



NYU

COURANT INSTITUTE OF
MATHEMATICAL SCIENCES

SEPTEMBER 2025

RESUME BOOK

FULL-TIME CANDIDATES

MATHEMATICS IN FINANCE

Master of Science Program

DEAR COLLEAGUE,

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

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

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

Sincerely yours,

Petter Kolm
DIRECTOR

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.

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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:** stochastic calculus, time series analysis, scientific computing, risk and portfolio management, dynamic asset pricing, algorithmic trading, equity derivatives, deep learning
- 09/20 - 05/24 **NEW YORK UNIVERSITY** New York, NY
B.A. With Honors in Computer Science and Mathematics (Cum Laude)
- **Coursework:** linear algebra, probability & statistics, ordinary differential equations, real analysis, numerical analysis, data structures, algorithms, machine learning, data management and analysis

EXPERIENCE

- 06/25 - 08/25 **PANAGORA ASSET MANAGEMENT** Boston, MA
Quantitative Research Intern (Python, LLM, NLP)
- Built large language model (LLM)-driven pipelines that convert earnings-call transcripts into sentiment factors across global and domestic universes; created micro and macro-level signals
 - Preprocessed raw transcripts into 512-token chunks with BERT-tokenizer; used few-shot prompting with GPT API to build labeled training datasets for fine-tuning locally-hosted LLMs
 - Fine-tuned various BERT classification models; optimized hyperparameters via Optuna; resolved class imbalance with stratified batching and focal loss, and improved out-of-sample F1 by 0.40
 - Engineered monthly factors with IR 1.7 (t-stat over 4); validated macro relevance with strong correlation; cut signal runtime 6.1x using batched GPU inference and parallel computing
- 06/24 - 08/24 **QILIN INVESTMENT** Shanghai, China
Quantitative Research Intern (Python, Algo Trading)
- Generated alpha factors by structuring alternative datasets, including sell-side analyst estimates and market news, to develop composite signal algorithms; achieved 1.5 information ratio
 - 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 (NLP) on alternative datasets from due diligence reports; achieved 16.31% annualized excess return
- 06/23 - 08/23 **LONGQI INVESTMENT** Hangzhou, China
Quantitative Research Intern (Python, Market Timing)
- Constructed market-timing signals that captured factor exposures using in-house Barra-based risk models; managed portfolio risk and increased Sharpe ratio by 8.37%
 - Analyzed minute-level order-book depth and trading data from institutional investors to extract order-flow imbalance; produced long/short selection signals that increased return by 13.68%
 - Created more than 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

- 08/24 - 12/24 **NEW YORK UNIVERSITY** New York, NY
Fit-finder Application Development (Python, Full Stack)
- Utilized PyTorch and FashionCLIP for classification of garment data from Farfetch; developed search engine with vector encoding of images and text to ensure accurate outfit matches
 - Designed web application to provide outfit recommendations based on restaurant dress codes
- 01/24 - 05/24 **Evaluation of Vision-Language Models for Radiology (Python, LLM)**
- Built radiology VLM evaluation framework with BERTScore, LLM rubric scoring, and CheXpert labels; reduced data leakage with few-shot prompted pseudo-labeled test sets

COMPUTATIONAL SKILLS / OTHER

Programming Languages and Tools: Python, Java, C/C++, SQL, PyTorch, CUDA, Polars, Azure ML, Git, Flask, R
Activities: President of NYU Zen Buddhism Club, Teaching Assistant of Calculus at NYU, Skiing, Meditation, Poker

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

EXPERIENCE

- 06/25 - 09/25 **SHANXI SECURITIES** Shanghai, China
Quantitative Researcher (Python)
- Built automated options hedging model using Monte Carlo simulation with path-wise Greeks and delta rebalancing; validated against Black-Scholes benchmarks
 - Compared and evaluated simple rule-based strategies for corn futures side-by-side; then designed portfolio strategy with position sizing and risk limits based on best-performing mix
 - Researched index-futures historical volatility, basis levels, and contango patterns; explained underlying drivers and proposed arbitrage strategy frameworks
- 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

PROJECTS

- 09/24 - 12/24 **NYU COURANT** New York, NY
Performance Analysis of Hedge Fund Returns using Linear Regression (Python)
- Conducted regression analysis on hedge fund returns using Fama-French 5-Factor model, validating results through t-tests and F-tests to evaluate factor significance and model fit
 - Enhanced predictive accuracy by implementing Elastic Net regularization and expanding regressors with non-linear transformations
- 09/24 - 12/24 **NYU COURANT** New York, NY
Machine Learning on 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)

Activity: VP of Events, Chinese Undergraduate Students' Association at University of Toronto

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
- **Coursework:** object-oriented programming, stochastic calculus, market microstructure, mean field games, game theory, price impact models, numerical methods, time series analysis
- 09/16 - 06/20 **NATIONAL TSING HUA UNIVERSITY** Hsinchu, Taiwan
B.A. in Economics
- **Coursework:** econometrics, derivatives market, differential equations, macroeconomics

