



**NYU**

COURANT INSTITUTE OF  
MATHEMATICAL SCIENCES

# RESUME BOOK

# CLASS OF 2023

**MATHEMATICS IN FINANCE**

Master of Science Program

# DEAR COLLEAGUE,

We are pleased to provide you with the resumes of the first semester students in the Courant Institute's Mathematics in Finance Master's Program. They just started the program this semester and will graduate from our Master's program in December 2023. We hope you will consider them for possible summer internship positions at your firm.

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

Our 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, for example, 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 machine learning and data science as they are used in the financial industry today. Our advanced electives cover cutting-edge topics in pricing, algorithmic trading, portfolio management and financial machine learning. Our instructors are high-level industry professionals and faculty from the Courant Institute, the top ranked department worldwide in applied mathematics. You can find more information about the curriculum and faculty at the end of this document, or at [math.nyu.edu/financial\\_mathematics](https://math.nyu.edu/financial_mathematics).

Sincerely yours,

Petter Kolm  
**DIRECTOR**

Deane Yang  
**CHAIR**

Leif Anderson  
**INDUSTRY ADVISOR**

# THE CURRICULUM HAS FOUR MAIN COMPONENTS

For more information about the program curriculum and course descriptions, visit [math.nyu.edu/financial\\_mathematics/academics/courses](https://math.nyu.edu/financial_mathematics/academics/courses)

## 01. FINANCIAL THEORY, STATISTICS, AND FINANCIAL DATA SCIENCE

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

## 02. PRACTICAL FINANCIAL APPLICATIONS

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

## 03. MATHEMATICAL TOOLS

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

## 04. COMPUTATIONAL SKILLS

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

## PRACTICAL TRAINING

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

# HUYI CHEN

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## EDUCATION

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- Expected 12/23 **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, VaR, covariance matrix estimation, Monte Carlo simulation, data-driven models
- 09/16 - 06/20 **WUHAN UNIVERSITY** Wuhan, China  
**B.S. in Mathematical Finance and B.S in Mathematics**
- **Coursework:** linear algebra, probability theory, statistics, real analysis, optimization, stochastic process, random forest, neural networks, differential equations, numerical analysis, derivatives pricing, volatility smile, regression, C++ programming, data structures
  - **Honors/Awards:** national scholarship (top 5%), first prize of the 10th national college student mathematics competition
  - **Thesis:** The expected utility maximization problem with general asset dynamics

## EXPERIENCE

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- 10/19 - 01/20 **ZMATE QUANTITATIVE TECHNOLOGY LTD** Shenzhen, China  
**Quantitative Research Intern**
- Developed 6 trading strategies for cryptocurrency and stocks with Python
  - Used empirical stock data to update strategy implementation, database communication, and log system for backtesting; wrote research reports
  - Improved performance of stock selection program based on CAPM by introducing mixed integer programming, increasing Sharpe ratio by 6% and reducing max drawdown by 5%
  - Prepared technical aspects of presentation to security company clients to better demonstrate technical implementation
  - Communicated final results to security company clients; succeeded in selling them stock selection program

## PROJECTS

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- 07/21 - 08/21 **UBS SECURITIES CO. LIMITED** Remote  
**Pair Trading Strategies Based on Cointegration Arbitrage (Python)**
- Conducted data cleaning for government bond futures using Python; applied co-integration tests
  - Wrote fully functional backtesting program with Python to implement statistical arbitrage strategies of Treasury bond futures based on residual deviation signal
  - Used moving average and Kalman filter to better fit time-varying strategy parameters, which significantly improved strategy performance in most cases
  - Optimized program by restricting data structure to pure numpy array and using vectorization heavily; improved average running speed of backtesting program 22-fold
- 09/21 - 02/22 **CALIFORNIA INSTITUTE OF TECHNOLOGY** Remote  
**Performance Comparison of BS and Heston Models in Options Pricing (Python, C++)**
- Collected Apple Inc. stock and options data with Python; calibrated market parameters and priced options with Black-Scholes and Heston models
  - Fitted parameters by minimizing the prediction errors of option prices with hybrid schemes
  - Compared performance of Black-Scholes and Heston models by calculating prediction error on test set and conducting Delta hedging for specific portfolios

## COMPUTATIONAL SKILLS / OTHER

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**Programming Languages:** Python, C++, MATLAB, Java

**Languages:** English (fluent), Mandarin (native)

# RUIZE CHEN

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## EDUCATION

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- Expected 12/23 **NEW YORK UNIVERSITY** New York, NY  
**The Courant Institute of Mathematical Sciences**  
**M.S. in Mathematics in Finance**
- **Expected Coursework:** object-oriented programming (Java), stochastic calculus, Brownian motion, Fama-French, Black-Scholes, risk and portfolio management, data-driven modeling
- 08/18 - 05/22 **UNIVERSITY OF ROCHESTER** Rochester, NY  
**B.A. in Mathematics and Statistics & B.S in Finance**
- **Coursework:** linear algebra, ordinary differential equations, real analysis, stochastic processes, probability theory, linear regression, mean-variance optimization, corporate finance
  - **Honors/Awards:** Dean's List (3 years), Cum Laude, Beta Gamma Sigma Honor Society

## EXPERIENCE

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- 06/21 - 08/21 **NORTHEAST SECURITIES** Shenzhen, China  
(Top 25 Chinese securities firm)
- Quantitative Research Intern**
- Identified factors, from firm's database, that better predicted stock returns, by calculating information coefficients (i.e., correlation between factor value and stock yield)
  - Constructed new stock selection factors using principal component and cluster analyses
  - Applied Python to carry out web crawler for acquiring Chinese real estate data (e.g., construction area, floor area ratio) to support research on future housing trends; stored data using MongoDB
  - Preprocessed acquired data with log transformation and performed exploratory data analysis and graphed time series plots to examine housing construction patterns over past 10 years
- 01/21 - 02/21 **INDUSTRIAL SECURITIES** Guangzhou, China  
(Top 7 Chinese securities firm)
- Quantitative Research Intern**
- Employed quantitative stock selection methodology to healthcare stocks
  - Reproduced factor construction process with random forest model to extract most influential ones; built linear model based on selected factors
  - Achieved annualized returns of 28% and Sharpe ratio of 1.5 from derived factor model

## PROJECTS

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- 04/22 - 05/22 **UNIVERSITY OF ROCHESTER** Rochester, NY  
**Study on Factors Affecting Likelihood of Having Heart Disease (Python)**
- Built logistic regression, random forest, and artificial neural network via NumPy, pandas, and scikit-learn packages to explore possible impact of factors such as blood pressure
  - Evaluated performance of each model and achieved recall of 97%
- 04/21 - 05/21 **Optimal Risk and Return Portfolio Construction (Excel)**
- Collected 60 years' monthly returns of 3 types of Fama-French risky assets; measured their variances, covariances, and correlations to derive mean-variance efficient portfolios
  - Created CAPM linear regression model in Excel; evaluated excess return rate and influential degree brought by the 3 Fama-French assets
- 03/21 - 04/21 **Analysis of Rochester Housing Market (R)**
- Performed linear regression, stepwise regression, ANOVA test, and Tukey's HSD test to examine how factors (e.g., architectural style, location) could affect Rochester home sales prices; utilized ggplot2 package to create statistical plots
  - Derived best fit linear model with metrics including AIC and R-squared; constructed confidence and prediction intervals

## COMPUTATIONAL SKILLS / OTHER

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**Programming Languages:** Java, Python, R, VBA, Excel, Tableau, MongoDB

**Languages:** English (fluent), Mandarin (native), Cantonese (native), German (intermediate)

# YONGYAO CHEN, FRM

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## EDUCATION

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- Expected 12/23 **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
- 08/16 - 06/20 **NANYANG TECHNOLOGICAL UNIVERSITY** Singapore  
**B.ENG. in Electrical and Electronic Engineering**
- **Coursework:** linear algebra, probability & statistics, numerical methods, differential equations, data structure & algorithms, intelligent system design, business finance, accounting fundamentals
  - **Graduated with Honors (Highest Distinction)**
- 02/18 - 07/18 **ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE (EPFL)** Lausanne, Switzerland  
**Semester Exchange**
- **Award:** Exchange Student Scholarship

## EXPERIENCE

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- 09/20 - 07/22 **JPMORGAN CHASE & CO.** Singapore  
**Analyst, Software Engineer** (Asset and Wealth Management)
- Created data-centric investment technology that facilitates portfolio management and trading decisions for private bank's internal investors and financial advisors
  - Contributed to development of new global strategic data framework that consolidates and processes data from all accounting systems, using big data, cloud, and automation technologies
  - Expanded portfolio analytics space with new features (e.g., trending trades analysis, large cash position indicator, overdraft alert, client service communication, morning briefs, trade idea feeds)
  - Designed and implemented novel automated monitoring system surveying data pipelines; it now serves as primary platform for service-line agreement management internationally
- 06/19 - 08/19 **Summer Analyst, Software Engineer** (Corporate and Investment Banking)
- Collaborated with London commodities team to develop new Python-based software for base metal post-trade customer information maintenance in firm's cross-asset platform, Athena
  - Accelerated legacy system decommissions, saving time and effort as well as reducing expenses
- 01/19 - 05/19 **ERNST & YOUNG SOLUTIONS LLP** Singapore  
**IT Advisory Intern**
- Facilitated business design, implementation, and data migration of Sales & Distribution module in largest global SAP S/4HANA ERP project at EY Singapore in 2019 for client, DyStar Group
  - Conducted international localization workshops for franchises in 8 countries; communicated business demands with key stakeholders and produced requirement traceability matrices

## PROJECT

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- 08/19 - 04/20 **NANYANG TECHNOLOGICAL UNIVERSITY** Singapore  
**Onboard 3D SLAM for AGV Localization** - With Delta Electronics, Inc. (C++, Linux)
- Designed Simultaneous Localization and Mapping (SLAM) system for automated guided vehicles (AGVs), addressing dangers of human-robot collisions and human interference during robot positioning process in dynamic environments such as modern warehouses
  - Proposed human classifier in complex 3D point clouds utilizing anthropometric geometry and support vector machine model; implemented system with ROS in C++ in Linux environment

## COMPUTATIONAL SKILLS / OTHER

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**Programming Languages:** Java, Python, SCALA, C++, SQL, Unix Shell

**Languages:** English (fluent); Mandarin (native); Japanese and French (elementary)

**Affiliations/Certifications:** Certified Financial Risk Manager (FRM); Passed CFA Exam Level II (November 2021)

**Activities:** NTU Chinese Orchestra, Two-String Fiddle Performer (Singapore, Taipei); Singapore Marathon (2017, 2019)

# ZELIN DING

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## EDUCATION

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- Expected 12/23 **NEW YORK UNIVERSITY** New York, NY  
**The Courant Institute of Mathematical Sciences**  
**M.S. in Mathematics in Finance**
- **Expected Coursework:** object-oriented programming (Java), Black-Scholes, decision trees, linear regression, stochastic processes, Monte Carlo method, data-driven modeling
- 08/18 - 05/22 **PENN STATE UNIVERSITY** University Park, PA  
**Dual B.S. in Computational Statistic and Applied Mathematics**
- **Coursework:** calculus III, linear algebra, probabilities, ordinary differential equations, partial differential equations, real analysis, time series analysis, Bayesian statistics, programming in R, Python, Java and C++, data structure and algorithms, dynamic programming
  - **Honors/Awards:** Dean's List for 7 semesters

## EXPERIENCE

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- 06/21 - 07/21 **CHINA SECURITIES** Beijing, China  
**Investment Banking Intern**
- Conducted enterprise risk assessments for clients of Nanjing Metro from qualitative and quantitative perspectives
  - Performed due diligence to obtain comprehensive understanding of Nanjing Metro's capital structure and credit risk
  - Calculated credit rating scores with China Securities' model, using financial statistics such as quick and working capital ratios for client companies
  - Developed KMV rating model, calibrated by historical default data of Chinese corporate bonds over prior 5-year period; estimated probability of defaults and mapped to ratings buckets
- 03/21 - 06/21 **HUAXI SECURITIES** Shanghai, China  
**Industry Research Intern**
- Monitored Chinese electronics industry business and financial news; produced daily reports by quantifying effect of industry events on financial markets
  - Wrote reports after completing in-depth analysis of semiconductor and electronics industry, including deep dive into its current state and future trends
  - Led company and industry analysis for Chinese GPU sector; compared profitability and market shares of leading companies; generated graphs to visualize research conclusions

