Yifan **Li**

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Education

University of Connecticut	*Connecticut, USA*
PHD IN STATISTICS	*Sep 2018 - Sep 2023*
University of Wisconsin - Madison	*Wisconsin, USA*
MASTER IN STATISTICS	*Sep 2016 - May 2018*
Nanjing University	*Jiangsu, China*
BACHELOR IN STATISTICS	*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, archieving high decoupling of code.
    - Enabling independent updates to each component without affecting the overall system, significantly reducing redundancy and enhancing maintainability.
    - Designed and implemented 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 interpretablity.
    - Intergrated 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, delivering 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 method used in decision tree to tag visitor in 20s.

Thesis

Enhanceing Flexibility and Efficiency Item-Response-Theory Model　　　*Connecticut, USA*

- Developed innovative extensions to Item-Response-Theiry (IRT) models by incorporating flexible power link functions and random effects to address traditional limitations, such as skewness and parameter constraints.
- Joint Model of Item Response and Response Time with Dirichlet Process Prior
- Joint Model of Longitudinal Item Response and Survival Time

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