EXPERIENCE

- OPTIONMETRICS** New York, NY
- 06/25 - 08/25 **Quantitative Research Intern (Python, SQL)**
- Designed and trained deep learning models to improve computation for implied volatility, accelerating solver convergence by 50% and improving numerical stability in production
 - Developed spread-adjusted pricing method for implied dividends, reducing variance by 25% across SPX constituents and integrating outputs into backtester for dividend arbitrage strategies
 - Built options backtester with transaction cost modeling, execution simulation, and walk-forward performance evaluation, used to showcase trading strategies under realistic market conditions
- NOMURA ASSET MANAGEMENT** Taipei, Taiwan
- 04/23 - 06/24 **Quantitative Risk Manager (Python, SQL)**
- Led team of 2 to develop ML models forecasting large client redemptions, collaborating with portfolio managers to refine strategies and enhance portfolio resilience under market stress
 - Constructed dynamic dashboards with Python/SQL to visualize risk exposures and portfolio performance, translating complex analytics to actionable insights for investment teams
 - Designed and built scalable SQL database for storing and analyzing large-scale financial data, enhancing data quality and supporting firm-wide portfolio analysis
- 05/21 - 03/23 **Quantitative Risk Analyst (Python, SQL, VBA)**
- Conducted performance and attribution analysis on multi-asset portfolios, hosting weekly meetings with senior executives and portfolio managers to present findings and guide discussions
 - Implemented Monte Carlo simulations to model portfolio P&L and VaR across diverse market scenarios, supporting stress-test frameworks and allocation strategy decisions
 - Engineered ETL pipelines integrating multi-source datasets with automated testing and cleansing, reducing reporting time by 80% and improving data quality for analytics

PROJECTS

- NYU COURANT** New York, NY
- 01/25 - 02/25 **Market Regime Clustering using K-Means, WK-Means, and Hidden Markov Models (Python)**
- Developed market regime clustering models using K-Means, Wasserstein K-Means, and Hidden Markov Models to classify market states from hourly SPY data (2008–2024)
 - Built and Validated feature sets with rolling windows, applying maximum mean discrepancy to benchmark clustering and showing Wasserstein distance improved regime separation

COMPUTATIONAL SKILLS / OTHER

Programming Languages & Tools: Python (NumPy, Pandas, scikit-learn, TensorFlow), SQL, R, VBA, Git

Languages: English (Fluent), Mandarin (Native), Spanish (Intermediate)

Certificates: Mathematics for Machine Learning (Imperial College London), C/C++ Programming (NTU)

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, derivatives markets, machine learning, scientific computing for finance, market microstructure
- 08/22 - 05/24 **STONY BROOK UNIVERSITY** Stony Brook, NY
B.S. in Applied Mathematics and Statistics
 - **Coursework:** time series analysis, numerical analysis, data mining, parallel computing
 - **Honors/Awards:** Award of Honor (Graduated #1 of 600 in Applied Mathematics & Statistics)
- 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

- 06/25 - 08/25 **VALIDITY BASE** New York, NY
Quantitative Research Summer Analyst (Python, Excel)
 - Built medium-frequency trading signals for 500-stock universe using market-neutral residuals
 - Developed intraday signals capturing residual pressure (VWAP gap, order-book balance) and informed intensity (volume-per-tick, Kyle lambda), incorporating sector neutralization
 - Leveraged large language model (LLM) to ingest Stocktwits commentary and Benzinga news articles, generating earnings-event sentiment scores for daily trading
 - Integrated signals into risk-parity portfolio, delivering 40% daily turnover and Sharpe ratio of 2.1
- 06/24 - 07/24 **ALPHA BETA** Remote (Tel Aviv-Yafo, Israel)
Quantitative Research Assistant (Python, Excel)
 - Devised stock selection model for merger arbitrage strategy using random forest and deep neural network, leveraging M&A deal characteristics and macro trends; achieved Sharpe ratio of 1.0
 - Analyzed financial statements using LLM with prompt engineering to predict future earnings; achieved 4% higher accuracy and 5% higher F1 score compared to financial analysts' predictions
 - Designed Python package to automate LLM-based analysis using OpenAI API and pandas
- 02/24 - 07/24 **STONY BROOK UNIVERSITY** Stony Brook, NY
Research Assistant (Python, Excel)
 - Developed Python package to extract statistical factors that explain hidden relationships between individual stock returns and firm characteristics, using Instrumented PCA
 - Engineered statistical factor-based strategy using mean-variance optimization with Elastic Net regularization, achieving Sharpe ratio of 1.5 and max drawdown of 12% over 15-year backtest

PROJECTS

- 03/25 - 05/25 **NEW YORK UNIVERSITY** New York, NY
Equity-Linked Security Pricing Analysis (Python, Excel)
 - Structured step-down payoff based on two underlying stocks with early redemption conditions and knock-in/knock-out barriers
 - Priced structured security by solving 2D Black-Scholes PDE with Crank-Nicolson method
- 01/25 - 02/25 **Calendar Spread Arbitrage Strategy (Python, Excel)**
 - Implemented calendar spread strategy on RBOB futures to exploit backwardation/contango dynamics between first-month and 1-3 month deferred contracts, achieving Sharpe ratio of 0.8