## PROJECT

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- 09/21 - 11/21 **MORGAN STANLEY** New York, NY (remote)  
**Quantitative Research (Python)**
- Analyzed SPY and risk-on/risk-off US sector ETFs' correlations and dynamic co-movements using Pearson and Spearman correlations and ML algorithms (linear regression, cluster analysis)
  - Evaluated risk attributes of selected ETFs by studying their historical volatility
  - Designed quantitative trading strategy that used risk attributes of each selected ETF by allocating to different sectors under various market scenarios and volatile regimes
  - Backtested strategy over 20 years of data; achieved 7.2% annualized return and 0.4 Sharpe ratio, benchmarked against SPY

## COMPUTATIONAL SKILLS / OTHER

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**Programming Languages:** Python (Numpy, Pandas, Statsmodels, Sklearn, Tensorflow), R, Java, C++

**Languages:** English (fluent), Mandarin (native)

**Interests:** Honor of Kings multiplayer online battle arena game (ranked top 10 of 100M contestants in Season 11)

# IONKENG HO

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## EDUCATION

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- Expected 12/23 **NEW YORK UNIVERSITY** New York, NY  
**The Courant Institute of Mathematical Sciences**  
**M.S. in Mathematics in Finance**
- **Expected Coursework:** Currency Derivatives, Interest Rate Models, Convex Optimization, Markowitz theory, Time Series, Credit Modeling, Almgren-Chriss, Black–Litterman–Bayes
- 09/18 - 06/22 **UNIVERSITY OF CALIFORNIA SANTA BARBARA** Santa Barbara, CA  
**B.S. in Physics and B.S. in Financial Math & Statistics**
- **Coursework:** multivariable calculus, probability and statistics, linear algebra, ODE&PDEs, complex analysis, numerical methods, regression, stochastic process, machine learning
  - **Honors/Awards:** Honors (Top 8% GPA in College of Letters and Science)

## EXPERIENCE

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- 01/22 - 03/22 **UNIVERSITY OF CALIFORNIA SANTA BARBARA** Santa Barbara, CA  
**Learning Assistant, Special Relativity Class**
- Held weekly office hours to answer students' questions about course material and homework; graded 30 assignments and exams
  - Discussed students' performance with professor; participated in selecting homework problems
- 08/21 - 09/21 **SHENZHEN TENGYIN INFORMATION CONSULTING** Shenzhen, China  
**News Department Assistant**
- Researched financial news daily; drafted 20 morning briefings to customers by summarizing news and predicting how it may affect global markets
  - Organized and analyzed provincial government debt data; wrote comprehensive report on local governments' financial conditions for inclusion in company publication

## PROJECTS

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- 09/22 - 12/22 **NEW YORK UNIVERSITY** New York, NY  
**Pricing an Exotic Option using Hull-White Model (Python)**
- Retrieved past data of variables that define the option (e.g. Nikkei-225 index, USD LIBOR rate, US 10Y Treasury) using FRED API
  - Derived dynamics of Nikkei index, forward rate, and risk free rate and calculated parameters of the model using past data and calibration of the Hull-White Model
  - Built an automated program that visualizes predictions of future data (e.g. the Nikkei index) and outputs the option price given inputs (e.g. relative strike prices, maturity date, settlement date)
- 04/22 - 06/22 **UNIVERSITY OF CALIFORNIA SANTA BARBARA** Santa Barbara, CA  
**Solving Acoustic Wave Equations Using Crank-Nicolson Method (Python)**
- Proved stability of Crank-Nicolson Method; used it to write simulation of wave equation into linear system of equations in lexicographical order
  - Applied ADI algorithm to solve the linear system; obtained approximate solution, which achieved less than 1% deviation from exact solution
- 09/21 - 12/21 **Applying Machine Learning in Finding Relationships Between Poverty and Education Level (R)**
- Pruned data from United States county-level census and education using PCA to 12 PCs while capturing 90% of variance
  - Applied decision tree and logistic regression to pruned data; observed that poverty level of counties was strongly related to number of people who had less than a high school diploma
  - Used cross-validation to optimize parameters used in above models; reduced test mean square error by 20%

## COMPUTATIONAL SKILLS / OTHER

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**Programming Languages:** Java, Python, R

**Languages:** English (fluent), Cantonese (native), Mandarin (native)

**Activities:** 2018 International Physics Olympiad Macau Team; won 4th place in UCSB poker tournament



# SAMAR HOLKAR

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## EDUCATION

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- Expected 12/23 **NEW YORK UNIVERSITY** New York, NY  
**The Courant Institute of Mathematical Sciences**  
**M.S. in Mathematics in Finance**
- **Expected Coursework:** object oriented programming in finance, portfolio optimization, derivatives pricing, econometrics, machine learning
- 08/13 - 05/17 **INDIAN INSTITUTE OF TECHNOLOGY ROORKEE** Roorkee, India  
**B.Tech. in Computer Science and Engineering (awarded 09/17)**
- **Coursework:** probability (basics), linear algebra, machine learning, multi-variable calculus and differential equations
  - **Honors/Awards:** MCM (Merit-Cum-Means) Scholarship for Exemplary Performance (99.9 percentile) in All India IIT Joint Entrance Examination

## EXPERIENCE

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- 04/19 - 06/22 **GOLDMAN SACHS** Bangalore, India  
**Associate - Quantitative Strategist**
- Modeled initial margin for U.S. equity derivatives flow desk's portfolio, resulting in 14% reduction in overall margin postings
  - Calibrated 5-day 99.7% GAP risk calculation for option hedges to offer clients optimal margins on their portfolios
  - Calculated credit risk benchmarks for U.S. equity derivatives clients trading single stock portfolios using different strategies
  - Structured corporate trade models to optimize collateral and margin constraints for clients
  - Optimized CVA capital risk for clients, resulting in reduction in attributed equity (capital constraint) by about 4%
- 06/17 - 04/19 **PAYTM** New Delhi, India  
(E-commerce and utility startup)  
**Software Engineer**
- Built language translation engine that accommodated 11 languages, enhancing user experience through interactive design flow
  - Created rule-based engine that standardized product names, streamlining operational design, as well as cutting expenses and time-intensive manual operations

## PROJECTS

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- 08/16 - 02/17 **INDIAN INSTITUTE OF TECHNOLOGY ROORKEE** Roorkee, India  
**Text-Image Synthesis with Uni-Skip Vectors (Python, Deep Learning)**
- Used natural language understanding; designed model that learned image generation from text data with 1M-word vocabulary, producing high-level generic sentence representations
  - Improved model by employing distributed text encoder conditioned with generative adversarial modeling to produce visual representations
- 04/16 - 05/16 **INDIAN INSTITUTE OF TECHNOLOGY ROORKEE** Roorkee, India  
**Object Identification from Visual Data (Python)**
- Followed hypothesis to optimize hyperparameters such as receptive fields and feature maps to improve invariance and filtering in convolutional neural net architecture

## COMPUTATIONAL SKILLS / OTHER

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**Programming Languages:** C/C++, Python, Javascript, Slang

**Languages:** English (fluent), Hindi (native)

**Certifications (Coursera):** [Financial Markets](#), [Introduction of Financial Engineering and Risk Management](#), [Statistics with Python](#), [Numerical Methods](#)

**Interests:** Programming (ranked top-4th percentile in ACM ICPC), Public Speaking (President of GS Toastmasters)

# JIAMING HU

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## EDUCATION

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- Expected 12/23 **NEW YORK UNIVERSITY** New York, NY  
**The Courant Institute of Mathematical Sciences**  
**M.S. in Mathematics in Finance**
- **Expected Coursework:** objective-oriented programming (Java), data-driven modeling in Python, stochastic calculus, time series analysis, derivatives pricing, Fama-French, Monte Carlo simulation, portfolio optimization
- 09/18 - 05/22 **NORTHEASTERN UNIVERSITY** Boston, MA  
**B.S. in Data Science & Mathematics**
- **Coursework:** multivariate calculus, linear algebra, ordinary differential equations, law of large numbers, Markov chain, numerical analysis, supervised/unsupervised machine learning, database design (SQL and No-SQL), options pricing (binomial and Black-Scholes)
  - **Honors/Awards:** Cum Laude

## EXPERIENCE

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- 08/21 - 12/21 **MOYI TECH** New York, NY  
(Fintech company that automates market research and data analysis)
- Quantitative Research Intern (Python)**
- Conducted industry research on technology and financial sectors in US market
  - Researched quantitative aspects of financial crises to predict future ones by analyzing transactions and other historical financial metrics (e.g., GDP growth rate, real interest rate)
  - Used existing full-fledged quantitative trading packages such as VNPY to perform backtesting, and simulated live trading on proposed strategies using Python; analyzed and reported results

## PROJECTS

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- 01/21 - 04/21 **NORTHEASTERN UNIVERSITY** Boston, MA  
**Loan Default Predictor (Machine Learning, Python)**
- Collected historical loan application data and performed PCA to reduce dimensionality
  - Developed probability-based Bayesian classification model to determine whether to issue loans
  - Applied linear and non-linear regression models to predict loan amount to be issued
  - Performed cross-validation, and evaluated different models' performance by interpreting  $R_2$ , RMSE, and profits under pre-set conditions (e.g., APR, default duration)
  - Translated statistical results into business insights and created visualized dashboard in Tableau
- 07/20 - 10/20 **Options Pricing and CBOE Options Market Efficiency (Python)**
- Detected \$1M in arbitrage opportunities due to options mispricing; tested boundary condition violations, call-put-parity, and Black-Scholes model using Python
  - Analyzed arbitrage by applying Black-Scholes model with delta-neutral strategy in different time periods and assessed its feasibility

## COMPUTATIONAL SKILLS / OTHER

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**Programming Languages:** Python (Numpy, Pandas, Scikit-learn, Matplotlib), Java, SQL, R

**Languages:** English (fluent), Mandarin (native)

**Publication:** [Option Mispricing & Arbitrage Opportunity](#), ICSET 2021 Taiwan

**Activities:** Discrete Structure Teaching Assistant at Northeastern University

# YUE (RAY) HU

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## EDUCATION

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- Expected 12/23 **NEW YORK UNIVERSITY** New York, NY  
**The Courant Institute of Mathematical Sciences**  
**M.S. in Mathematics in Finance**
- **Expected Coursework:** object-oriented programming (Java), unsupervised learning, time series analysis, Monte Carlo, derivatives pricing, Fourier analysis, Black-Scholes, stochastic calculus
- 09/17 - 04/22 **UNIVERSITY OF WATERLOO** Waterloo, Canada  
**B.Math. in Mathematical Finance**
- **Coursework:** linear algebra, partial differential equations, Itô's lemma, real analysis, Bayesian statistics, CAPM, WACC, options, data structure (Python), stochastic processes, linear regression
  - **Honors:** Dean's Honors (top 5% of GPA in department), President's Scholarship

## EXPERIENCE

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- 03/22 - 04/22 **CITIC SECURITIES** Shenzhen, China (remote)  
**Equity Research Analyst Intern**
- Analyzed target companies' financial statements and industries' business cycles and future trends
  - Made predictions in new-generation education industry (e.g., AI and new vocational learning)
- 09/21 - 12/21 **AVIVA CANADA** Toronto, Canada  
(2nd largest property and casualty insurance company in Canada)  
**Actuarial Intern, Group and High Net Worth**
- Provided actuarial pricing for high-net-worth clients with properties valued at more than \$50M
  - Developed credit analysis for insurance brokers to determine whether to apply more risk factors
  - Improved efficiency of pricing tools built in Excel by 30% through automation and optimization
  - Consolidated group case database, with over 10K observations and 500K features, in Python
  - Drafted tier analysis for top corporate entities; prepared and presented rate adjustment strategies
- 09/20 - 12/20 **GORE MUTUAL INSURANCE COMPANY** Cambridge, Canada  
(Oldest property and casualty insurance company in Canada)  
**Actuarial Analyst, Actuarial Transformation and Operations**
- Revamped rating structure model to transform actuarial pricing process from flat to multi-stage
  - Renovated data retrieving process with SQL and VBA; improved data flow efficiency by 40%
  - Created reconciliation calculator to fit new modeling structure that replaced old pricing process
  - Developed calculator for underwriting in Excel for privately-owned automobiles in Ontario

