient descent algorithm
- Derived upper bounds of WGAN objective functions in different scenarios, employing methods such as maximum likelihood estimation (MLE) and maximum a posteriori (MAP)

01/22 - 12/22 **Congruence of Linear Symplectic Forms by Symplectic Groups (Mathematica)**
- Provided complete classifications of linear symplectic form orbit space in 4 dimensions and established necessary conditions for intertwining these forms
- Investigated action of linear symplectomorphisms on symplectic forms, and determined invariants identified as polynomial expansion coefficients of Pfaffian terms

12/21 - 09/22 **Enumeration of Random Walk Positions in d-Dimensional Lattice**
- Derived general formula to count possible final positions for n-step random walk in d-dimensional integer lattice, with constraint that final destinations had largest norm
- Used generating functions method and Faulhaber's formula to derive formula that counted possible positions given constraint; presented theorem through matrix representation

COMPUTATIONAL SKILLS / OTHER

Programming Languages: Python (advanced), C++ (elementary)
Languages: English (fluent), Mandarin (native)

AARUSHI SINGH

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EDUCATION

Expected 12/25   **NEW YORK UNIVERSITY**   New York, NY
The Courant Institute of Mathematical Sciences
M.S. in Mathematics in Finance
- *Expected Coursework:* penalized regression, decision trees, linear regression, Fama-French, Black-Scholes, stochastic processes, alternative data, object-oriented programming (Python)

08/20 - 12/23   **PURDUE UNIVERSITY**   West Lafayette, IN
B.S. in Computer Science
- *Coursework:* operating systems (x86 Assembly, C), computer architecture (x86 Assembly, C), data structures and algorithms (Java), systems programming (C/C++, Bash Script), data mining and machine learning (Python), marketing management for new ventures
- *Honors:* FactSet Research Systems Scholarship 2021, Entrepreneurship & Innovation Certificate

EXPERIENCE

10/23 - 08/24   **EXCELLENT REALM**   Cupertino, CA
Software Engineer (Python, OpenAI, LangChain, React)
- Acquired 80 student clients in first month by implementing data-driven marketing strategy with Pandas for targeted school advertising in local area
- Developed AI chatbot to teach computer science fundamentals for this tutoring startup
- Integrated progress-tracking system into chatbot with React and Azure to monitor client performance and provide personalized learning experiences

06/22 - 08/22   **PUBLICIS SAPIENT**   Boston, MA
Financial Services Software Engineer Intern (Python, PostgreSQL, React Native, Spring Boot)
- Built database to manage user transactions for stock trading app, ensuring data integrity and fast query performance for high-frequency data
- Conducted market analysis of popular trading platforms using Python to track features and performance, providing insights for strategic positioning in competitive market
- Facilitated front-end and back-end integration to create responsive and user-friendly interface

08/21 - 05/22   **THE DATA MINE**   West Lafayette, IN
Data Science Researcher (R, SQL)
- Collaborated with CliftonLarsonAllen financial services firm to determine dynamic pricing model that maximizes profitability for their services while staying competitive
- Analyzed CliftonLarsonAllen's employee data (e.g., billable hours, region) to create model
- Trained in R to manipulate and aggregate dataframes, providing detailed analysis of pricing structures and identifying improvements through predictive insights on workforce utilization

PROJECT

10/24 - 12/24   **NEW YORK UNIVERSITY**   New York, NY
Customer Spending Alternative Data for Trading (Python)
- Performed k-means clustering using Euclidean distance on credit card transaction data to uncover spending patterns among users, ensuring optimal cluster weights by preprocessing data
- Created a constrained regression model to map spending clusters to quarterly company revenue data, achieving a Mean Absolute Percentage Error (MAPE) of 32.16% by leveraging L-BFGS-B optimization techniques
- Applied insights to design a market-neutral portfolio by comparing predictions with Bloomberg estimates, identifying high-impact segments, and assessing stock price sensitivities.