COMPUTATIONAL SKILLS / OTHER

Programming Languages: Python (Pandas, NumPy, PyTorch, scikit-learn, SciPy, PySpark), C++, SQL, Excel
Languages: English (fluent), Korean (native)

YIMING JI

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EDUCATION

- Expected 12/25 **NEW YORK UNIVERSITY** **New York, NY**
The Courant Institute of Mathematical Sciences
Master of Science in Mathematics in Finance
- **Coursework:** fixed income derivatives, interest rate & FX models, algorithmic trading & quantitative strategies, risk & portfolio management, Black-Scholes model, supervised learning, regression, stochastic calculus, Bayesian statistics, time series analysis
- 09/21 - 12/24 **NEW YORK UNIVERSITY** **New York, NY**
Bachelor of Arts in Mathematics and Computer Science
- **Coursework:** probability & statistics, numerical analysis, PDE & ODE, linear algebra, algebra, oop, data structure, multivariable calculus, algorithms, machine learning, data analysis, OS
 - **Activities:** Courant Recitation Leader (Calculus II for 1 year), Grader (3 years)

EXPERIENCE

- 06/25 - 08/25 **DEUTSCHE BANK** **New York, NY**
E-Trading Quant Intern, Rates and Credit Desks (Python)
- Upgraded UST option desk risk dashboard by extracting weights that mapped mid-curve swaps to anchor tenors with linear regression & PCA, cutting RMSE from 5 bp to 0.1 bp
 - Built live net-basis monitor tracking history and intraday shifts across deliverable baskets; cut price discovery process to under 2 seconds
 - Created a curve-scenario engine (bear/bull steepen & flatten) to forecast Cheapest-to-deliver switches across contracts
 - Benchmarked sweep sessions against TRACE to identify missed fills and competitor trades; designed routing logic to better balance hit rate and P&L, reducing missed trades by 30%
 - Regressed desk alpha on Tradeweb/Algo-Mid, quantifying alpha bleeds with 5-min intervals, and triggering model recalibration
- 05/23 - 08/23 **EVERBRIGHT SECURITIES** **Shanghai, China**
Equity Derivative Trading Intern, Swap Desk (Python)
- Implemented Python-driven automation tools independently for optimized ledger operations and comprehensive daily bond order aggregation, expediting regular reporting workflows by 30%
 - Spearheaded futures contract rollover strategy using CSI 500 index data, achieving seamless position maintenance, and identifying key factors influencing basis and spread
 - Used time series analysis for optimal trading days, reducing operational expenses by 9%
 - Conducted Black-Scholes model-based scenario analysis; actively analyzed counterparty risk

PROJECTS

- 04/24 - 05/24 **NEW YORK UNIVERSITY** **New York, NY**
Deep Reinforcement Learning Capstone Project
- Developed deep reinforcement learning model on OpenAI Gym platform, achieving 230% increase in agent rewards through iterative tuning
 - Used convolutional neural networks to reduce training loss by 35% over 4M episodes
- 05/21 - 03/22 **Genetic Data Analysis of Multiple Synostoses Syndrome**
- Conducted data analysis with chi-squared tests for multiple synostoses syndrome family
 - Co-authored "[Clinical observation and genetic analysis of a SYNS1 family caused by novel NOG gene mutation](#)" on family genetic analysis caused by gene mutation

COMPUTATIONAL SKILLS

Programming Languages: Python, Julia, R, Matlab, SQL, C/C++, Java, kdb+, ML, Microsoft Office, LaTeX, Excel
Languages: English (Fluent), Mandarin (Native)

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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:** short rate & FX modeling, structured credit (CMBX, MBS, ABS), stochastic control, option pricing, volatility modeling, time series analysis, algorithmic trading, stochastic calculus
- 09/20 - 05/24 **SWARTHMORE COLLEGE** Philadelphia, PA
B.A. in Mathematics and Economics
- **Coursework:** numerical methods, real analysis, partial differential equations, linear algebra, econometrics

EXPERIENCE

- 06/25 - 08/25 **STOUT (COMPLEX SECURITIES & FINANCIAL INSTRUMENTS TEAM)** New York, NY
Valuation Analyst Intern (Python, R, Advanced Excel Modeling)
- Built and automated stochastic valuation models for equity awards (via Black-Scholes, Merton, Monte Carlo) and carried interest waterfalls
 - Modeled ABS/MBS cash flows under prepayment/default scenarios and borrowing rates using credit-spread and yield-curve calibration under risk-neutral frameworks
 - Enhanced model robustness with stress testing of volatility, interest rates, IRR-to-return, and validated outputs against regulatory and client reporting requirements
 - Delivered research-backed valuations for major PE clients with zero post-delivery revisions; led two engagements from model build-up to delivery, ensuring full market data traceability
 - Collaborated with global teams (NY, LA, Athens) to pre-clear data gaps and assumptions to support timely multi-timezone delivery of market and portfolio analytics