## PROJECTS

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- 08/21 - 10/21 **ARTIFICIAL INTELLIGENCE FINANCE INSTITUTE (AIFI)** New York, NY  
**Impact of COVID-19 on Perth Housing Prices: A Machine Learning Perspective (Python)**
- Conducted statistical analysis and model validation with TensorFlow and scikit-learn
  - Identified several new and original parameters after testing hundreds of transformed ones
  - Applied CatBoost regression for price forecasting, and difference-in-difference (DID) methods for impact evaluation
  - Wrote [manuscript](#) (independently) that was published by 7th International Conference on Financial Innovation and Economic Development (2022)
- 01/21 - 04/21 **UNIVERSITY OF WATERLOO** Waterloo, Canada  
**Applications of Multi-Layer Perceptrons on Time Series Forecasting (R)**
- Examined real-life applications using MLPs, a class of feedforward artificial neural network
  - Forecasted annual lynx trappings in Canada using efficient ADAM optimization algorithm

## COMPUTATIONAL SKILLS / OTHER

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**Programming Languages:** Python, Java, MATLAB, SQL, R, C#

**Languages:** English (fluent), Mandarin (native)

**Interest:** China Flight Simulation Competition (4th place out of 1K+)

# XIXIANG HU

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## EDUCATION

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- Expected 12/23 **NEW YORK UNIVERSITY** New York, NY  
**The Courant Institute of Mathematical Sciences**  
**M.S. in Mathematics in Finance**
- **Expected Coursework:** stochastic processes, Black-Scholes & Greeks, Hull-White model, penalized regression, linear regression, Fama-French, object-oriented programming (Java)
- 09/21 - 07/22 **LONDON SCHOOL OF ECONOMICS (LSE)** London, UK  
**M.S. in Data Science**
- **Coursework:** time series, SVM, random forest, boosting, lasso, ridge regression, principal component analysis, Q-learning, Sarsa, distributed computing
- 09/17 - 06/21 **SOUTHWESTERN UNIVERSITY OF FINANCE AND ECONOMICS** Chengdu, China  
**B.S. in Computer Science**
- **Coursework:** corporate finance, derivative financial instruments, Java, database, statistics, data structures, probability, algorithms, machine learning, linear algebra, Hadoop

## EXPERIENCE

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- 07/21 - 09/21 **CAITONG SECURITY** Chengdu, China  
**Wealth Management Intern**
- Researched and identified stocks, fixed income, and bond products in China
  - Gathered information about newly developed fund; analyzed it to facilitate sales to clients
  - Processed and visualized fund and stock data for further survival analysis and presentation
- 07/19 - 09/19 **HUAWEI TECHNOLOGIES** Chengdu, China  
**Product Manager and Service Engineer Assistant**
- Collaborated on 5G base station installation detection and late part signal debugging
  - Collected and organized signal information; marked poor signal areas and relevant base stations; suggested adjustments for nearby base stations
  - Researched relevant theories for antenna feeder systems and 5G and technologies like Hadoop, Spark, and distributed computing for processing large-scale data

## PROJECTS

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- 12/21 - 08/22 **LSE & SIEMENS ADVANTA CONSULTING** London, UK  
**Inventory Optimization (Python)**
- Applied ARIMA and ARIMAX time series models and machine learning methods (Prophet, LSTM) to simulate and predict product order demand over forthcoming 3 months
  - Constructed environment for inventory management process; compared reinforcement learning methods, DQN and Dueling DQN, to optimize reorder points
- 10/21 - 12/21 **LONDON SCHOOL OF ECONOMICS** London, UK  
**Machine Learning Analysis of Songs on Spotify (R)**
- Preprocessed data, using one-hot encoding and lasso regression to adjust features
  - Used logistic regression, random forest, and boosting to explore popularity of each song; accuracy of final result reached 75%
  - Implemented QDA, KNN, and SVM to classify song genres; achieved 90% accuracy

## COMPUTATIONAL SKILLS / OTHER

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**Programming Languages:** Java, Python, R, C, SQL

**Languages:** English (fluent), Mandarin (native)

# HUA (HANA) JING

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## EDUCATION

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- Expected 12/23 **NEW YORK UNIVERSITY** New York, NY  
**The Courant Institute of Mathematical Sciences**  
**M.S. in Mathematics in Finance**  
*Coursework:* object-oriented programming (Java), regressions & time series, data-driven modeling, portfolio optimization, Black-Scholes, Monte Carlo simulation, stochastic calculus  
*Expected Coursework:* short rate model, fx models, scientific computing, trading energy derivatives, securitized products, dynamic asset pricing
- 08/18 - 05/22 **UNIVERSITY OF COLORADO, DENVER** Beijing, China/Denver, CO  
**B.S. in Mathematics, B.A. in Economics, Minor in Data Sciences**
  - *Coursework:* ML, regression, probability, real analysis, ODE, linear algebra, econometrics
  - *Honors/Awards:* Magna Cum Laude, Dean's List every semester
  - *Joint Program with China Agricultural University*

## EXPERIENCE

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- 11/21 - 01/22 **HUATAI SECURITIES** Nanjing, China  
**Quantitative Research Intern (Python)**
  - Conducted time series analysis, projected crude oil prices for next quarter by aggregating data (e.g., US Dollar Index, inflation expectation, crude oil production)
  - Used Monte Carlo to implement GBM stochastic pricing model and simulated returns of snowball autocallable options after identifying their structure
- 09/20 - 12/20 **DELOITTE CONSULTING** Beijing, China  
**Research Assistant (Python and R)**
  - Used Python to analyze data to inform decisions about entering/expanding into 12 sub-sectors
  - Predicted net income of client's parent company for forthcoming 5 years with regression in R
- 01/20 - 03/20 **SOOCHOW SECURITIES** Beijing, China  
**Research Intern (Excel)**
  - Analyzed 50+ communications companies by reviewing development budgets, technology advancement, and potential customers; published report with research results
  - Extracted P/E ratios from financial reports; compared fund positions with VLOOKUP

## PROJECTS

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- 02/23 - Present **NEW YORK UNIVERSITY COURANT** New York, NY  
**Trading WTI Futures (Excel)**
  - Implemented Carry and Momentum Rolling Strategies on WTI Futures; calculated P&L, maximum drawdown, RoD; graphed equity line and drawdowns
  - Constructed mini-portfolio; optimized parameters with Solver, achieving higher Sharpe ratio
- 11/22 - 12/22 **Interest Rate-Equity Option Pricing (Python)**
  - Built pricing model for LIBOR-Nikkei-225 hybrid option with Vasicek and Quanto models
  - Ran two-factor Monte Carlo; discounted payoff with domestic riskless numeraire to get price
- 03/22 - 04/22 **UNIVERSITY OF COLORADO, DENVER** Denver, CO  
**Email Spam Classifier with Machine Learning (Python)**
  - Preprocessed email text strings using regular expression operations (re); extracted vectorized features; trained SVM for spam classification
- 02/22 - 05/22 **Computational Accuracy and Efficiency in Solving Partial Differential Equations (Python)**
  - Built finite difference and close-formed solutions for heat equations; compared speed and accuracy of numerical calculations with GPU and CPU capabilities; depicted errors by grid size

## COMPUTATIONAL SKILLS / OTHER

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**Technical Skills:** Python, Java, R, SQL, LaTeX, Stata, Excel, GIS, Bloomberg

**Languages:** English (fluent), Mandarin (native)

**Other:** Undergraduate Development Economics Research Assistant; Volunteer Leader

# ZHENQI (HARRY) JING

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## EDUCATION

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- Expected 12/23 **NEW YORK UNIVERSITY** New York, NY  
**The Courant Institute of Mathematical Sciences**  
**M.S. in Mathematics in Finance**
- **Expected Coursework:** object-oriented programming (Java), data-driven modeling, Fama-French, Black-Scholes, stochastic processes
- 01/19 - 04/21 **UNIVERSITY OF MICHIGAN, ANN ARBOR** Ann Arbor, MI  
**B.S. in Mathematics, Economics**
- **Coursework:** simple linear regression, multiple regression analysis, probability, numerical methods, interest theory, term structure, CAPM, binomial model
  - **Honors:** Graduation With Highest Distinction (top 3% of class)
- 08/17 - 12/18 **CASE WESTERN RESERVE UNIVERSITY** Cleveland, OH  
**Applied Mathematics Studies**

## EXPERIENCE

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- 02/22 - 07/22 **HIGH HOPE WISDOM INVESTMENT** Nanjing, China  
(Asset management firm with +\$1B in AUM)
- Quantitative Research Intern**
- Studied “Likely gains from market timing” paper; developed math derivations; and explained findings to team to offer perspective for China A-share performance
  - Analyzed intraday/interday prices and trading volumes of China A-shares; identified pattern variations; studied papers about explanations; assessed implications for investments
  - Applied research-based decomposition method to China A-shares; identified its potential significance in constructing portfolios to outperform market
  - Evaluated performance of 6 financial factors during differently performing market periods; identified significant persistence of SML factor
  - Conducted literature reviews on different topics (e.g., measures for economic policy uncertainty; patterns in trading volume and return volatility)

## PROJECTS

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- 10/19 - 11/19 **UNIVERSITY OF MICHIGAN, ANN ARBOR** Ann Arbor, MI  
**Data Analytics (STATA)**
- Replicated Tennessee Student Teacher Achievement Ratio Project to study bias caused by reverse causality and benefits of random experiments
  - Investigated effect of seatbelt law introduction in California with time series regression models; used dummy variable to detect seasonal patterns in accidents
- 03/19 - 04/19 **Creative AI Learning Models Based on NLP (Python)**
- Trained Beatles song lyrics using n-grams language modeling

## COMPUTATIONAL SKILLS / OTHER

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**Programming Languages:** Python, Java, R, STATA

**Languages:** English (fluent), Mandarin (native)

**Activities:** Modern Algebra and Numerical Methods Grader, University of Michigan

# SUSHMANTH KAKULLA

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## EDUCATION

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- Expected 12/23 **NEW YORK UNIVERSITY** New York, NY  
**The Courant Institute of Mathematical Sciences**  
**M.S. in Mathematics in Finance**
- **Future Coursework:** stochastic calculus, machine learning, Black Scholes, monte carlo simulation, CAPM, computing in finance
- 06/18 - 03/20 **INDIAN INSTITUTE OF MANAGEMENT AHMEDABAD** Ahmedabad, India  
**M.B.A.**
- **Coursework:** stochastic calculus, data analysis, algorithmic trading, option pricing, blockchain
- 07/12 - 05/16 **INDIAN INSTITUTE OF TECHNOLOGY BOMBAY** Mumbai, India  
**B.Tech in Mechanical Engineering and Minor in Electrical Engineering**
- **Coursework:** calculus, linear algebra, computer programming

## EXPERIENCE

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- 07/20 - 05/22 **FINIQ CONSULTING INDIA PVT. LTD.** Pune, India  
**AVP - Derivatives Platform Consultant**
- Designed and implemented accumulator, decumulator pricing with back-solve functionality and Greeks calculations
  - Developed Monte Carlo pricing scripts for equity structured investment products; implemented pricer functionality on platform to showcase indicative prices on screen
  - Led team to create optimum underlying basket size calculator using Excel VBA; formulated recommendation to investors for higher yields
  - Implemented payoff scripts that OCBC Bank and RHB Bank use for pricing; developed system interfaces for RHB Bank using C# and SQL – they are now live at RHB
  - Managed 15 people to develop and deliver customized products for client, JAR Capital
- 04/19 - 05/19 **AXIS BANK** Mumbai, India  
**Management Trainee**
- Devised go-to-market strategy for app to increase market penetration and build business volume
  - Recommended 7 new features on marketing and product fronts by identifying gaps in current portfolio
  - Achieved 15% increase in transactions by implementing app; onboarded 130+ distributors of app
- 08/16 - 06/18 **VIRTUSA CONSULTING SERVICES PVT. LTD.** Hyderabad, India  
**Engineer – Technology**
- Rolled out 20 deliverables to production successfully in \$2.5M transformation project
  - Received highest rating (10/10) as well as direct appreciation from client in assigned project
  - Attained 25% reduction in weekly bug reporting rate by devising and formulating regression suite
  - Recognized as subject matter expert in development and implementation using Java, J2EE technologies, and GWT
  - Resolved 100+ critical client issues in production and reduced count by 70% in less than 1 year