COMPUTATIONAL SKILLS / OTHER

Programming Languages: Python, Java, C/C++, R, SQL, LaTeX, x86 Assembly, HTML, CSS, Bash Script, Javascript
Technologies: React, PostgreSQL, Django, Excel, OpenAI, Node, Spring Boot, Android Studio, Linux, Figma
Activities: Marketing Director for NYU Student Council; Recruitment Leader for Delta Kappa Delta; Treasurer for Association of South Asians at Purdue; Alumni Fundraising Cold Caller (Top 10 of 200 Students) for Rally Line

SITENG WU

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EDUCATION

Expected 12/25	**NEW YORK UNIVERSITY** **The Courant Institute of Mathematical Sciences** **M.S. in Mathematics in Finance**	New York, NY

- *Coursework:* Black-Scholes, Monte Carlo simulation, stochastic processes, machine learning, risk and portfolio management, algorithmic trading

08/20 - 05/24	**NEW YORK UNIVERSITY SHANGHAI** **B.S. in Finance, B.S. in Data Science**	Shanghai, China

- *Coursework:* derivatives pricing, equity valuation, fixed income securities, probability theory, linear algebra, data structures, machine learning, ordinary differential equations, econometrics
- *Honors/Awards:* Magna Cum Laude, Business & Economics Honor Program, Dean's List, Excellence Award, Founder's Day Award

EXPERIENCE

05/24 - 08/24	**IFUND ASSET MANAGEMENT** ($12B AUM) **Quantitative Research Intern (Python)**	Shanghai, China

- Spearheaded identification and validation of equity fundamental factors, including industry-specific factors for targeted sectors
- Developed novel methodology for enhancing factor performance, achieving 1.31% increase in annual excess return and 3.28% decrease in maximum drawdown
- Forecasted stock dividend payouts and rates leveraging historical data, financial reports, and shareholder meeting transcripts

12/23 - 03/24	**SHENWAN HONGYUAN SECURITIES** (Top 10 securities firm in China) **Quantitative Research Intern (Python)**	Shanghai, China

- Engineered bespoke backtesting model for A-share market, incorporating price limit rules, special treatment stocks, and next-day repositioning strategies to enhance model robustness
- Replicated and optimized equity factors from academic research, achieving 5% uplift in annual excess returns and 2% reduction in maximum drawdown

PROJECTS

09/23 - 05/24	**VOLATILITY INSTITUTE AT NEW YORK UNIVERSITY SHANGHAI** **Predictive Power and Trading Strategies of Northbound Capital (Python)**	Shanghai, China

- Analyzed northbound (Hong Kong to Shanghai) funds' A-share stock selections, highlighting long-term preference for large-cap, high ROE firms and short-term negative feedback trading
- Detected post-2023 outflow of northbound funds, suggesting diminished stock selection efficacy and implications for market liquidity and risk

09/23 - 05/24	**NEW YORK UNIVERSITY SHANGHAI** **Factors Influencing Holiday Effect: Evidence from Chinese Stock Market (Python)**	Shanghai, China

- Used Fama-French 3 Factor model to calculate abnormal stock returns
- Conducted factor sorting and t-tests; concluded that holidays' duration had low impact, while small-cap, low-priced, and low-EPS firms showed stronger holiday effects

COMPUTATIONAL SKILLS / OTHER

Programming Languages: Python, SQL, R
Languages: English (fluent), Mandarin (native), Shanghainese (native)
Certifications: Bloomberg Market Concepts, WorldQuant Challenge Gold Level, ACCA Advanced Diploma in Accounting and Business

YUTONG (MARK) WU

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EDUCATION

Expected 12/25	**NEW YORK UNIVERSITY**	New York, NY

The Courant Institute of Mathematical Sciences
M.S. in Mathematics in Finance
- *Expected Coursework:* stochastic calculus, risk and portfolio management, derivative hedging, Hull-White model

08/20 - 05/24	**CARNEGIE MELLON UNIVERSITY**	Pittsburgh, PA

B.S. in Economics and Statistics & B.A. in Chemistry
- *Coursework:* Monte Carlo simulation, ODE, PDE, derivative securities, statistical inference, time series analysis, bootstrap, instrumental variables, directed acyclic graph

EXPERIENCE

05/24 - 08/24	**SDIC SECURITIES CO., LTD.**	Beijing, China

Investment Management Intern (R)
- Managed 3 firm's social media accounts, monitored view statistics of posts and articles on platforms, and used data analytics to filter potential new customers with R
- Drafted 5 industry reviews and stock recommendations by comparing and reviewing 20 companies' stock performance based on 3-year financial statements and research reports

05/23 - 08/23	**CHINA LIFE INVESTMENT MANAGEMENT CO., LTD.**	Beijing, China

Investment Management Intern (Excel)
- Cleaned clients' financial statements to analyze their operations and credits
- Researched clients' industries and local economic performance to assess prospects for lending capital for clients' financial and construction projects
- Predicted clients' and projects' cash flows to evaluate likelihood of default on loans
- Customized products like asset-backed securities for clients to exchange receivables and cash

PROJECTS

	CARNEGIE MELLON UNIVERSITY	Pittsburgh, PA
03/23 - 12/23	**Analysis of Nike Stock's Potential Arbitrage Opportunities (Excel)**	