PROJECTS

- 03/25 - 05/25 **NYU COURANT** New York, NY
Market Impact & Optimal Execution Strategies (Python, Stochastic Control, Optimization)
- Implemented Almgren–Chriss and VWAP execution models on TAQ intraday data, inferring trade direction, computing benchmarks, and estimating market impact via nonlinear regression
 - Derived and solved HJB equations for optimal execution, simulating trading speed, inventory trajectories, and risk-neutral vs. risk-averse liquidation scenarios
 - Extended VWAP strategies from static to dynamic, allocating trades via U-shaped volume curves and extending to real-time adaptive strategies with risk-adjusted costs
 - Formulated execution as a stochastic control problem, testing robustness to shocks and deriving optimal trading rates under uncertainty by minimizing risk-adjusted costs
- 02/25 - 04/25 **Fast Greeks via Algorithmic Differentiation (Python, Basket & Asian options)**
- Implemented algorithmic differentiation with pathwise derivative methods in Monte Carlo simulation for Greeks of European basket calls and path-dependent “best-of” Asian options
 - Demonstrated machine-precision sensitivities with runtime overhead only about 2.5x pricing, versus linear growth under finite-difference bumping
 - Benchmarked against bumping, showing more than 10x speed-ups for mid-size baskets (N equal to 10-12) and eliminating numerical noise, enabling real-time hedging analysis for exotics

COMPUTATIONAL SKILLS / OTHER

Programming Languages: Python (NumPy, pandas, QuantLib, scikit-learn, PyTorch), Stata, R, SQL, VBA
Quantitative Finance: Fixed income (MBS/ABS, CLOs, swaptions, bond options), FX options, short-rate models (Hull–White, CIR), SABR/Heston, VaR and stress testing, stochastic control problems, market impact analysis

RUNDONG LIU

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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:** financial security and markets, risk and portfolio management, machine learning, asset pricing, rates and fx, time series analysis
- 09/20 - 06/24 **UNIVERSITY OF WASHINGTON** Seattle, WA
College of Arts and Sciences
B.S. in Computational Finance and Risk Management
- **Coursework:** financial markets, fixed income, risk management, machine learning, linear algebra, numerical analysis, data structures and algorithms

EXPERIENCE

- 06/25 - 08/25 **ING Financial Services LLC** New York, US
Trading Risk Management Intern (Python, Excel, Murex)
- Developed SACCR and SIMM engines, automating regulatory capital and initial margin calculations for non-cleared OTC portfolios, reducing manual computation time by 50%
 - Addressed the overestimation of risk by researching three different VaR models and backtesting on three years' commodity trade data
 - Produced daily PnL and risk reports, parsing raw trade and market data to quantify PnL contributions across FX spot, rates, communicating with front office for alignment
- 07/24 - 08/24 **CHINA POST SECURITIES CO., LTD.** Beijing, China
Fixed Income Analyst Intern (Python, Excel)
- Implemented 10 portfolio duration strategies; identified best performing ones for each of 15 sectors; consolidated them into 1 portfolio consisting of >300 corporate bonds
 - Evaluated multiple annual reports, conducted rigorous research on companies' financial, industrial, and state economic performance to contribute to corporate bond credit ratings
- 09/23 - 10/23 **CITIC SECURITIES CO., LTD.** Remote, China
Quantitative Analyst Intern (R, Python, SQL)
- Collected and analyzed historical stock data; provided suggested portfolio weights based on Markowitz optimization problem and corporate clients' risk and return preferences
 - Implemented Black-Litterman model, incorporating market and investor views to refine portfolio weights; reduced their aggressiveness by 50%
 - Gathered 5 years' stock market data and stored it using MySQL; implemented moving average strategy and visualized trading history
- 07/23 - 09/23 **SHENZHEN CAPITAL GROUP CO., LTD.** Shanghai, China
Quantitative Analyst Intern (Python)
- Built various quantitative factors, optimized their performance with different parameters using high frequency stock data; achieved industrial-level correlation with return rate
 - Denoised sorted factors using different algorithms (e.g., PCA, k-means) and developed practical method to boost factor performance by 10%-20%
 - Led 6 interns and ensured efficient communication between them and mentor; distributed assignments based on individual strengths

PROJECT

- 05/23 - 06/23 **UNIVERSITY OF WASHINGTON** Seattle, WA
Risk Report of Representative ETFs in the United States (R)
- Led team of 4 to produce risk report on 5 ETFs; explained 4-years' price trends and distribution of returns for each ETF
 - Applied portfolio theory, risk analysis, and Monte Carlo forecasting process to ETFs to discover optimal portfolio weight with different risk levels

COMPUTATIONAL SKILLS / OTHERS

Programming Languages: Python, SQL, R, Excel, Java

Languages: English (fluent), Mandarin (native)

RAHUL KUMAR MANDAL

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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
	• Previous Coursework: Python, machine learning, algorithmic trading & quantitative strategies, equity vol models, IR models, portfolio optimization, risk modeling, market microstructure • Honors/Awards: Modeled global macroeconomic transition for Bridgewater Associates	
06/18 - 02/20	INDIAN INSTITUTE OF FOREIGN TRADE M.B.A. in Finance, Strategy, and Marketing	New Delhi, India
	• Coursework: statistics, derivatives, game theory, economics, trade economics, trade research • Honors/Awards: National qualifier in WorldQuant trading challenge Alphathon	
05/09 - 04/13	INDIAN INSTITUTE OF ENGINEERING SCIENCE & TECHNOLOGY B.E. in Metallurgy & Materials Engineering	Shibpur, India
	• Coursework: Linear algebra, differential and integral calculus, PDEs, optimization, kinetics • Honors/Awards: Ranked 36 in all-India National Mathematics Olympiad	

