

Yifan Li

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Education

University of Connecticut

PHD IN STATISTICS

Connecticut, USA

Sep 2018 - Sep 2023

University of Wisconsin - Madison

MASTER IN STATISTICS

Wisconsin, USA

Sep 2016 - May 2018

Nanjing University

BACHELOR IN STATISTICS

Jiangsu, China

Sep 2013 - Jun 2017

Work Experience

Quantitative Trading Book in Ernst & Young U.S. LLP

New York, USA

SENIOR CONSULTANT

Oct 2023 - Present

- Modular Redesign of Derivatives Pricing Algorithm
 - Led the architectural overhaul by decomposing the algorithm into service class and analysis units, achieving high **decoupling** of code.
 - Enabling independent updates to each component without affecting the overall system, significantly reducing redundancy and enhancing maintainability.
 - Designed robust unit testing frameworks, improving system **debug reliability** by proactively identifying potential errors.
- Optimization of American Options Pricing
 - Applied the American Monte Carlo (**AMC**) method to price American options, replacing the original Monte Carlo over Monte Carlo method.
 - Achieved a substantial reduction in computational complexity from $O(n^2)$ to **$O(n)$** , cutting pricing time and saving considerable resources.
- Equity Derivatives Pricing Algorithm Enhancement
 - Improved the pricing framework for equity derivatives by transitioning from a market-based risk model to an underlying location-based risk analysis, enhancing accuracy and **interpretability**.
 - Integrated advanced machine learning techniques, such as **LSTM**, **random forest** models with traditional MCMC methods to price derivatives, enabling the pricing of complex toxic options with more than three underlying.
- Counterparty Credit Risk Monitoring
 - Employed SFT VaR-based models to calculate and monitor Counterparty Credit Risk.
 - **Interpreted** complex data and model results, and delivered clear insights to stakeholders, including cross-disciplinary teams and **non-technical** audiences.
 - Regularly updated model parameters in line with evolving market data, ensuring the models reflect current market conditions and deliver accurate risk assessments.

Bank of China International Holdings Limited

Shanghai, China

SECURITIES ANALYST ASSISTANT (INTERN)

Jun 2021-Sep 2021

- Predicted the short- and long-term performance of new energy industry equity based on time series model with a spike-and-slab error.
- Adjusted the prediction under a multinomial model based on the performance of correlated companies, avoiding an over-optimistic forecast.

HUATAI SECURITIES CO., LTD. (HTSC)

Jiangsu, China

DATA ANALYST (INTERN)

Jul 2017-Sep 2017

- **Unsupervised** screened visitors with a strong desire to buy products based on their records on company's APP.
- Cleaned and reshaped the **17 million** visitor records by summarizing operations from the same visitor, and grouped them by **K-means**.
- Extracted useful variables by principal component analysis (**PCA**) method used in decision tree to tag visitor in 20s while the target is 1 min.

Thesis

Enhancing Flexibility and Efficiency Item-Response-Theory Model

Connecticut, USA

- Developed innovative extensions to Item-Response-Theory (IRT) models by incorporating flexible power link functions and random effects to address traditional limitations, such as skewness and parameter constraints.
- Integrated item response and response time into a joint model using a nonparametric Dirichlet Process prior, removing normality assumptions.
- Designed a joint model to examine the dynamics of individual abilities and their impact on response times using forward and backward forecasting methods. Modeled response times through a Cox proportional hazards framework with semiparametric partial likelihood estimation.

Skill

- **Language:** Mandarin Chinese (Native), English
- **Coding/Database Languages:** Master R, Python, GitHub, Latex, Nimble, JUGS and HPC, familiar with SQL, SAS, MATLAB, C++ and Julia.
- **Certificate:** CFA level 1