## PROJECT

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- 09/19 - 12/19 **INDIAN INSTITUTE OF MANAGEMENT AHMEDABAD** Ahmedabad, India  
**Pricing of Power**
- Researched valuation of power and weather derivatives using differential equations
  - Implemented model to solve price of derivatives with application of Ito's lemma, PDE, and boundary conditions

## COMPUTATIONAL SKILLS / OTHER

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**Programming Languages:** Java, Python, C++, SQL, VBA, MATLAB, R

**Languages:** English (fluent), Hindi (fluent), Telugu (native), German (basic)

**Certification:** Programming for Everybody (Python) from Coursera

# ERDING LIAO

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## EDUCATION

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- Expected 12/23 **NEW YORK UNIVERSITY** New York, NY  
**The Courant Institute of Mathematical Sciences**  
**M.S. in Mathematics in Finance**
- **Expected Coursework:** high-level programming language (Java, C++), stochastic process, penalized regression, linear regression
- 09/18 - 06/22 **UNIVERSITY OF CALIFORNIA, SAN DIEGO** San Diego, CA  
**B.S. in Mathematics (Applied)**
- **Coursework:** linear algebra, partial differential equations, method of moments, maximum likelihood estimation, Bayesian statistics, Markov chain, big data analysis, data mining, neural networks, recommendation systems
  - **Honors/Awards:** Cum Laude (top 8%)

## EXPERIENCE

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- 08/19 - 10/19 **DONGXING SECURITIES CHONGQING BRANCH** Chongqing, China  
**Data Analyst Summer Intern**
- Collected and processed clean energy industry data (e.g., from top 20 car companies in China), with Azure HDInsight; prepared data visualization for industry report
  - Built large-scale database from daily news and data for 3,000 clean energy automobile stocks from 2018 to 2019, using R and SQL
  - Used feature extraction on news about 1,000 selected stocks in 2019; improved stock prediction based on sentiment analysis with RNN; average accuracy increased by 7%

## PROJECT

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- 09/20 - 06/21 **UNIVERSITY OF CALIFORNIA, SAN DIEGO** San Diego, CA  
**Math Honors Research: Hidden Markov Model with Partially Missing Observations (C++, R)**
- Evaluated practicality of Hidden Markov model in financial market prediction with respect to HMM-GMM algorithm and Monte-Carlo GMM
  - Developed alternative EM-algorithm for Hidden Markov model with discontinued observations; mathematically proved and analyzed its potential implementation for HMM-GMM model
- 02/21 - 05/21 **Deep-Learning AI - Poetry Generator (Python)** San Diego, CA
- Implemented language model for RNN based on datasets of Shakespeare poetry; analyzed performance with respect to BIC and time/space complexity
  - Discussed potential improvements of N-gram model with RNN Markov and possibility of reducing complexity through pruning
- 09/20 - 12/20 **Prediction Model - NYPD Allegations (Python)** San Diego, CA
- Conducted data cleaning on dataset of complaints and allegations against New York Police Department; analyzed dependency of factors with Kolmogorov Smirnov Test
  - Applied feature engineering on data; constructed prediction model of allegation outcomes using random forest and SVM
  - Analyzed performance of model through grid-search and evaluation on fairness

## COMPUTATIONAL SKILLS / OTHER

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**Programming Languages:** Java, C++, R, Python, SQL, MATLAB

**Languages:** Mandarin (native); English (fluent)

**Activities:** Vector calculus teaching assistant and grader at UCSD



# SIHAN LIU

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## EDUCATION

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- Expected 12/23 **NEW YORK UNIVERSITY** New York, NY  
**The Courant Institute of Mathematical Sciences**  
**M.S. in Mathematics in Finance**
- **Forthcoming Coursework:** portfolio theory, risk management, Fama-French, Black Scholes, Monte Carlo simulation, stochastic calculus, Hull-White model
- 09/18 - 06/22 **NEW YORK UNIVERSITY SHANGHAI** Shanghai, China  
**B.S., Double Major in Honors Mathematics and Data Science**
- **Coursework:** linear algebra, mathematical statistics, Brownian motion, law of large numbers, machine learning, data structures, algorithms, databases
  - **Honors/Awards:** Dean's list for 4 years, Latin Honors Cum Laude

## EXPERIENCE

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- 12/21 - 01/22 **GUOTAI JUNAN SECURITIES CO., LTD** Shanghai, China (remote)  
**Quantitative Research Intern**
- Evaluated Chinese stock market's key indicators (e.g., major indices, cross-sectional volatility, stock turnover rate); wrote market overview report
  - Built backtest system using Python, with modules including data collection, data preprocessing, trading signal detection, data visualization and performance analysis
  - Backtested double moving average strategy and achieved 8.9% annualized return as well as 23% max drawdown
- 06/21 - 08/21 **ATOS INFORMATION TECHNOLOGY** Chengdu, China  
**Data Visualization Intern**
- Collected information from multiple web databases, cleaned and organized it into Excel tables, as well as generated frequent reports to facilitate manager's monitoring of team productivity
  - Created dashboards to display cleaned data clearly and concisely
  - Used VBA and Power Query to automatically generate daily reports and send emails; results: reductions to 25% of production time and 17% of computer memory used by data
- 08/20 - 09/20 **SICHUAN WANYI ENERGY TECHNOLOGY CO., LTD.** Chengdu, China  
**Data Mining Intern**
- Collaborated with team to build ML model that helped clients extract information from images
  - Used Python to generate synthetic optical character recognition dataset comprising images of Chinese character lines in various backgrounds
  - Standardized 300+ images in Python; corrected thousands of mismatched labels in image dataset

## PROJECTS

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- 02/22 - 05/22 **NEW YORK UNIVERSITY SHANGHAI** Shanghai, China  
**Derivatives Pricing: Options Price Fluctuation Simulation with Black-Scholes Formula (Python)**
- Implemented Black-Scholes formula on European calls; collected contract information and historical prices for 100+ Chinese options; simulated price fluctuations from list to maturity dates
  - Applied several models to estimate volatility of options, including moving average, exponentially moving average, and GARCH(1, 1)
- 05/21 - 06/21 **Machine Learning: Music Classification Based on Emotions (Python)**
- Designed conventional machine learning models including SVM, decision trees, and random forest, to classify musical pieces into 3 categories: sad, calm, energetic
  - Improved model performance with parameter tuning, PCA, oversampling, stacking, and cross-validation; achieved precision score of 88%

## COMPUTATIONAL SKILLS / OTHER

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**Programming Languages:** Proficient in Python, SQL, Java, and Excel; basic in VBA

**Affiliations/Certifications:** Microeconomics and corporate finance from edX

**Languages:** English (fluent), Mandarin (native)

# ZIYU LIU

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## EDUCATION

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- Expected 12/23 **NEW YORK UNIVERSITY** New York, NY  
**The Courant Institute of Mathematical Sciences**  
**M.S. in Mathematics in Finance**
- **Expected Coursework:** object-oriented programming (Java), penalized regression, decision trees, linear regression, Fama-French, Black-Scholes, stochastic processes
- 10/20 – 07/21 **UNIVERSITY OF CAMBRIDGE** Cambridge, UK  
**M.A.S. in Pure Mathematics**
- **Coursework:** algebraic number theory, commutative algebra, Weyl algebra, profinite groups and group cohomology, elliptic curves
- 09/16 - 05/20 **MOUNT HOLYOKE COLLEGE** South Hadley, MA  
**B.A. in Mathematics**
- **Coursework:** abstract algebra, real and complex analysis, differential geometry, partial differential equations, combinatorics

## EXPERIENCE

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- 01/22 - 06/22 **FOSUN CAPITAL (\$7.3B AUM)** Shanghai, China  
**Investor Relations Intern, Fosun Capital Flagship USD Fund**
- Drafted roadshow materials for growth stage USD fund targeting LPs in Asia, Europe, and Australia; participated in roadshows and communicated proactively on fundraising progress
  - Conducted research on secondary funds and completed report covering transaction structure, domestic and foreign market overview, and fundraising in Asia Pacific region
  - Collaborated with TMT, healthcare, and consumer project teams in connecting with potential investors; participated in roadshows; gained insight into multiple sectors
  - Prepared summary report on fund due diligence questions; crafted monthly reports to update LPS with latest developments in fund management
- 07/20 - 09/20 **TOPSPERITY FUND (\$4.7B AUM)** Shanghai, China  
**Research Analyst, Security Analysis / Consumer and TMT**
- Collected TMT and consumer industry trends through 20 expert calls and industry conference calls; consolidated meeting memos and presented findings to fund managers
  - Selected stocks based on financial analysis, fundamentals, sector trends and shareholding structure in TMT and consumer industries based on financial reports and WIND
  - Analyzed companies and stocks in TMT and consumer industries (e.g., RELX, Smoore Intl.) through industry analysis and competitive strengths analysis as well as valuation
  - Automated daily morning reports process with Python and Excel

## PROJECTS

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- 05/18 - 07/18 **MUHLENBURG COLLEGE REU – REU Math Research** Allentown, PA  
**Investigation on Partitions with Equal Products**
- Initiated new approach to applying combinatorics and number theory; published [paper](#) on integer partitions in International Journal of Number Theory
- Sums of Polygonal Numbers**
- Conducted research and collaborated on report with team members

## COMPUTATIONAL SKILLS / OTHER

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**Programming Languages:** Java; Python

**Languages:** English (fluent), Mandarin (native); German (basic); Homeric Greek (basic)

**Activities:** President of Association for Women in Mathematics at Mount Holyoke College chapter

# YOURAN PAN

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## EDUCATION

---

- Expected 12/23 **NEW YORK UNIVERSITY** New York, NY  
**The Courant Institute of Mathematical Sciences**  
**M.S. in Mathematics in Finance**
- **Expected Coursework:** object-oriented programming (Java), decision trees, linear regression, Fama-French, Black-Scholes, derivative securities, quantitative portfolio theory, finite difference method, data-driven models, scientific computing regression
- 08/18 - 05/22 **DUKE UNIVERSITY | DUKE KUNSHAN UNIVERSITY** Durham, NC | Kunshan, China  
**B.S. in Applied Mathematics**
- **Coursework:** linear algebra, ODEs, PDEs, stochastic process, numerical analysis, mathematics of machine learning, econometrics
  - **Awards:** Mathematical Modeling Context (honorable mention) 2021, Mathorcup Mathematical Modeling Challenge 2020 (group won 1st place)

## EXPERIENCE

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- 07/22 - present **ENHANCED HEALTHCARE PARTNERS** New York, NY (remote)  
(Healthcare-focused private equity firm)
- Investment Research & Data Analytics Intern (Python, SQL, Excel, Tableau)**
- Researched macro trends, industry drivers, and market segments of plastic surgery industry
  - Profiled 16 prospective pre-assigned investment targets by investigating locations, business descriptions, ownership, revenues, ratings, and rationales
  - Used Python and SQL to manage data; calculated and analyzed it with Excel and SQL to find summary values and trends; correlated data using Tableau
  - Presented market landscape research summary and recommended investment targets to manager
- 12/20 - 05/22 **DUKE KUNSHAN UNIVERSITY** Kunshan, China  
**Research Assistant, Data Science Research Center (Python)**
- Developed web crawler to collect first-hand data for translated books from 3 online libraries; performed data cleaning and conducted analysis and visualizations; wrote and presented reports
  - Sorted and merged information for Shanghai Library database
- 05/21 - 08/21 **Research Scholar (Python, R, STATA)**
- Conducted literature review on healthy lifestyles using PubMed, WHO, and UN databases
  - Accessed Yinzhou, China, databases collaboratively, and calculated influenza vaccine effectiveness using static decision tree model

