

# Yanzhe Wang

School of Mathematical Sciences, Peking University

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## Education

### Peking University

Sep. 2021 – July 2025 (expected)

*B.S. Mathematics; Double Major in Economics*

*Beijing, China*

**GPA: 3.90/4.00, Major Courses GPA: 3.91/4.00, Rank: 6/125; Double Major GPA: 3.98/4.00**

*Ranking among all students majoring in mathematics and applied mathematics*

## Research Interests

Machine Learning and its intersections with Financial Market, Applied Probabilities, Statistics.

## Research & Seminar Experiences

### High-frequency Pricing Model

Nov. 2022 – May. 2023

*Advised by Prof. Ruixun Zhang and working with Mr. Ruichen Wang*

*Peking University, China*

- Studied the Micro Price Model in High-frequency Pricing and CJ and VR(q) statistical tests for random walk hypothesis.
- Judged the extent of rejecting the three random walk hypotheses of Mid/Weighted/Micro price by CJ/VR(q) variance ratio; evaluated the estimators by the correlation coefficients that portray the predictive power for future prices within the same quarter under stock and date.
- Demonstrated the optimality of Mid/Weighted model under linearity hypothesis by ML/DL methods. Constructed a new high-frequency spread pricing model that outperforms the three existing models in statistical tests.
- My contributions: Proposed a methodology capable of evaluating the ability of three pricing models to predict future price movements and implemented the full analytical process; completed of ML code for demonstrating the optimality of Mid/Weighted model.

### Implied Volatility of Black-Scholes model and Corrado-Su model

Jun. 2023 – Dec. 2023

*Advised by Prof. Alan Anderson*

*New York University, US (remote)*

- Studied the volatility smile of BS model; studied CS model, the deformation of Black-Scholes model proposed by Corrado and Su that introduce implied third-order moments and fourth-order moments and its calculation method.
- Studied the implied volatility performance of two call options, SSE50ETF and CSI300ETF, between 2018 to 2020. Researched on the comparison of the models' ability to predict tomorrow's prices across different cross-sections.
- Formed a more comprehensive view about Chinese option market and the features of its volatility; studied topics including stochastic analysis and CS option pricing model; grew interests in financial derivatives and its pricing.

### Seminar on Financial Statistics

March. 2023 – Aug. 2023

*Organized by Prof. Jingping Yang, Prof. Ruixun Zhang and Prof. Xue Cheng*

*Peking University, China*

- Learned topics including Copula Function, Topological Data Analysis, Autoencoder Prediction, DL for time series, etc.
- Gave a talk on High-Frequency Pricing and Statistical Testing for Random Walk Hypothesis.

## Honors and Awards

- |  |      |
|--|------|
| • Academic Excellence Award of Peking University     | 2022 |
| • Third-class Scholarship of Peking University       | 2022 |
| • Gold Medal in the 35th China Mathematical Olympiad | 2019 |

## Internship Experiences

### Tongdeng Capital

*Quantitative Researcher*

**Jan. 2024 - Present**

*Shanghai & Beijing, China*

- Utilized data from the past ten trading days to forecast the dominant contracts for 73 futures products in the Chinese futures market.
- Independently developed two distinct algorithmic solutions to address this issue: one with optimized parameters for linear regression, and another employing a simple RNN (Recurrent Neural Network) with a custom loss function.
- Enhanced the prediction accuracy; reduced the forecast loss from the existing company algorithm's 2.49% to 1.69%. The model is now in production use by the company.

### Lianhai Capital

*Quantitative Researcher*

**Aug. 2023 - Sep. 2023**

*Shanghai, China*

- Built from scratch a two-layer GRU weekly frequency factor model for A-shares database and live trading system. Employed a hybrid RNN+NN architecture for short-term return forecasting and utilize heuristic search to randomly select factor combinations from the factor library.
- Trained and analyzed 600 unique factor combinations; back-tested the results and assessed the impact of various hyper parameters, orthogonalization functions, and other model configurations on the model's stock selection and timing capabilities. The best model reached a Sharpe of 3.86.
- Submitted two factor ideas per week that met the company's back-testing criteria.

## Selected Scores

Maths Courses	Grades	CS Courses	Grades
Probability Theory	95	Analysis of Financial Data (python)	99
Mathematical Statistics	100	Machine Learning	94
Stochastic Analysis and Applications	97	Introduction to Computation (python)	91
Applied Stochastic Process	92.5	Data Structure and Algorithm (C++)	98
Mathematical Introduction to Machine Learning (Graduate)	94		
Mathematical Analysis I, II, III (Honor)	92.3 (average)		

See the report card for a full list of courses.

## Activity Experiences

**School Floorball Team Player**

**Dec. 2023 to date**

**Class Committee Publicity Member**

**Sep. 2021 to date**

**Member of Peking University Orientation Association**

**Sep. 2021 to date**

*Individual: 5th place; Team: 2nd place*

*2021 "Peking University Cup" Orientation Race*

## Standardized Language Tests

- TOEFL iBT, Total 107 (Reading 29, Listening 28, Speaking 24, Writing 26)
- GRE General Test, Total 326 (Verbal Reasoning 156, Quantitative Reasoning 170)