EXPERIENCE

01/25 - 05/2025	NYU COURANT - Department of Mathematics in Finance Teaching Assistant	New York, NY
	• Graded undergraduate coursework for Mathematics in Finance program	
05/24 - 11/2024	WORLDQUANT Brain User (Quantitative Research) (Fast Expression Language, Python, R)	Remote
	• Built equity strategies for US and China with sharpness of 4.38, fitness of 6.13, RoMaD 11.08	
04/19 - 10/19	Quantitative Research Consultant (Fast Expression Language, Python, R)	New Delhi, India
	• Built equity strategies for US and China with sharpness of 3.06, fitness of 1.34, RoMaD of 3.09	
04/23 - Present	ETARK SOCIAL Founder (Python, Firebase, MongoDB, Azure)	Kolkata, India
	• Launched world's 1st messaging app to provide full spam control in chats by implementing GTM strategy validated by Bass model that led to 9.8K users within 2 months at zero CAC	
11/21 - 04/23	EY Senior Consultant - Quantitative Research, Strategy, Product, M&A, GTM (Python, R, Tableau)	Kolkata, India
	• Built risk management model for global automobile manufacturer based on advanced statistical causal research which generated drop in payment defaults by 42% in 1 quarter	
04/20 - 11/21	ETARK Head of Product & Business (Python, R, MongoDB, AWS)	Kolkata, India
	• Built an earliest form of LLM on algorithmic law that analyzed consumer complaints in less than 1 min; optimized DAU/MAU more than 30%; GTM to achieve 10% growth at zero CAC	
01/15 - 06/18	STEEL AUTHORITY OF INDIA LIMITED Operations, Planning, Business Development Manager (Excel, Linux)	Durgapur, India
	• Increased production by 30% (\$215K) by optimizing logistics with waiting line models	

PROJECTS

06/22 - Present	CAUSAL AI ALGORITHM	
	• Found cause-effect relationships, validated over 2.5 years, reducing model errors by factor of 1K	
05/24 - 09/24	INDIAN INSTITUTE OF ENGINEERING SCIENCE & TECHNOLOGY <u>Dynamics of Financial Market Liquidity</u>	Shibpur, India
	• Studied liquidity takers and providers using Lotka Volterra Prey-Predation model and variants	

COMPUTATIONAL SKILLS / OTHER

Programming Languages: Python, R, Tableau, Linux, MySQL, Cpp
Languages: English (fluent), Hindi (fluent), Bengali (native)

GREGORY (GREG) SHARMA

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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:** model selection, Lasso, ridge, and elastic net regressions, PCA, SVD, risk models, stochastic processes, SDEs, PDEs
- 09/20 - 05/24 **NEW YORK UNIVERSITY** New York, NY
The Leonard N. Stern School of Business
B.S. in Business and Political Economy, Minor in French
 - **Coursework:** time series forecasting, equity factor models, political economics, international economics, corporate finance, debt instruments
 - **Award:** 2023 William Lowell Putnam Mathematical Competition (scored 20; top 20%)

EXPERIENCE

- 11/24 - 5/25 (PT) **BLACK CREEK DIGITAL** New York, NY
5/25 - 9/25 (FT) (Holding company with businesses in bitcoin mining, energy, and computing)
9/25 - Present (PT) **Quantitative Research Intern (Python, Clickhouse, AWS S3, Cron, CSP, NautilusTrader)**
 - Identified and ranked statistical arbitrage opportunities across equity sectors, spot crypto/FX, and energy derivatives by capacity and turnover
 - Engineered daily data pipeline, downsampling and split-adjusting raw NBBO ticks across 2K equities into ClickHouse with S3-backed storage
 - Developed linear Gaussian state-space model with robust variance estimation; implemented in NautilusTrader as live equity strategy, now in production on Interactive Brokers
 - Implemented fee- and slippage-aware execution algorithm under immediacy constraints
 - Accelerated Kalman filtering and backtests using Point72's CSP and low-level optimizations (Cython and Rust), facilitating discovery of new instruments to extend strategy
 - Built Grafana dashboards for backtests and live strategies (latency, fill quality, slippage, PnL attribution, risk/margin utilization), with alerting for connectivity and performance
 - Investigated and reconciled backtest-live discrepancies arising from sampling frequency, market microstructure, and slippage/impact; added diagnostics comparing broker quotes to NBBO
- 05/23 - 08/23 **TRANSMARKET GROUP LLC** Chicago, IL
(Privately held proprietary global markets trading firm)
Quantitative Trading Intern (Python, SQL, Excel)
 - Collaborated with relative value market-making strategy on off-the-run Treasury desk, focusing on long-end sector (20- and 30-year on-the-runs, ZB and UB CTDs)
 - Introduced novel duration spacing measure for improved yield curve risk management, smoothing spline fits through noisy coupon premia and anomalies between liquidity points
 - Wrote script to calculate yields' settle for residual cheapness and richness, creating daily reports