## PROJECTS

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- 03/20 - 04/20 **DUKE KUNSHAN UNIVERSITY** Kunshan, China  
**Air Transportation Overbooking and Revenue Management (Python)**
- Conducted literature reviews on overbooking and cabin control during COVID
  - Created web crawler to collect demand and daily ticket sales data
  - Developed pricing and SIR models
- 05/21 - 08/21 **CHINA UNIVERSITY OF MING & TECHNOLOGY** Xuzhou, China  
**Link Prediction With Deep Learning For Weighted Symmetric Graph in Undirected Graphs**
- Reviewed latest research on social network analysis, specifically for recommender systems
  - Contributed to proposing and testing weighted symmetric graph embedding approach based on deep learning for link prediction

## COMPUTATIONAL SKILLS / OTHER

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**Programming Languages:** Python, Java, MATLAB, SQL, Stata, R

**Languages:** English (fluent); Mandarin (native); Japanese (fluent)

# XINYUAN (FRANK) QIU

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## EDUCATION

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- Expected 12/23 **NEW YORK UNIVERSITY** New York, NY  
**The Courant Institute of Mathematical Sciences**  
**M.S. in Mathematics in Finance**
- **Expected Coursework:** stochastic calculus, Black-Scholes, Hull-White model, penalized regression, object-oriented programming (Java)
- 08/18 - 05/22 **WILLIAM & MARY** Williamsburg, VA  
**B.S. in Mathematics and Data Science**
- **Coursework:** singular value decomposition, positive definite matrices, numerical differentiation and integration, central limit theorem, method of moments, Markov chain, basic data structure, dynamic programming, SQL database, support vector machine, Monte-Carlo simulation

## EXPERIENCE

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- 06/22 - 08/22 **YINHUA FUND MANAGEMENT CO., LTD.** Shenzhen, China (Remote)  
(Chinese asset management firm with \$8B AUM)  
**Quantitative Market Analysis Intern**
- Summarized and analyzed reports on relationship between investors' emotions and Chinese stock market indices
  - Investigated history of CBOE's VIX index and its negative correlation with S&P 500
  - Used visualization and ANOVA to determine whether VIX was correlated with NASDAQ and US Treasury Bond Index
- 06/21 - 08/21 **WILLIAM & MARY'S GLOBAL RESEARCH INSTITUTE** Williamsburg, VA  
**Geospatial Analysis Researcher**
- Collaborated with another W&M undergraduate researcher to develop traffic simulation model using multi-agent transportation simulation (MATSim)
  - Built and tested geospatial agent-based model that used location data of 5,000 local residents to simulate traffic in Williamsburg area
- 05/19 - 07/19 **PEOPLE'S BANK OF CHINA** Beijing, China  
**Digital Currency Intern**
- Collected and organized latest news on technological updates in cryptocurrency and blockchain
  - Integrated and translated documents to track Facebook's cryptocurrency, Libra

## PROJECT

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- 06/21 - 04/22 **RESEARCH: FINDING EIGENVALUES WITH MATLAB** Williamsburg, VA
- Developed algorithm in MATLAB to calculate eigenvalues of matrices that satisfied certain conditions of Gershgorin theorem
  - Collaborated with professor and other linear algebra experts to extend computational results to theoretical proof in published paper

## COMPUTATIONAL SKILLS / OTHER

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**Programming Languages:** Python, SQL, R, C, Java, C++, MATLAB, LaTeX

**Languages:** English (fluent); Mandarin (native)

# TINGHAN (TIRRY) WANG

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## EDUCATION

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- Expected 12/23 **NEW YORK UNIVERSITY** New York, NY  
**The Courant Institute of Mathematical Sciences**  
**M.S. in Mathematics in Finance**
- **Expected Coursework:** object-oriented programming (Java), penalized regression, decision trees, linear regression, Fama-French, Black-Scholes, stochastic processes, Hull-White model
- 09/18 - 07/22 **SOUTHERN UNIVERSITY OF SCIENCE AND TECHNOLOGY** Shenzhen, China  
**B.S. in Mathematics and Applied Mathematics**
- **Coursework:** calculus, linear algebra, ordinary and partial differential equations, real analysis, probability, hypothesis testing, Markov chain, Black-Scholes-Merton, time series analysis, econometrics, programming in C/C++, Java, data structures
  - **Award:** First Prize Scholarship (top 5% in college)

## EXPERIENCE

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- 07/20 - 08/20 **SINOLINK SECURITIES** Chengdu, China  
**Settlement Officer Intern**
- Collected data daily on customer margins, net transfer of bank securities accounts, and total number of transactions; generated charts for management's review and monitoring
  - Inspected settlement statements from Shanghai Stock Exchange
  - Compiled intraday securities delivery list

## PROJECTS

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- 04/22 - 05/22 **SOUTHERN UNIVERSITY OF SCIENCE AND TECHNOLOGY** Shenzhen, China  
**Financial Crash Forecasting Using LPPL (Python)**
- Retrieved monthly Shanghai Composite Index data and implemented log-periodic power law (LPPL) model
  - Applied generic algorithm to estimate model parameters based on data collected; forecasted date of Shanghai stock market's next crash
  - Assessed LPPL model and identified sources of possible inaccuracies
- 11/21 - 12/21 **Matrix Multiplication and Convolutional Neural Network (C++)**
- Implemented standard matrix multiplication and Strassen's algorithm; theoretically proved time complexity of both
  - Established that below a certain threshold, one method was more efficient than the other; analyzed influencing factors for evaluating threshold (e.g., multithreading, matrix properties)
  - Parsed images using OpenCV; implemented convolutional neural network (CNN) model
- 07/21 - 08/21 **NORTH CAROLINA STATE UNIVERSITY** Raleigh, NC  
**Computational and Financial Mathematics and Simulations (Java)**
- Implemented least-squares Monte Carlo simulation and finite difference method on valuation of American options
  - Applied weighted least squares to decrease estimation bias, and used forward Monte Carlo simulation to improve computational speed
  - Compared accuracy and computational speed of enhanced methods with traditional ones

## COMPUTATIONAL SKILLS / OTHER

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**Programming Languages:** Java, C/C++, R, MATLAB, Python

**Languages:** English (fluent); Mandarin (native)

**Interests:** Badminton (captain of varsity team; Guangdong Badminton Championships, 2nd place in men's singles)

# WEI (OLIVIA) WANG

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## EDUCATION

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- Expected 12/23 **NEW YORK UNIVERSITY** New York, NY  
**The Courant Institute of Mathematical Sciences**  
**M.S. in Mathematics in Finance**
- **Coursework:** Black-Scholes, Fama-French, Hull-White model, object-oriented programming (Java), statistical inference, algorithmic trading, deep learning, Monte Carlo simulation, portfolio optimization, penalized regression, Ito's lemma, risk-neutral valuation
- 09/18 - 06/22 **THE CHINESE UNIVERSITY OF HONG KONG, SHENZHEN** Shenzhen, China  
**B.B.A. in Financial Engineering**
- **Coursework:** linear algebra, ODEs, calculus, probability and statistics, time series, stochastic process, Python, discrete mathematics, data analysis, econometrics, microeconomics, finance
  - **Honors/Awards:** Dean's List Honor (2019, 2020); Academic Performance Scholarship 2019-2020
- 10/20 - 06/21 **UNIVERSITY OF OXFORD** Oxford, UK  
**Visiting Program**
- **Coursework:** probability measures, mathematical models of financial derivatives, statistical machine learning, game theory, macroeconomics

## EXPERIENCE

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- 11/21 - 12/21 **UBS** Beijing, China (remote)  
**Quantitative Analyst Assistant (Python)**
- Coded pricing formulas using different methodologies (e.g., Black Scholes, Bachelier)
  - Generated European and American options pricing formulas
  - Found implied volatility of each pricing formula; drew volatility smile curve and Greeks graph of each option
- 10/21 - 11/21 **GUANGFA SECURITIES CO., LTD** Guangzhou, China (remote)  
**Quantitative Analyst Assistant**
- Researched quantitative finance trading in China and characteristics of each strategy
  - Identified several features with strong past performance; built models for feature combinations using data and fundamental factors

## PROJECTS

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- 09/21 - 10/21 **NEW YORK UNIVERSITY** New York, NY (remote)  
**Valuation of Google's Snowball Option**
- Built pricing model and created price expressions for variety of snowball option scenarios
  - Simulated 1,000 paths for Google's stock price; calculated snowball option price for each one; obtained average to determine snowball option price (using Monte Carlo simulation)
  - Presented sensitivity analysis about relationships among knock-out price, knock-in price, sigma, and option price
- 12/19 - 05/20 **THE CHINESE UNIVERSITY OF HONG KONG, SHENZHEN** Shenzhen, China  
**Econometrics Model: Influence of Violent Films on Violent Behaviors (STATA)**
- Built econometrics model that determined causal effect of different levels of violence in movies on real-world assaults; used movie attendance in 1 week before and after as instrument variables
  - Calculated model parameters; tested multicollinearity, validity of instrument variables, and autocorrelation of error terms
  - Concluded that moderately violent movies decrease number of assaults; articulated argument for that and policy recommendations in paper and presentation

## COMPUTATIONAL SKILLS / OTHER

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

# XUAN (SELINA) WANG

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## EDUCATION

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- Expected 12/23 **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, Fama-French, Black-Scholes, stochastic processes, Hull-White model, machine learning
- 09/17 - 06/22 **UNIVERSITY OF TORONTO** Toronto, Canada  
**B.S. in Mathematics and Statistics**
- **Coursework:** ordinary/partial differential equations, real analysis, probability theory, corporate finance, financial economics, multiple linear regression, time series analysis
  - **Awards:** Dean's List for 3 years, Merit-based New College Council In-Course Scholarship

## EXPERIENCE

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- 05/21 - 07/21 **BOC INTERNATIONAL (CHINA)** Shanghai, China  
**Quantitative Research Intern**
- Wrote SQL queries to monitor expiration dates of futures contracts, dramatically reducing labor costs and improving timeliness of rolling contracts
  - Implemented SQL queries, which increased stock dividend payment prediction accuracy
  - Collaborated with portfolio managers to conduct decomposition and analysis of portfolio performance measures, such as alpha, beta, drawdown, and return drivers
  - Aggregated trading data and generated reports to facilitate team's portfolio analysis
  - Developed thorough understanding of investment instruments and their competitive edges by participating in roadshows for multiple high-profile funds
  - Created onboarding procedures; designed learning materials for incoming analysts and interns
- 04/20 - 05/20 **SHANDONG QUANLUKERUN SEED INDUSTRY** Weifang, China  
(Vegetable seed producer and retailer)  
**Assistant Sales Associate**
- Created pipeline to gather raw data from sales team; developed data cleaning and consolidation process using Excel
  - Designed reporting dashboards with processed data to automatically calculate and track revenue metrics and trends, which facilitated strategic decision-making processes
  - Presented results of sales analyses and communicated them clearly with crisp visualizations to management team

## PROJECTS

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- 02/22 **UNIVERSITY OF TORONTO** Toronto, Canada  
**Construction of Bond YTM/Spot/Future Curve (R, Excel, LaTeX)**
- Consolidated raw Canadian government bond data from public sources with Excel
  - Used bootstrapping, Newton's method, and interpolation techniques to calculate rates; created visualization with R
  - Summarized results and algorithm explanations; composed final project report with LaTeX
- 04/21 **UNIVERSITY OF TORONTO** Toronto, Canada  
**Valuation of Convertible Debt for AMC**
- Gathered capital structure information for AMC from public sources (e.g., Yahoo Finance)
  - Used put-call parity and Black-Scholes-Merton theorem to calculate value of convertible bond AMC had recently issues; cross-validated accuracy of estimations

## COMPUTATIONAL SKILLS / OTHER

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**Programming Languages:** R, Python, SAS, SQL, LaTeX

