

# YAODE SUI

Waterloo, Ontario, Canada

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## Education

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### Wilfrid Laurier University

*PhD Candidate - Mathematical and Statistical modelling*

Sep 2019 - Jan 2024 (expected)

*Advisor: Dr. Giuseppe Campolieti and Dr. George Lai*

### Wilfrid Laurier University

*Master of Science - Financial Mathematics*

Sep 2018 - Aug 2019

*Advisor: Dr. George Lai*

### Southwestern University of Finance and Economics

*Bachelor of Science & Bachelor of Economics*

Sep 2014 - Jun 2018

## Work Experience

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### World Bank Group - IBRD - Market and Counterparty Risk

*Short Term Consultant*

April 2023 - July 2023

*Waterloo, Canada*

- Led dynamic interest-rate model development for financial product valuation and risk assessment.
- Formulated no-arbitrage representations of interest rate term structures, enabling zero-coupon bond price modeling.
- Employed simulation techniques for projecting future interest-rate states and yield curves.
- Conducted meticulous processing and analysis of original data from the interest rate derivative markets.
- Leveraged meticulously processed data to finely calibrate model parameters, aligning them with prevailing market conditions. This calibration process not only ensured accurate risk assessment but also bolstered the reliability of pricing outcomes across a range of models.

## Research Interest

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- Stochastic Analysis
- Risk Management
- Machine Learning
- Derivative Pricing
- Simulation
- Deep Learning

## Research Experience

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### Distributions of Last Passage Times for Families of Solvable Diffusions | *Paper*

- Derived the general formulae for marginal and joint distributions involving last passage times under solvable diffusions.
- Employed the spectral expansion method to derive explicit formulas for Geometric Brownian Motion, Constant Elasticity of Variance model, Squared Bessel, and Ornstein-Uhlenbeck diffusion models.
- Applied the diffusion canonical transformation method to extend the results to more complex asset price models.

### The Application of Last Passage Time in Option Pricing | *Paper*

- Demonstrated the practical relevance of last passage time by devising several path-dependent step options.
- Derived closed-form pricing formulas for these options using spectral expansion under four specific diffusion model.
- Performed numerical analysis and presented the results for the pricing of standard last passage step options and double barrier last passage knock-out options.

### Asset Price Prediction Using Informer Model | *Working Paper*

- Applied and improved the Informer model for stock price prediction and compared its forecasting performance with that of traditional deep learning methods.
- Applied the improved model to the options market and evaluated the model's effectiveness in this domain.
- Conducted the first study to incorporate carbon trading as a factor affecting the model input for improved forecasting of market trends.

### Pricing Asian Options with Regime Switching and Jump Diffusion by the CLMR Tree Method | *Paper*

- Analyzed the convergence rate of the recombined CLMR trees method under regime switching jump diffusion model.
- Provided a new method to price Asian options under regime-switching jump-diffusion model.
- Proved the convergence rate of Asian option's pricing under CLMR tree.

## Technical Skills

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**Programming Languages:** Matlab, Python, SQL

**Frameworks:** Pandas, Scikit, TensorFlow, Keras

**Soft Skills:** Problem-solving, Leadership, Event Management, Collaboration, Adaptability, Time Management