PROJECTS

- 04/24 - 05/24 **NYU STERN** New York, NY
Effect of Presidential Election on S&P 500 Volatility and Equity Returns (Python, MATLAB)
 - Reconstructed 2020 U.S. presidential election win probability using PCA on equity returns
 - Found electoral data significant as exogenous predictor of next-day S&P realized variance
- 05/21 - 05/23 **Dynamic Asset Pricing Research (Python)**
 - Collaborated with team to develop volatility model for exotic assets (crypto, commodities)

COMPUTATIONAL SKILLS / OTHER

Programming Languages: Python (Pandas, PyTorch, TensorFlow, scikit-learn, HuggingFace), SQL, R, C++, MATLAB

Languages: English (native), French (fluent)

Interests: Transaction-based volatility measures, natural language processing of financial news (text classification)

FENGRUI (SAM) TIAN

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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:** stochastic calculus, algorithmic trading, dynamic asset pricing, equity derivatives, risk & portfolio management, data-driven modeling, financial securities and markets
 - **Awards:** Squarepoint Foundation Math Finance Scholarship (ranked 1st in program)
- 09/19 - 06/23 **THE UNIVERSITY OF WESTERN ONTARIO** London, Canada
B.Sc. Honor Specialization in Financial Modeling
- **Coursework:** machine learning, derivative pricing, time series, regression, PDE, linear algebra
 - **Awards:** Governor General's Silver Medal (ranked 1 of 7,000 students); Western Gold Medal

EXPERIENCE

- 06/25 - 08/25 **KPMG** New York, NY
Quantitative Intern – Complex Securities (Python, Bloomberg)
- Used appropriate models and applied adjustments to price derivatives, fixed income, and contingent considerations with Bloomberg, Capital IQ, and ordinal logistic regression
 - Assessed credit exposures and constructed CDS curve for interest rate derivatives with CVA
 - Constructed liquidity-adjusted Term SOFR curves for hedging instruments from totem consensus
 - Developed Python-based VaR model using historical simulation and exponential weighted moving average (EWMA); performed backtesting under Basel III framework
 - Implemented exposure at default (EAD) calculation in Python following Standardized Approach for Counterparty Credit Risk (SA-CCR) guidelines for regulatory capital requirements
- 07/23 - 08/24 **SUN LIFE FINANCIAL** Toronto, Canada
Actuarial Associate – Quantitative Risk, Capital Optimization (Python, VBA, SQL)
- Developed and automated robust risk metrics and capital planning models to project capital generation, ensuring strong alignment between capital consumption and business drivers
 - Conducted quantitative risk analysis in Python for diversification benefits and capital allocation
 - Implemented time series model to identify trend and seasonality in group benefits policies
 - Engineered automated data ETL pipeline integrating multi-source datasets of fixed income and equity, saving 15 hours of manual operation each quarter
- 05/22 - 08/22 **Actuarial Analyst Co-Op – Pension Management (Python, Excel)** Toronto, Canada
- Identified inconsistency in estimated payments to retirees aged over 70; quantified overestimated reserves with analysis; worked with data science team and released \$10M excess capital
 - Designed machine learning algorithm for defined benefit pension pricing; cross-validated with historical data, achieving high prediction accuracy (MAE of less than 0.1 cents)

PROJECTS

- 05/22 - 03/25 **The University of Western Ontario, Banking Analytics Lab (Python)** London, Canada
Publication: [Multi-Modal Deep Learning Model for Credit Rating Prediction](#)
- Benchmarked 4 information fusion strategies based on commonly used deep learning models in 3 multi-modality datasets (containing financial data and earning-call speech texts)
 - Implemented cross-modality data fusion algorithms with cross-attention layer using TensorFlow
 - Developed 16 networks in CNN, LSTM, transformer-based models and NLP models (BERT) with designed fusion strategies to predict credit ratings, achieving 0.93 AUC and 0.67 F-1 score
- 09/22 - 10/22 **University of Toronto, Rotman MMA Datathon** (ranked 2nd place globally) Toronto, Canada
- Employed clustering in sklearn and regression to identify profit drivers in over 2M data entries
- 01/22 - 03/22 **Munich Re North America Case Competition** (ranked 2nd place in North America) Toronto, Canada
- Constructed regression on disability incidence to predict claim frequency with scenario analysis

COMPUTATIONAL SKILLS / OTHER

Programming Languages: Python (NumPy, Pandas, SciPy, sklearn, Keras), SQL, VBA, R, C++, QlikView

Certification: Associate of the Society of Actuaries ([ASA](#)), Citi Markets Quantitative Analysis, Deep Learning

SITENG 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
- **Coursework:** Black-Scholes, Monte Carlo simulation, stochastic processes, machine learning, portfolio management, algorithmic trading, interest rate modeling, econometrics
- 08/20 - 05/24 **NEW YORK UNIVERSITY SHANGHAI** Shanghai, China
B.S. in Finance, B.S. in Data Science
- **Coursework:** derivatives pricing, equity valuation, fixed income securities, probability theory
 - **Honors/Awards:** Magna Cum Laude, Business & Economics Honors Program, Dean's List