- Compared Nike's and competitors' financial data and stock price performance (i.e., P/B and P/E)
- Projected Nike's cash flows, traced its equity risk premium, and discounted its market value
- Evaluated its stock and option prices, as well as PnL of arbitrage strategies

09/22 - 12/22	**China Real Estate Market Research (Excel)**

- Reviewed market performance and policies over prior 4 decades, and plotted how number of construction workers, amount of capital, productivity, and output of real estate market changed
- Analyzed highly leveraged real estate companies that improperly compensated hourly construction workers; correlated that with companies' higher risk for loan default

06/22 - 12/22	**Quantitative Analysis Between Educational Background and Career Success (R)**

- Cleaned interdisciplinary academic background data of startups' founders; regressed relationship between funds raised and founders' academic backgrounds
- Predicted each year's early- and mid-career salaries for >100 universities' undergraduate students based on multiple factors (e.g., diversity of student body, percentage of STEM degrees granted)

COMPUTATIONAL SKILLS / OTHER

Programming Languages: R (Proficient), Python (Intermediate), SQL (Intermediate)
Languages: English (fluent), Mandarin (native)
Activities: Vice President of CMU Summit on U.S.-China Innovation and Entrepreneurship; Research Assistant at CMU to explore how to decompose antibiotics with iron catalysts

RUIPENG XU

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EDUCATION

Expected 12/26	**NEW YORK UNIVERSITY** **The Courant Institute of Mathematical Sciences** **M.S. in Mathematics in Finance**	New York, NY

- *Expected Coursework:* object-oriented programming (Python), algorithmic trading, Black-Scholes model, VaR, covariance matrix estimation, data-driven models

Expected 06/27	**THE GRADUATE CENTER, CUNY** **Ph.D. in Mathematics**	New York, NY

- *Coursework:* dynamics in neural networks, measure and integration theory, Banach and Hilbert spaces, linear functionals, smooth manifolds, group, ring, module, field and Galois theory, computability theory in dynamical systems

08/18 - 06/21	**THE CITY COLLEGE OF NEW YORK, CUNY** **M.S. in Mathematics**	New York, NY

- *Coursework:* Lebesgue measure & integration, real, complex and symbolic dynamic, recurrence and ergodicity, finite dimensional vector spaces and minimization problem
- *Honor/Award:* Dr. Barnett & Jean H. Rich Summer Scholarship

01/15 - 06/18	**THE CITY COLLEGE OF NEW YORK, CUNY** **The Grove School of Engineering** **B.ENG. in Chemical Engineering**	New York, NY

EXPERIENCE

10/23 - Present	**DIRECTED READING PROGRAM IN MATHEMATICS**, CUNY **Organizer and Student Mentor**	NYC, NY

- Organized events (e.g., student poster sessions)
- Guiding students on advanced math topics such as measure and ergodic theory
- Increased mentee applications by almost 100% by promoting program

01/23 - Present	**QUEENS COLLEGE, CUNY** **Adjunct Lecturer**	Queens, NY

- Teach calculus, linear algebra, and discrete mathematics

PROJECTS

06/21 - 08/21	**THE CITY COLLEGE OF NEW YORK, CUNY** **Research in Symbolic Dynamics**	New York, NY

- Engaged in intensive pure math research with focus on symbolic dynamics

01/21 - 5/21 Independent Study in Dynamical Systems

- Extended results (e.g., established pressures as limits of all finite submatrices) from infinite shift to bi-infinite shift with countable alphabets

08/17 - 5/18 Undergraduate Thesis in Bioprocessing

- Researched bioprocessing of ethanol and optimized profit
- Designed process flow chart with optimized technical and economic analysis

08/17 - 5/18 Honors Research in Anti-Atherogenesis Methods

- Performed operations on Dawley rats such as canalization
- Involved in many technical parts in research such as staining, TEM imaging, and data collection
- Trained undergraduate students on technical skills such as staining and TEM imaging

COMPUTATIONAL SKILLS / OTHER

Programming Languages: Python, LaTeX
Languages: English (fluent); Chinese (native)

ZHANTAO (CHRIS) XU

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EDUCATION

Expected 12/25   **NEW YORK UNIVERSITY**   New York, NY
The Courant Institute of Mathematical Sciences
M.S. in Mathematics in Finance
- *Coursework:* object-oriented programming (Java), penalized regression, decision trees, linear regression, Fama-French, Black-Scholes, stochastic processes, Hull-White model