**Languages:** English (fluent); Mandarin (native)

**Certifications:** Base SAS and SAS Advanced

**Interests:** Guzheng and piano (highest level 10 player)

# YIFAN (MICHAEL) WANG

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## EDUCATION

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- Expected 12/23 **NEW YORK UNIVERSITY** New York, NY  
**The Courant Institute of Mathematical Sciences**  
**M.S. in Mathematics in Finance**
- **Expected Coursework:** Black-Scholes & Greeks, stochastic processes, object-oriented programming (Java), penalized regression and time series, decision trees, machine learning
- 09/20 - 05/22 **COLUMBIA UNIVERSITY** New York, NY  
**B.S. in Applied Mathematics**
- **Coursework:** linear regression, partial differential equations, statistical inference, Fourier analysis, modern algebra, numerical analysis, CAPM model, advanced linear algebra, options
- 09/17 - 05/22 **DICKINSON COLLEGE** Carlisle, PA  
**B.A. in Mathematics**
- **Honors:** Major Honor Society, Dean's List, Pi Mu Epsilon Honor Society

## EXPERIENCE

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- 06/22 - 07/22 **DEUTSCHE BANK** Shanghai, China  
**Capstone Project, Quantitative Research**
- Conducted portfolio optimization on index ETFs and gold using mean-variance, Black-Litterman, and risk parity in Python; simulated asset weights to calculate efficient frontier
  - Extracted pricing from data APIs using Python; performed data cleaning and transformation
  - Backtested portfolio performance based on risk parity method that auto-adjusted its weights monthly; built functions to calculate annualized return, volatility, Sharpe ratio, max drawdown
- 05/21 - 08/21 **DELOITTE CONSULTING CHINA** Shanghai, China  
**Finance & Performance Consulting Intern**
- Developed talent scoring framework based on machine learning models such as linear regression, random forest, and gradient boosting decision tree in Python
  - Performed data collection, cleaning, and transformation of past employee evaluation data; conducted feature engineering based on dimensions such as leadership and technical skills
  - Created interactive data visualization dashboard in Tableau to perform comparative analyses

## PROJECTS

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- 03/22 - 05/22 **COLUMBIA UNIVERSITY** New York, NY  
**Machine Learning Driven Sector Return Prediction (Python)**
- Built machine learning models such as linear regression, ridge regression, and random forest to predict returns of sector ETFs such as US Technology and Financials iShares
  - Constructed features based on macro factors (e.g., CPI) and sector average fundamental ratios
- 09/21 - 12/21 **Stock Valuation Based on DCF and Black-Scholes Model (Python)**
- Built web crawler to collect price and financial statement data from Yahoo Finance
  - Applied DCF model with growth-rate assumptions in high- and stable-growth periods; performed Monte Carlo simulations of company's value and stock prices through 10K+ paths
  - Calculated intrinsic stock value using weighted average result from DCF, MCS, and B-S models
- 02/21 - 05/21 **Future Arbitrage Using Ornstein-Uhlenbeck Model (MATLAB)**
- Crafted Ornstein-Uhlenbeck mean version model to predict spot-to-future price ratio for gold
  - Back-tested arbitrage trading strategy using ratio to test model's efficacy

## COMPUTATIONAL SKILLS / OTHER

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**Programming Languages:** Python (NumPy, Pandas, Sklearn, SciPy), SQL, Java, R, MATLAB

**Languages:** English (fluent); Mandarin (native)



# ZHANGYI WANG

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## EDUCATION

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- Expected 12/23 **NEW YORK UNIVERSITY** New York, NY  
**The Courant Institute of Mathematical Sciences**  
**M.S. in Mathematics in Finance**
- **Coursework:** object-oriented programming (Java), financial modeling, algorithmic trading, stochastic processes, machine learning, Fama-French, Black-Scholes
- 08/18 - 05/22 **NEW YORK UNIVERSITY SHANGHAI** Shanghai, China  
**B.S. in Data Science, B.A. in Economics**
- **Coursework:** deep learning, regression, causal inference, optimization, databases, linear algebra, multivariable calculus, probability and statistics
  - **Honors/Awards:** Dean's List for Academic Year 2020, 2021; NYU Shanghai Excellence Award; Magna Cum Laude

## EXPERIENCE

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- 06/22 - 08/22 **TURING FUND MANAGEMENT** Shanghai, China  
**Quantitative Research Intern**
- Replicated and examined different versions of AlphaNet (factor mining network) with Keras
  - Conducted single factor IC testing and multi-layer testing using latest daily trading data
  - Achieved annualized rate of return of 14% and Sharpe ratio of 3.00 in 7-year period
  - Adjusted inner operators and layers of AlphaNet and improved rank IC by 1%
- 10/21 - 01/22 **GF SECURITIES** Shanghai, China  
**Institutional Sales Intern**
- Participated in fund managers' research and data compilation for institutional clients
  - Constructed database for targeted fund products and fund managers' profiles
  - Implemented clustering analysis of fund products' comprehensive capacities using Python, and divided targeted fund products into 5 tiers
- 07/21 - 08/21 **INSTITUTE OF INTELLIGENT COMPUTING TECHNOLOGY, CAS** Suzhou, China  
**Financial Data Mining and Analysis Intern**
- Collected sector index data; examined potential sector linkage and rotation patterns for over 120 industries from 2014 to 2021
  - Labeled data as well as extracted and categorized information from financial news and reports

## PROJECTS

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- 02/22 - 05/22 **NEW YORK UNIVERSITY SHANGHAI** Shanghai, China  
**Momentum Strategy with Deep Reinforcement Learning in Chinese Stock Market**
- Implemented risk-adjusted momentum strategies using DDPG model, based on first open-source DRL framework, FinRL
  - Conducted backtesting for automatic trading with SSE 50 constituent stock portfolio
  - Achieved Sharpe ratio of 2.46 in backtesting across 12 months
- 10/21 - 12/21 **NEW YORK UNIVERSITY SHANGHAI** Shanghai, China  
**Music Style Recombination and Interpolation**
- Extracted fundamental frequencies and chords from wav files using Python; quantified and mapped fundamental frequencies to integer-level pitches
  - Applied EC2VAE trained with pop songs to conduct interpolation of information in latent space
  - Generated new pieces using midi-level as well as wave-level synthesis methods

## COMPUTATIONAL SKILLS / OTHER

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**Programming Languages:** Python, Java, MySQL, Stata, Javascript

**Languages:** English (fluent); Mandarin (native)

# DAJUN XU

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## EDUCATION

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- Expected 12/23 **NEW YORK UNIVERSITY** New York, NY  
**The Courant Institute of Mathematical Sciences**  
**M.S. in Mathematics in Finance**
- **Expected Coursework:** stochastic calculus, Black-Scholes equation, fixed-income securities, portfolio optimization, statistical inference, machine learning, object-oriented programming
- 09/17 - 03/22 **UNIVERSITY OF CALIFORNIA, IRVINE** Irvine, CA  
**B.S. in Mathematics (Honors Program), B.S. in Neurobiology**
- **Coursework:** real analysis, linear algebra, numerical analysis, stochastic process, partial differential equations, numerical differential equations, optimization, modeling in biology

## EXPERIENCE

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- 06/20 - 08/20 **UNIVERSITY OF CALIFORNIA, IRVINE** Irvine, CA  
**MathBioU Research Assistant**
- Calculated and mapped electrostatic impacts of remdesivir nucleotide analogue on SARS-CoV-2 RNA-dependent polymerase with Poisson-Boltzmann equation
  - Visualized and rendered calculated data and identified potentially interesting protein regions for further molecular dynamics simulation
  - Mentored 2 high school students on partial differential equations and academic writing
  - Contributed to research, resulting in publication of [Probing remdesivir nucleotide analogue insertion to SARS-CoV-2 RNA dependent RNA polymerase in viral replication](#)
- 03/19 - 03/22 **Math Department Grader**
- Graded homework for more than 300 students in upper-division courses including real analysis, linear algebra, abstract algebra, and probability
  - Provided feedback to instructors and students, and wrote solutions for abstract algebra notes
  - Held Q&A sessions with students on real analysis problems and exam reviews

## ACADEMIC PROJECTS

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- 08/21 - 09/21 **UNIVERSITY OF CALIFORNIA, IRVINE** Irvine, CA  
**Image Steganography**
- Used least significant bits method to conceal secret image within original one
  - Combined discrete cosine transform with neural network to reduce size of secret images
  - Trained encoder and decoder neural networks to encode secret images and scatter their information in original images
- 03/20 - 06/20 **Epidemic Modeling**
- Implemented delayed SIR model with MATLAB to fit and predict number of COVID-19 cases
  - Added delayed differential equation and equation solver to Bayesian interference and Markov chain Monte Carlo model to account for oscillation in daily COVID-19 case trend

## COMPUTATIONAL SKILLS / OTHER

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**Programming Languages:** Python, MATLAB, Java, Mathematica, R

**Languages:** English (fluent), Mandarin (native)

# JIAXIN (JACKSON) YANG

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## EDUCATION

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- Expected 12/23 **NEW YORK UNIVERSITY** New York, NY  
**The Courant Institute of Mathematical Sciences**  
**M.S. in Mathematics in Finance**
- **Expected Coursework:** object-oriented programming (Java), penalized regression, decision trees, linear regression, Fama-French, Black-Scholes, stochastic processes, Hull-White model
- 09/18 - 06/22 **UNIVERSITY OF INTERNATIONAL BUSINESS AND ECONOMICS** Beijing, China  
**B.A. in Financial Mathematics**
- **Coursework:** linear algebra, real analysis, game theory, ordinary differential equations, Bayesian statistics, ARIMA model, financial derivatives, stochastic process, risk-neutral pricing
  - **Honors/Awards:** 1st-tier scholarship (top 5%); 1st place (2x), nationwide Chinese math modeling
- 08/21 - 12/21 **UNIVERSITY OF CALIFORNIA, BERKELEY** Berkeley, CA  
**Exchange Program**
- **Coursework:** statistical learning, time-series analysis, optimization

## EXPERIENCE

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- 03/22 - 06/22 **CHINA MERCHANTS SECURITIES** Shenzhen, China  
**Quantitative and Fund Evaluation Research Intern**
- Used compound logic to detect holdings of 1,000+ fund managers; achieved 0.96 sample accuracy for their leading products
  - Calculated stock positions in funds using lasso; tracked industry coefficients that showed preferred sectors for heavily weighting stocks in each fund
  - Analyzed 200K+ quarterly fund reviews using natural language processing; conducted sentiment analysis and generated time-varying word clouds
- 11/20 - 05/21 **FOUNDER SECURITIES** Beijing, China  
**Quantitative Analyst Intern**
- Processed 3-minute data from IC and IF stock index futures contracts (2018 - 2020) in Python; built basic high-frequency timing strategy framework
  - Used intra-day high-frequency indicator MACD to construct CTA timing strategy; conducted backtest timing strategy introducing threshold and peak breakthrough
  - Achieved 3-year excess returns of 95% on IC and 129% on IF backtests; maximum retractions reached 24% and 26% and daily average win ratios were 59% and 60% on backtests

## PROJECTS

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- 03/22 - 05/22 **UNIVERSITY OF INTERNATIONAL BUSINESS AND ECONOMICS** Beijing, China  
**Examination of Relationships Among 50ETF IV, 50ETF, and Future Realized Volatility**
- Compared asymmetric effects of A-share and Hong Kong markets using Kalman filter; discovered higher sensitivity to both positive and negative returns for investors in A-share market
  - Predicted future realized volatility with VIX using linear and dynamic models; identified VHSI (VIX in HK) as unbiased estimate while 50ETF IV (VIX in China) was biased
- 09/19 - 09/20 **UNIVERSITY OF INTERNATIONAL BUSINESS AND ECONOMICS** Beijing, China  
**Research on Investment Strategy Based on Text Mining and Natural Language Processing**
- Analyzed news about individual stocks and constructed sentiment characteristics for it; calculated weighted average sentiment scores and constructed factors
  - Proposed stock price prediction model based on news feature extraction with SVM model and conducted empirical research; obtained regression coefficient of 0.16