EXPERIENCE

- 06/25 - 08/25 **PING AN ASSET MANAGEMENT** Shanghai, China
(Asset management fund with \$800B AUM)
Quantitative Research Intern (Python)
- Built end-to-end forecast model framework in PyTorch, integrating ResNet, GRU, and attention; unified daily/weekly/monthly pipelines for automated alpha research
 - Developed tree-based dynamic factor-weighting model on predicted signals that improved annualized return by 4.72% and Sharpe ratio by 0.17 relative to equal-weight baseline
 - Designed CSI 1000 index-enhancement strategy via CVXPY-based constrained optimization
- 05/24 - 08/24 **IFUND ASSET MANAGEMENT** Shanghai, China
(Hedge fund with \$1.2B AUM)
Quantitative Research Intern (Python)
- Conducted deep review of 400 sell-side reports, refining and extending methodologies into 50 implementable fundamental alpha signals validated in cost-aware backtests
 - Reconstructed growth/valuation signals via quantile YoY normalization, acceleration features, stability metrics, and OLS residuals to improve monotonicity and cross-sectional prediction
- 12/23 - 03/24 **SHENWAN HONGYUAN SECURITIES** Shanghai, China
(Top 10 Chinese securities firm)
Quantitative Research Intern (Python)
- Developed backtesting model for A-share market, integrating price limit constraints, special treatment stock handling, and next-day retry balancing strategies for robustness and accuracy
 - Replicated and extended alpha signals across capital flows, price-volume structure, and intraday microstructure from sell-side research reports

PROJECTS

- 03/25 - 05/25 **NYU COURANT** New York, NY
Portfolio Selection with Higher Moments (Python)
- Built higher-moment portfolio optimizer that fits multivariate skew-normal, derived predictive mean/covariance/coskewness, and maximized third-order expected utility
 - Backtested 2020–2024 on US tech and multi-asset ETFs; achieved higher expected utility than mean-variance with positive-skew tilts
- 09/23 - 05/24 **VOLATILITY INSTITUTE AT NEW YORK UNIVERSITY SHANGHAI** Shanghai, China
Predictive Power and Trading Strategies of Northbound Capital (Python)
- Analyzed northbound (Hong Kong to Shanghai) funds' A-share stock selections using phase-wise OLS, suggesting long-term preference for large-cap, high ROE firms
 - Identified post-2023 regime shift with weaker price impact and reduced stock-selection efficacy

COMPUTATIONAL SKILLS / OTHER

Programming Languages: Python (PyTorch, CVXPY, scikit-learn, NumPy), SQL, R, Git, Bloomberg, Wind
Certifications: Bloomberg Market Concepts, WorldQuant Challenge Gold Level

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
 - *Coursework:* interest rate and foreign exchange, XVA, statistical arbitrage, alternative data
- 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, time series analysis, bootstrap

EXPERIENCE

- 07/24 - 08/24 **CITIC SECURITIES CO., LTD.** Beijing, China
FICC Quant Strats Intern (Python)
 - Analyzed iron ore market on Singapore Exchange and enhanced algorithm for market making; monthly volume was around 50K lots
 - Developed statistical arbitrage strategy on hot-roll-rebar spread, and optimized looking-back period to tradeoff volume and performance metrics (return, volatility, and drawdown)
- 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

- 01/25 - 05/25 **NYU COURANT** New York, NY
Energy Futures Trading Strategies and Related Stock Arbitrage Strategies (Python)
 - Researched carry and momentum strategies for WTI and RBOB futures; tuned key parameters to optimize long-term returns, Sharpe ratio, and drawdown
 - Explored relationship between prices of oil and ETFs of major oil companies, analyzed volatility impacts on stock prices, and identified arbitrage trading strategy with Sharpe ratio above 0.7
- 03/23 - 12/23 **CARNEGIE MELLON UNIVERSITY** Pittsburgh, PA
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

COMPUTATIONAL SKILLS / OTHER

Programming Languages: R (Proficient), Python (Intermediate), SQL (Intermediate)

Languages: English (fluent), Mandarin (native)

ZHANTAO (CHRIS) XU

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EDUCATION

NEW YORK UNIVERSITY

The Courant Institute of Mathematical Sciences

New York, NY

Expected 12/25

M.S. in Mathematics in Finance

- **Coursework:** object-oriented programming (Java), penalized regression, decision trees, risk management of securitized products, linear regression, Fama-French, Black-Scholes, stochastic processes, Hull-White model

UNIVERSITY OF CALIFORNIA SAN DIEGO

San Diego, CA

B.S. in Mathematics and Computer Science (Minor in Business and Economics)

09/20 - 03/24

- **Coursework:** vector calculus, linear algebra, probability, stochastic calculus, data structures, system programming, data science, microeconomics, macroeconomics, accounting, project management

EXPERIENCE

New York Life Investment

New York, NY

Data Analytics Intern (SQL, Python)

06/25 - 09/25

- Engineered and validated ETL pipelines on AWS platform, transforming raw FactSet datasets into production-ready fund reporting tables; automated ingestion and quality checks on more than 100K daily records
- Applied time-series analysis on fund return datasets to evaluate factor exposures and identify performance drivers
- Ran stress-tests on mutual funds' risk stats (beta, alpha), boosting shock-resilience analysis efficiency by 20%

HAITONG SECURITIES

Shenzhen, China

Research Analyst Intern (SQL, Python, Excel)

07/22 - 10/22

- Built regression and predictive models to project cost-reduction dynamics in solar energy sector
- Performed segmentation and predictive modeling of client data (e.g., risk profiles, total capital) in SQL; partnered with sales team to interpret results; boosted client engagement by 20% across 4 roadshows
- Developed web scraping tool using Python, which automated extraction and consolidation of financial statements onto Excel spreadsheets; improved efficiency in identifying viable investment opportunities by 10%

CITIC FUTURES CO., LTD.