09/20 - 03/24   **UNIVERSITY OF CALIFORNIA SAN DIEGO**   San Diego, CA
B.S. in Mathematics and Computer Science
- *Coursework:* vector calculus, linear algebra, probability, stochastic, data structure, system programming, data science, microeconomics, macroeconomics, accounting, project management

EXPERIENCE

07/23 - 10/23   **SHANGHAI BAOSIGHT SOFTWARE CO., LTD**   Shanghai, China
Software Engineering Intern (NSIS, SQL)
- Built platform to reduce developers' workload and tailor algorithms' functionality to different on-site needs through modularizing them, enabling interconnection of algorithm components
- Designed and created 1-click installation package in NSIS using UI control; integrated installation and configuration of common environments (e.g., MySQL, JDK, Redis, Nginx)
- Added UIs that asked users whether to start software on boot, and allowed them to freely choose to download MySQL, Java, Python, and Redis; beautified UI with nsNiuniuSkin

07/22 - 10/22   **HAITONG SECURITIES**   Shenzhen, China
Financial Analyst Intern (SQL, Excel)
- Conducted green energy industry research; did regression analysis and predictive modeling on government and market data to forecast cost-reduction trends and demand for solar energy
- Performed segmentation and predictive analysis on client data (e.g., risk profiles, total capital) using SQL; collaborated with sales team to increase client engagement by 20% on 4 roadshows
- Developed web scraping tool that extracts companies' financial statements and organizes them into Excel spreadsheets; boosted process of identifying viable investment opportunities by 10%

03/21 - 06/21   **CITIC FUTURES CO., LTD.**   Kunming, China
Marketing Management Intern (Excel)
- Analyzed futures market trend using time-series and predictive analysis for sales team to identify optimal timing for new client outreach; increased client conversion rate by ~8%
- Conducted competitive analysis of competitors' profitability ratios, transaction fees, and trading volumes; enabled firm to rectify weaknesses, boosting client acquisition and retention rate
- Evaluated clients' data (e.g., trading volumes, risk profiles); collaborated with sales team to recommend tailored futures contracts accordingly, resulting in 15% revenue increase that quarter

PROJECTS

01/23 - 03/23   **UNIVERSITY OF CALIFORNIA SAN DIEGO**   San Diego, CA
NYC Parking Ticket Database Using Internal Computer Memory (C)
- Created system to manage parking ticket database using pointers and self-referential structure
- Built memory runtime with allocation/deallocation; debugged with Valgrind for memory leaks
- Designed system using efficiency of hash table and 2-dimensional linked lists, which enabled users to locate any specific vehicle's ticket information directly while saving 50% memory

09/22 - 12/22   **Bitwise Operation Cipher (Assembly)**
- Wrote program that encrypts and decrypts any type of file using bitwise operation
- Optimized program by allowing users to choose encrypt or decrypt mode and open files of key

COMPUTATIONAL SKILLS / OTHER

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

ZIXU (ROBIN) ZHAI

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EDUCATION

Expected 12/25	**NEW YORK UNIVERSITY** **The Courant Institute of Mathematical Sciences** **M.S. in Mathematics in Finance**	New York, NY

- ***Coursework:*** stochastic calculus, risk & portfolio management, financial computing applications, machine learning algorithms, model evaluation and validation

01/21 - 05/24	**NEW YORK UNIVERSITY** **College of Arts and Sciences** **B.A. in Mathematics & B.A. in Economics, Minor in Computer Science**	New York, NY

- *Coursework:* econometrics, numerical analysis, data structures
- *Honors/Awards:* World Quantitative Challenge, Gold Award; Dean's List

EXPERIENCE

03/24 - Present	**UNILOG CAPITAL LLC.** **Co-Founder, Quantitative Researcher (Python, Yfinance, Scikit-learn, BeautifulSoup)**	New York, NY

- Collaborate with multidisciplinary team to manage $500K diversified portfolio by using statistical analysis and machine learning techniques to achieve 15% return
- Establish relationships with clients, providing insights and recommendations based on quantitative research; ensure all activities comply with regulatory requirements

06/24 - 08/24	**CHINA INTERNATIONAL ECONOMIC CONSULTANTS CO., LTD.** **Innovation and Financial Consulting Intern (Python, Matplotlib)**	Beijing, China

- Performed quantitative analysis of financial data and market trends to provide insights for National Development and Reform Commission in making national investment decisions
- Developed risk mitigation and growth strategies collaboratively for China Trust Protection Fund, managing over $20B to protect Chinese trust market

06/23 - 08/23	**ICARUS FUND** **Quantitative Analyst Intern (Python, Pandas, NumPy)**	New York, NY