## COMPUTATIONAL SKILLS / OTHER

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**Programming Languages:** Python, Java, R, MATLAB, SQL

**Languages:** English (fluent); Mandarin (native)

**Activity:** Linear algebra and real analysis teaching assistant at University of International Business and Economics

# JIAQI (GEORGE) YE

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## EDUCATION

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- Expected 12/23 **NEW YORK UNIVERSITY** New York, NY  
**The Courant Institute of Mathematical Sciences**  
**M.S. in Mathematics in Finance**
- **Expected Coursework:** object-oriented programming (Java), penalized regression, decision trees, linear regression, Fama-French, Black-Scholes, stochastic processes, Hull-White model
- 08/19 - 05/22 **NEW YORK UNIVERSITY** New York, NY  
**B.A. in Mathematics**
- **Coursework:** multivariable calculus, linear algebra, probability, statistics, numerical analysis, real analysis, data structures, algorithms, financial accounting, economics
  - **Minor:** Computer Science
  - **Honors/Awards:** Degree with Distinction; Dean's List for 5 semesters

## EXPERIENCE

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- 06/21 - 08/21 **SHENWAN HONGYUAN CO., LTD** Beijing, China  
(Top 10 securities firm in China)  
**Quantitative Research Intern**
- Priced convertible bonds with Black-Scholes model and Monte Carlo simulation in Python; built convertible bond index in Excel
  - Audited 3 asset securitization investment projects; analyzed and integrated information and data according to clients' promotional material; crafted reports and presented to manager
  - Predicted cash flow for asset securitization investment projects using Excel; created tables to visualize data and ensured their accuracy
  - Updated and supplemented research reports of clients China Railway, China Communications Construction, China Railway Construction, and China Power Construction
- 07/20 - 08/20 **KPMG CHINA** Shanghai, China  
**Audit Intern**
- Audited over 3,000 car replacement contracts; checked their accuracy and formatting
  - Collaborated with team members on creating and presenting audit reports to partners

## PROJECT

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- 11/20 - 12/20 **NEW YORK UNIVERSITY SHANGHAI** Shanghai, China  
**Welfare and Inequality in China**
- Collected data and analyzed relationship among the level of education, medical treatment, and inequality in different provinces in China
  - Applied linear regression to calculate relationships among different provinces' data; used hypothesis testing to determine which data was relevant
  - Summarized data in Excel and applied GeoDa to make visualization about inequality; wrote reports and presented findings

## COMPUTATIONAL SKILLS / OTHER

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

**Languages:** English (fluent), Mandarin (native)

**Affiliation/Certification:** CFA Level I candidate

**Other Experience:** English Language Teaching Assistant, Martz Educational Institute in Soochow, China

# BAIHE YUAN

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## EDUCATION

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- Expected 12/23 **NEW YORK UNIVERSITY** New York, NY  
**The Courant Institute of Mathematical Sciences**  
**M.S. in Mathematics in Finance**
- *Expected Coursework:* Java, option pricing models, equilibrium asset pricing models, arbitrage pricing theory, risk neutral pricing, Black-Scholes theory, stochastic calculus
- 07/18 - 05/22 **BRANDEIS UNIVERSITY** Waltham, MA  
**B.S. in Economics & Mathematics Double Major; Business Minor**
- *Coursework:* machine learning with Python (numerical linear algebra), probability, statistics
  - *Honors and Awards:* Magna Cum Laude

## EXPERIENCE

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- 05/21 - 07/21 **TAIKANG PENSION & INSURANCE** Beijing, China  
**Strategic Planning Intern**
- Conducted research and summarized results about public health policies in 6 regions
  - Tabulated data on health conditions for 1,600+ employees; used Excel and MySQL to analyze and visually present Chinese employees' health in 17 industries
- 07/19 - 09/19 **TOTO NORTH CHINA** Beijing, China  
**Administrative and Data Analysis Intern**
- Learned and applied Excel functions to collect and verify new product information; gave factory suggestions for production planning based on new products' sales volume
  - Improved colleagues' work efficiency by taking inventory of office supplies and ranking materials according to frequency of use

## PROJECTS

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- 09/21 - 11/21 **RENMIN UNIVERSITY** Beijing, China  
**Forecasting Chinese Stock Market (Shanghai Shenzhen CSI 300)**
- Developed and tested ARIMA models for analyzing Shanghai and Shenzhen stock exchange returns to forecast future returns
  - Created GARCH models to compare the two stock markets; found volatility of markets to be closely correlated by analyzing models' coefficients and conditional standard deviation
- 09/21 - 12/21 **BRANDEIS UNIVERSITY** Waltham, MA  
**Movie Recommendation Algorithm**
- Collaborated with team members to use algorithm that made movie recommendations based on users' movie preferences
  - Built model with PCA, regression, and k-clustering based on 4,500 observations
- 09/19 - 11/19 **Investment Club - Analysis of US and China Energy Sectors**
- Speculated future investment opportunities by collecting data on petroleum wholesaling, semiconductor, and energy industries, while analyzing impact of external factors
  - Wrote paper on investment opportunities after collecting and analyzing information; predicted crude oil return decrease and natural gas and renewable energy increase after 2025

## COMPUTATIONAL SKILLS / OTHER

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*Programming Languages:* RStudio, Python, MySQL

*Languages:* English (fluent), Mandarin (native)

*Certification:* Passed CFA Level I

# WEI (ANDY) YUAN

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## EDUCATION

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- Expected 12/23 **NEW YORK UNIVERSITY** New York, NY  
**The Courant Institute of Mathematical Sciences**  
**M.S. in Mathematics in Finance**
- **Expected Coursework:** derivatives pricing, stochastic processes, time series analysis, Support Vector Machines, object-oriented programming (Java), linear regression, Fama-French, Black-Scholes & Greeks, interest rate models, optimization
- 08/18 - 05/21 **INDIANA UNIVERSITY** Bloomington, IN  
**B.S. in Mathematics, B.A. in Economics with High Distinction**
- **Coursework:** calculus, linear algebra, probability, statistics, ODEs, econometrics, multi-factor models, time series models
  - **Award:** James E. Moffat Scholarship (Highest GPA in Economics Department in 2020)

## EXPERIENCE

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- 09/21 - 03/22 **GALAXY DERIVATIVES CAPITAL MANAGEMENT** Shanghai, China  
**Quantitative Analyst Intern**
- Designed and backtested futures trading strategy with Sharpe ratio of 2.1 by using fundamental data and Backtrader library
  - Constructed multi-factor model and factor analysis structure that analyzed performance of fundamental and technical factors of chemical commodities futures
  - Applied risk parity technique to optimize fund allocation for futures trading strategy, which decreased maximum drawdown to 5%
- 09/20 - 10/20 **ALLIED MILLENNIALS PARTNERS** New York, NY  
**Quantitative Analyst Intern**
- Analyzed Charles Schwab Corporation's common stock returns using AR(1) model; tested whether those returns achieved weak efficient market criteria
  - Created dummy variable model and examined seasonality in financial markets by exploiting ordinary least squares regression
  - Charted data (e.g., PE ratio, ROE) of Schwab compared to other financial services firms'
- 06/19 - 08/19 **FOUNDER SECURITY** Beijing, China  
**Steel and Coal Industry Research Intern**
- Aggregated Chinese steel and coal industry data; compiled it into daily reports
  - Collaborated with team members in building iron ore price analysis system
  - Forecasted decline of iron ore prices during 2nd half of 2019 correctly

## PROJECTS

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- 03/22 **BARUCH COLLEGE** New York, NY  
**Options Pricing System (C++)**
- Applied Boost, STL library, and OOP technique to build options pricing system
  - Used exact pricing method for European and perpetual American options; built Greeks calculation functions
  - Developed numerical method pricing with Monte Carlo and finite difference methods for European options
- 04/21 **INDIANA UNIVERSITY** Bloomington, IN  
**PetroChina Company Limited Analysis (Python)**
- Identified number of lags in time series models by using Bayesian information criterion
  - Built EGARCH and Markov switching models to analyze PetroChina on Shanghai Stock Exchange and New York Stock Exchange using Python
  - Concluded that basic volatility of PetroChina on Shanghai Stock Exchange was almost double of its volatility on New York Stock Exchange

## COMPUTATIONAL SKILLS / OTHER

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**Programming Languages:** Python, Java, C++, MATLAB, VBA, SQL

**Languages:** English (fluent), Mandarin (native)

**Activity:** North American Debate Contest for Chinese University Students (Team won 2nd place)

# JINMING (JIM) ZHANG

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## EDUCATION

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- Expected 12/23 **NEW YORK UNIVERSITY** New York, NY  
**The Courant Institute of Mathematical Sciences**  
**M.S. in Mathematics in Finance**
- **Expected Coursework:** object-oriented programming (Java), penalized regression, decision trees, linear regression, Fama-French, Black-Scholes, stochastic processes, Hull-White model
- 09/19 - 05/22 **UNIVERSITY OF WISCONSIN-MADISON** Madison, WI  
**B.A. in Mathematics and B.A. in Economics**
- **Coursework:** stochastic processes, probability, linear algebra, ordinary differential equations, game theory, Bayesian statistics, law of large numbers, econometrics
  - **Honors/Awards:** Dean's list (top 2%)
- 09/17 - 06/19 **SHANDONG UNIVERSITY** Ji'nan, China  
**B.S. in Human Resource Management**
- **Coursework:** calculus, accounting, time series analysis, statistics, economics

## EXPERIENCE

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- 07/21 - 09/21 **SHENWAN HONGYUAN SECURITIES** Beijing, China  
**Investment Banking Intern**
- Evaluated property trust and its financial solvency, analyzed risks, and created investment scheme including risk management suggestions
  - Collaborated with teammates in performing due diligence as well as drafting prospectus and investment reports
  - Analyzed financial statements released by top 30 sports teams worldwide; evaluated pandemic's impact on them
  - Co-wrote research report on multiple aspects of ice-snow sports industry in China (e.g., clothing, gear) over prior 10 years
- 04/21 - 07/21 **MORGAN STANLEY** Shanghai, China  
**Quantitative Analyst Intern**
- Developed Python programs based on FIX protocol to receive and store order information
  - Used high-frequency algorithm to classify, time, and quantify orders; accelerated processing by 45%; retrieved and enriched FIX messages according to different trading strategies
  - Optimized VWAP and TWAP algorithms; simplified codes and sped up processing by 20%

## PROJECTS

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- 01/21 - 05/21 **UNIVERSITY OF WISCONSIN-MADISON** Madison, WI  
**Tracking Worldwide COVID-19 Vaccination (Python)**
- Programmed database crawler that extracted information from 50 countries (e.g., HDI, GDP, and number of new vaccinations)
  - Analyzed collected data to define duration of pandemic's phases in each country
  - Predicted COVID-19 vaccination development in those countries
- 09/20 - 12/20 **Loose Monetary Policy in New Framework**
- Analyzed how Taylor's rule fit new objectives that Federal Reserve Board stated in 2020
  - Used IS-LM model to assess effectiveness of new conventional monetary policies during economic shocks
  - Applied Expectations Hypothesis of Term Structure model and Phillips Curve to assess impact of unconventional monetary policies (e.g., credit easing) on market since 2018

## COMPUTATIONAL SKILLS / OTHER

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**Programming Languages:** Python, Java, Stata

**Languages:** English (fluent); Korean (native); Mandarin (native)

# YUXUAN (LEXIE) ZHANG

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## EDUCATION

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- Expected 12/23 **NEW YORK UNIVERSITY** New York, NY  
**The Courant Institute of Mathematical Sciences**  
**M.S. in Mathematics in Finance**
- **Expected Coursework:** OOP in Java, LSTM model, Black-Scholes formula, Ito's lemma, options pricing, derivatives trading, risk-neutral valuation
- 09/18 - 06/22 **BEIJING JIAOTONG UNIVERSITY** Beijing, China  
**B.S. in Statistics**
- **Coursework:** probability, linear regression, stochastic process, machine learning, real analysis, functional analysis, ordinary differential equations, time series analysis
  - **Honors:** National Recognition (team ranked top #65 of 844) in Bayesian Statistics, First Prize in Chinese Undergraduate Mathematical Contest in Modeling (team ranked in top 4% nationwide)