Kunming, China

Quantitative Futures Analyst Intern (Excel)

03/21 - 06/21

- Analyzed futures market trends using time-series and predictive models and used insights to collaborate with sales team, identifying optimal timing for new client outreach; resulted in about 8% increase in client conversion rate
- Conducted competitive analysis of trading profit, fees, volumes; acquired and retained more clients by closing gaps
- Increased quarter profit 10% by modeling client risk and trading behavior to recommend tailored futures contracts

PROJECTS

UNIVERSITY OF CALIFORNIA SAN DIEGO

San Diego, CA

NYC Parking Ticket Database Using Internal Computer Memory (C)

01/23 - 03/23

- Implemented complex system to manage NYC parking ticket database using pointers and self-referential structure
- Managed memory with dynamic allocation and deallocation; debugged with Valgrind for memory leaks
- Designed system with hash tables and 2-dimensional linked lists for efficiency, which enabled users to locate any specific vehicle's ticket information directly while saving 50% of memory

NYU COURANT

New York, NY

Magnificent 7 Concentration Analysis (Python, Statistical Modeling)

01/25 - 03/25

- Used OLS regression to show that 7 mega-cap stocks contributed 51% of S&P 500's total beta, highlighting significant concentration risk and challenging traditional beta models
- Identified correlation (Pearson 0.72) between MAG 7 and broader market volatility (VIX), driving systematic increases in SPX implied volatility skews and elevating option premiums by approximately 2%
- Designed beta-neutral strategies (long small-cap, short adjusted large-cap index) to mitigate risks of MAG 7 concentration, resulting in 60% lower volatility and 44% higher Sharpe ratio relative to traditional approaches

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 • <i>Coursework:</i> stochastic calculus, risk & portfolio management, financial computing applications, machine learning algorithms, dynamic asset pricing, algorithmic trading • <i>Honors/Awards:</i> CFA Program Level I	New York, NY
01/21 - 05/24	NEW YORK UNIVERSITY College of Arts and Sciences B.A. in Mathematics and B.A. in Economics, Minor in Computer Science • <i>Coursework:</i> econometrics, numerical analysis, data structures, financial mathematics • <i>Honors/Awards:</i> World Quantitative Challenge, Gold Award; Dean's List	New York, NY

EXPERIENCE

06/25 - Present	<u>CME GROUP INC.</u> Quantitative Risk Management Intern (Python, SQL) • Validate SABR-based margin model vs. legacy Black-Scholes by comparing over 1M options and setting review thresholds, improving margin coverage all clearing members • Assess post-convention behavior of 10 illiquid products through volatility smile diagnostics and error metrics (implied vol, MSE), supporting model acceptance evaluation • Back-test margin prices to facilitate final model endorsement; correct critical first-trade dates error in Oracle database to preserve analytics integrity	New York, NY
03/24 - Present	<u>UNILOG CAPITAL LLC.</u> Co-Founder, Quantitative Researcher (Python, Yfinance, Scikit-learn, BeautifulSoup) • Construct quantitative trading strategies with multidisciplinary team by using statistical and machine learning techniques, generating 15% return on \$50K multi-asset portfolio • Generate quantitative research insights and recommendations, while maintaining client relationships and ensuring regulatory requirements; successfully manage client relationships	New York, NY
06/24 - 08/24	<u>CHINA INTERNATIONAL ECONOMIC CONSULTANTS CO., LTD.</u> Innovation and Financial Consulting Intern (Python, Matplotlib) • 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	Beijing, China
06/23 - 08/23	<u>ICARUS FUND</u> Quantitative Analyst Intern (Python, Pandas, NumPy) • 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 • Back-tested momentum strategies with Bollinger Bands; cross-validated moving averages • Conducted due diligence on space-tourism company and catalyzed \$10M investment	New York, NY

PROJECT

07/22 - 08/22	NEW YORK UNIVERSITY Textual Analysis in Asset Pricing Research and Quantitative Investing • Implemented LDA model to analyze risk factors from annual reports on SEC Edgar	New York, NY
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COMPUTATIONAL SKILLS / OTHER

Programming Languages: Python, Java, C, R, MATLAB, LATEX

Languages: English (Native), Mandarin (Native), French (Basic)

Interests/Affiliations: NYU Chinese Basketball Team Manager, Media Producer (20K followers), NBA Guest Announcer, Sense7 Larp Advisor, International Chinese Kong Fu Festival Gold Award, Piano (Top Amateur Level)

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TO GET WORK.**

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