- Implemented predictive models (e.g., ARIMA) to forecast and analyze stocks; incorporated findings to optimize portfolio with modern portfolio theory, achieving Sharpe ratio of 1.71
- Performed due diligence for space tourism company; orchestrated Q&A information sessions, catalyzing successful investments of $10M

02/23 - 05/23	**HUATAI INTERNATIONAL** **Remote Quantitative Analyst Intern (Python, MySQL)**	(Remote) Hong Kong, China

- Optimized strategies for multiple stock portfolios using Markowitz and Black-Litterman models; achieved 3.47 Sharpe ratio and 0.11 max drawdown
- Back-tested momentum trading strategies by building Bollinger Bands by extracting historical data in MySQL database with Python's SQLalchemy and Pymysql packages
- Analyzed risk-free value using CAPM; calibrated moving average windows with cross-validation

PROJECT

07/22 - 08/22	**NEW YORK UNIVERSITY** **Textual Analysis in Asset Pricing Research and Quantitative Investing**	New York, NY

- Implemented LDA model to analyze risk factors from annual reports on SEC Edgar

COMPUTATIONAL SKILLS / OTHER

Programming Languages: Python, Java, C, R, MATLAB, LATEX
Languages: English (Fluent), Mandarin (Native), French (Basic)
Affiliations/Certifications: NYU Chinese Basketball Team Manager, Media Producer (20K followers), NBA Brooklyn Nets Guest Announcer, Sense7 Larp Advisor, 3rd International Chinese Kong Fu Festival Gold Award
Interests: Basketball (Warwick School Team Captain), Piano (Top Amateur Level)

HANDAN ZHONG

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EDUCATION

Expected 12/25	**NEW YORK UNIVERSITY**	New York, NY

The Courant Institute of Mathematical Sciences
M.S. in Mathematics in Finance
- *Expected Coursework:* object-oriented programming, penalized regression, decision trees, linear regression, Fama-French, Black-Scholes, stochastic processes, Hull-White model

09/21 - 05/24	**KING'S COLLEGE LONDON**	London, UK

B.S. in Mathematics
- *Coursework:* linear algebra, analysis, geometry, applied differential equations, probability and statistics, Python, discrete mathematics, mathematical finance, time series
- *Honors:* First Class Honors

EXPERIENCE

06/23 - 09/23	**ZHEJIANG ZHENGLI ENGINEERING MANAGEMENT CO., LTD.**	Ningbo, China

Financial Management Intern
- Collaborated with team members to prepare budgets, estimate costs, and perform financial analysis for building renovation project
- Conducted risk assessments and proposed mitigation strategies to ensure financial stability
- Provided regular cost updates, addressed client inquiries, and presented detailed reports

06/22 - 09/22	**NINGBO ZHENGLIDE ENTERPRISE MANAGEMENT CO., LTD.**	Ningbo, China

Financial Analyst Intern
- Conducted detailed financial analysis and reporting, supporting budget preparation
- Forecasted and monitored revenue and expenditures, contributing to accurate budget planning
- Managed daily accounting processes; handled voucher entries and account reconciliation

07/21 - 09/21	**ZHENGDE ACCOUNTING FIRM, LTD.**	Ningbo, China

Accounting Intern
- Conducted financial statement analysis, audit preparations, and data organization
- Streamlined tax-related tasks, including data organization and tax law research
- Developed proficiency in accounting software for financial analysis and reporting

07/20 - 09/20	**MINGZHOU REAL ESTATE & LAND ASSETS APPRAISAL CO., LTD.**	Ningbo, China

Assistant Appraiser Intern
- Conducted market research and reconciled real estate market data for appraisal reports
- Analyzed and visualized geographic data, enhancing its accuracy
- Collaborated on preparation of assessment reports, ensuring clear documentation of findings

PROJECT

07/24 - 08/24	**NEW YORK UNIVERSITY**	New York, NY

K-means Clustering Implementation (Python)
- Implemented K-means clustering to solve problems with grid-based data
- Developed and refined K-means clustering algorithm by initializing centroids from dataset values and implementing convergence check to ensure algorithm stability
- Validated algorithm results by testing centroid alignment with expected positions; organized project into modular scripts for streamlined testing and code management

COMPUTATIONAL SKILLS / OTHER

Programming Languages: Python, R, Excel
Languages: English (fluent), Mandarin (native)
Interests: Ultimate Frisbee (top 5 all-university teams in UK)

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Connect with the students directly, or contact
MathFin's Office of Career Services at:
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