## EXPERIENCE

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- 07/21 - 09/21 **CHINA GALAXY SECURITIES** Beijing, China  
**Investment Banking Analyst Intern (Wind, Excel)**
- Used conditional stock selection function in Wind (Chinese version of Bloomberg) to find relevant cases for due diligence and transaction evaluation
  - Visualized data with PivotChart; cleaned multiple fixed income securities' data with VLOOKUP
  - Wrote evaluation, referring to prior 3 years' mergers, using precedent transaction analysis
- 12/20 - 02/21 **ACCENTURE** Beijing, China  
**Technology Consulting Assistant (SAP)**
- Collaborated with business planning and consolidation consultant to construct expense budget table in SAP; created 23 logical carding diagrams of cost allocation configuration rules
  - Maintained weekly reports and meeting minutes; listed outstanding issues in group budget; promoted customers' user training progress and optimized speed of system implementation
- 07/20 - 08/20 **PANGUWEB TECHNOLOGY**  
(Regional operator of China's largest search engine, Baidu)
- Data Analyst Intern (Power BI, Power Query)** Shijiazhuang, China
- Processed data with Power Query to assess sales volume of different goods for prior 10 years
  - Applied Pareto's rule to analyze sales data; drew waterfall plot in Power BI to visualize changes
  - Analyzed seasonal influence of different goods' sales data for target customers; submitted report to senior managers to facilitate their sales strategy

## PROJECTS

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- 06/20 - 04/21 **BEIJING JIAOTONG UNIVERSITY** Beijing, China  
**Empirical Bayesian Estimation in Generalized Censoring Scheme (R, MATLAB)**
- Estimated parameters of censored data with Bayesian and E-Bayesian methods based on LINEX and SE loss functions (methods for model optimization)
  - Conducted KS test and implemented Metropolis-Hastings algorithm for simulation study
  - Published two papers in SCI journals: one in [Entropy](#) and one in [Mathematical Problems in Engineering](#)
- 05/20 - 07/20 **HARVARD BUSINESS SCHOOL** Remote  
**Fintech and Asset Management (Python)**
- Utilized DCF model and DuPont analysis methods for Yangjie Technology Co., Ltd.
  - Predicted stock price trends in Python with ARIMA, GARCH, and Holt-Winter models; introduced SVM algorithm to process nonlinear parts of data
  - Tested and removed outliers from ARIMA and SVM models
  - Recommended purchase of Yangjie Technology shares,; which achieved 148% return in forthcoming 1.5 years compared to 6% from CSI 300 Index

## COMPUTATIONAL SKILLS / OTHER

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**Programming Languages:** Python, Java, R, MATLAB, SQL, Wind  
**Languages:** English (fluent); Mandarin (native)



# CHEN ZHAO

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## EDUCATION

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- Expected 12/23 **NEW YORK UNIVERSITY** New York, NY  
**The Courant Institute of Mathematical Sciences**  
**M.S. in Mathematics in Finance**
- **Expected Coursework:** stochastic calculus, object-oriented programming in Java, supervised and unsupervised machine learning, portfolio optimization, Fama-French, time series analysis
- 09/18 - 04/22 **UNIVERSITY OF PITTSBURGH** Pittsburgh, PA  
Completed first two years at Sichuan University (China)  
**B.S. in Material Science and Engineering, Minor in Economics**
- **Coursework:** stochastic process, probability theory, linear algebra, MLE, machine learning, partial differential equation, corporate finance, game theory, Hamilton's equations, thermodynamic modeling and numerical simulation, time-independent Schrödinger equation
  - **Honors/Awards:** Term Honors, all semesters Dean's Honor, all semesters

## EXPERIENCE

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- 06/21 - 08/21 **JINRUI FUTURES** Shanghai, China  
(Traditional commodity hedging and arbitrage research firm)  
**Market Research Intern**
- Interpreted and qualitatively analyzed copper futures in China under carbon-neutral policies
  - Collaborated in writing report on using iron ore and coke futures in rebar industry, hedging against adverse price movements
  - Explained logic of cross-hedging strategy in presentation to department
- 02/21 - 03/21 **CHINA INTERNATIONAL CAPITAL CORPORATION (CICC)** Shanghai, China  
**Quantitative Analyst Intern**
- Managed large-scale datasets of Shanghai Stock Exchange 50 ETF Option in Python
  - Calculated synthetic forward prices and implied volatility of options using different market discount factors in Python
  - Calculated implicit market discount factor of options by linear regression in Python
  - Built backtesting system and tracked daily profit and loss to verify accuracy of new implicit market discount factor and reliability of strategies in MATLAB

## PROJECTS

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- 09/22 - 10/22 **NEW YORK UNIVERSITY** New York, NY  
**Stock Trading Platform Design (Python)**
- Implemented functions that users can bid buy/sell prices for a stock and view the real time price
  - Designed match system by constructing new data structure according to price/time
- 03/21 - 05/22 **UNIVERSITY OF PITTSBURGH** Pittsburgh, PA  
**Math Research on Low-Dimensional Lotka-Volterra Models of Economic Growth (R, MATLAB)**
- Contributed to developing new mathematical model to interpret different countries' economic growth trends; discovered nonlinear relationships among several variables; created new features
  - Developed algorithms that combined linear regression, sparse identification, and particle swarm optimization to calculate model's parameters; checked parameters' convergence
  - Analyzed model's Hamiltonian system and numerically simulated it
  - Visualized evolution equations and calculated the attractors of dynamic system
- 07/22 - 08/22 **Kaggle Competition: American Express – Default Prediction (Python)**
- Managed large-scale dataset with time series and filled in missing data
  - Implemented several methods (e.g., QDA, PCA, SVM) to predict default probability
  - Designed parallel computing algorithms to speed-up calculation

## COMPUTATIONAL SKILLS / OTHER

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**Programming Languages:** Python, JAVA, MATLAB, R

**Languages:** English (fluent); Mandarin (native)

# YUQI (ZOE) ZHOU

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## EDUCATION

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- Expected 12/23 **NEW YORK UNIVERSITY** New York, NY  
**The Courant Institute of Mathematical Sciences**  
**M.S. in Mathematics in Finance**
- **Expected Coursework:** Black-Scholes, risk management, object-oriented programming (Java)
- 09/18 - 06/22 **UNIVERSITY OF CALIFORNIA, SAN DIEGO** San Diego, CA  
**B.S. in Applied Mathematics and B.A. in Economics**
- **Coursework:** capital asset pricing model, arbitrage pricing theory, futures hedging techniques, options trading strategies, econometrics, probability, statistics, real analysis, regression models, Monte Carlo simulation, decision trees, corporate finance

## EXPERIENCE

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- 03/21 - 05/21 **ZHESHANG SECURITIES** Shanghai, China  
(Top 20 securities firm in China)
- Sales & Trading Intern**
- Researched Chinese government bonds and US Treasury market, investigated macro drivers (e.g., interest rates, inflation), and summarized key takeaways in research report
  - Analyzed credit bonds for coal, steel, oil, and electricity industries, developed data analysis for steel industry using R, and produced carbon-neutral investment research report
  - Drafted weekly market summary; gathered 15 liquidity indicators (e.g., DR rates, OMO and UST yields in rates market); assessed credit risk of defaulted bond entities
  - Approached ~200 financial institutions on Bloomberg, administered cross-border transactions for new clients, such as Deutsche Bank, and updated daily trading information and volumes
- 07/20 - 09/20 **SHANGHAI PUDONG DEVELOPMENT BANK** Guangzhou, China  
**Fund Custody Intern**
- Tracked private equity funds, contacted ~300 portfolio managers, and updated custodian records
  - Examined funds' capital backgrounds and investment restrictions; conducted risk verification
  - Converted funds' paper files into digital ones and built 300 digital transfer records
- 08/19 - 09/19 **GUANGFA SECURITIES** Guangzhou, China  
**Debt Capital Market Intern**
- Collaborated in drafting company's semi-annual report; sorted bond issuance documents and supplemented company and business introduction sections in offering memorandum
  - Created status-tracking tables for bonds of 4 Chinese provinces in Excel spreadsheets and learned issuance information for bonds from Wind Financial Terminal

## PROJECTS

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- 07/21 - 01/22 **UNIVERSITY OF CALIFORNIA, LOS ANGELES** San Diego, CA  
**High-frequency Stock Price Movements and Market Microstructure (R)**
- Calculated 4 US tech stock return rates by collecting 30-year price data; designed 3 types of portfolios and efficient frontiers based on Markowitz portfolio theory
  - Constructed and backtested volatility-managed model portfolio
- 01/21 - 03/21 **UNIVERSITY OF CALIFORNIA, SAN DIEGO** San Diego, CA  
**Data Analysis and Inference Projects (Python)**
- Designed statistical analysis methods and investigated correlations among 5 topics
  - Used data science techniques such as implementing Poisson Process model, Mixed-Effect model, and single exponential smoothing to complete 5 research reports

## COMPUTATIONAL SKILLS / OTHER

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**Programming Languages:** R, Java, Python, MATLAB, STATA

**Languages:** English (fluent), Mandarin (native), Cantonese (basic)

# RUIHAN ZHUANG

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## EDUCATION

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- Expected 12/23 **NEW YORK UNIVERSITY** New York, NY  
**The Courant Institute of Mathematical Sciences**  
**M.S. in Mathematics in Finance**
- **Expected Coursework:** Machine learning, risk management, portfolio management, strategy simulations, data science, extreme-value theory, copulas, VaR, expected shortfall, stochastic calculus, Black-Scholes, arbitrage, risk-neutral valuation, log-normal hypothesis, derivatives, Feynman-Kac equation
- 09/18 - 03/22 **UNIVERSITY OF CALIFORNIA SAN DIEGO** San Diego, CA  
**B.S. in Mathematics-Computer Science**
- **Coursework:** OOP (Java, C++), data structures, agile methods, algorithms (e.g., greedy, graphs), statistics (hypothesis testing, MLE estimators, multivariate densities, Poisson process), econometrics (linear regression, IV estimators), multivariate calculus, linear algebra
  - **Honors/Awards:** 2021-2022 UC San Diego Physical Science Dean's Undergraduate Award for Excellence, Cum Laude

## EXPERIENCE

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- 07/22 - 08/22 **E FUND MANAGEMENT** Guangzhou, China  
(Largest public fund in China, AUM \$236B)
- Equity Analyst Intern**
- Analyzed Chinese automobile company BYD and effects of government policies on new-energy vehicle industry
  - Reviewed sell-side research reports and government statistics to determine causes of BYD's success with its best-selling models
  - Summarized BYD's advantages in battery and semiconductor production
- 07/21 - 08/21 **CHENGQI ASSET MANAGEMENT** Shenzhen, China  
(AUM \$4B)
- Quantitative Research Intern**
- Developed alpha-generating trading strategies using Python by leveraging stock market data, sell-side analytics forecasts, and company financial reports
  - Backtested alpha signals and analyzed their performance after risk factor and sector neutralization; improved several alpha signals
  - Experimented generating alpha by extracting market sentiment using sell-side forecasts

## PROJECTS

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- 12/20 - 06/21 **UNIVERSITY OF CALIFORNIA SAN DIEGO (Javascript, CSS)** San Diego, CA  
**Contribute to Research in Combinatorial Game Theory and App Development**
- Conducted research and developed 2 mathematical games – as website and native app; created installation packages for MacOS and Windows; designed games' UI
  - Added new modules to open-source toolkit commonly used in combinatorial game theory to compute games' theoretic values
- 07/20 - 09/20 **INDEPENDENT PROJECT (Python)** Qingdao, China  
**Application of Machine Learning Models**
- Designed and built housekeeping robot that recognizes human figures and controls flashlight to track and deter intruders
  - Customized heavy-duty pan-tilt hat, ensuring sufficient torque and control of flashlight rotation
  - Researched different machine learning models to find human-shape-recognition model suitable for robot with limited processing power

## COMPUTATIONAL SKILLS / OTHER

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**Programming Languages:** C++, C, Java, Python

**Languages:** English (fluent); Mandarin (native)

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