

Junyan Ye

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Education

Jilin University, College of Communication Engineering

Undergraduate in Communication Engineering, GPA: 3.97 / 4.0

Changchun, Jilin, China

Sep 2019 - Jul 2020

Jilin University, School of Mathematics

Undergraduate in Mathematics and Applied Mathematics, GPA: 3.91 / 4.0

Professional courses averaged grade: 94.8 / 100

Rank: 1 / 71

Changchun, Jilin, China

Sep 2020 - Present

Expected Graduate: Jun 2024

Massachusetts Institute of Technology, MIT xPRO

Successful completion of advanced SPOC on applying machine learning to engineering and science

Online

Jun 2022 - Sep 2022

Awards

Scholarships

National Scholarship (Top 1%) for twice, Dec 2020 & Dec 2022

First Class Scholarship for twice, Dec 2021 & Dec 2023

QI-ANXIN Scholarship, May 2023

XILAIJIAN Scholarship, May 2022

ZHAOYUE Scholarship, Oct 2022

Ministry of Education, China

Jilin University

Jilin University

Jilin University

School of Mathematics, Jilin University

Honors

University Excellent Student Leader, Dec 2022

University Excellent Student for four times, Dec 2020, Dec 2021, Dec 2022 & Dec 2023

Excellent Member of the Youth League, Jun 2021 & Jun 2023

Academic-Technology Award, Dec 2022 & Dec 2023

Jilin University

Jilin University

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Jilin University

Competition Awards

First prize of National College Mathematical Modeling Competition in Jilin area, Dec 2021

Third prize of National University Mathematics Contest, Dec 2021

CSIAM

CMS

Research Experience

National College Students' Innovation Program, *National level project approval, Paper finished*

Jun 2022 - Oct 2023

Supervisor: Prof. Yuecai Han, Vice-president of School of Mathematics

Jilin University

Research topic: Optimal stopping for swaying option based on deep learning and its application to carbon emission rights market.

- **Leading** our team to research on optimal control and stopping of American option by deep learning and its extension to multiple stopping swaying option; **Analyzing** its application in carbon emission rights market.
- **Coding for** the structure of deep learning for optimal stopping and multiple stopping; **Testing** the result against previous research result by generating stochastic process sample path and real data of American option.

Summer Research Program 2023 of Department of Mathematics, HKUST, *Successfully completed*

Jul 2023 - Aug 2023

Supervisor: Prof. Shuaijie Qian

HKUST

Research Topic: Neural network for solving free-boundary of investment-consumption with transaction cost problem.

- **Conducting** research on deep neural network for solving free-boundary in American option problem, and its extension to general singular control problem, especially to investment-consumption with transaction cost problem.
- **Coding for** numerical computation of free-boundary in American option pricing problem and investment-consumption with transaction cost problem by deep learning.

Undergraduate Science Research Program of Jilin University, *Project approval*

Jan 2023 - Present

Supervisor: Prof. Chunpeng Wang, Recipient of National Science Fund for Distinguished Young Scholars

Jilin University

Research Topic: Control theory of degenerate diffusion equation in the boundary.

- **Conducting** research on null-controllability and Carleman estimates of class of degenerate parabolic equations in the boundary with lower order term and convection term by approximation and perturbation approach.

PBL - Machine Learning in Quantitative Finance, *Paper finished*

Sep 2022 - Jan 2023

Supervisor: Prof. Weixuan Xia.

Boston University

Research Topic: Tempered stable subordinator with stochastic volatility: model calibration on Bitcoin option and Ethereum option.

- **Conducting** research on asymptotic properties of tempered stable subordinators, volatility of Heston model as well as their Gaussian mixture formulation with calculating their statistics.
- **Coding for** calibration of Bitcoin & Ethereum option pricing for our established stochastic volatility model against real market price by Fourier and its inverse transformation.

Leadership and Work Experience

Head of Publicity and Investigation Department of Student Union, Jilin University

Nov 2022 - Sep 2023

- **Operating** the new media platforms of the Student Union, which include **WeChat** and **Bilibili** official accounts (similar to Twitter and YouTube), for purpose of publicity.
- **Delegating** tasks such as poster design, article writing, and video creation to members of the department, while also occasionally completing tasks myself, and providing **guidance** and feedback to ensure **high-quality work**.
- **Collaborating** with other departments of the Student Union to organize **large-scale events** that align with the objectives of the Student Union.
- **Organizing** members of the department to conduct **surveys** aimed at gathering the opinions of students on various topics related to the university and writing comprehensive **reports** on the results to present to the administration department of the university.

Teaching Assistant, School of Mathematics, Jilin University

Sep 2023 - Present

- **Organizing** and conducting **seminars** on Mathematics Analysis and Advanced Linear Algebra for freshmen, with the aim of enhancing their understanding of these subjects and promoting their academic success.
- Guiding freshmen to participate in **discussions** on significant mathematical concepts and challenging problems, and encouraging them to think critically and creatively.
- Answering questions from freshmen and providing them with **advice** and guidance on mathematics learning skills and strategies, as well as sharing my own experiences and insights.

Academic Tutor for freshmen, School of Mathematics, Jilin University

Sep 2021 - Jun 2023

- **Guiding** and monitoring the study of freshmen on professional courses, including Mathematical Analysis, Advanced Algebra and Analytical Geometry.
- Collaborating with course instructors to develop assignments and assessments and providing **feedback** to the instructors on the students' progress and performance.

President of Class, School of Mathematics, Jilin University

Mar 2022 - Present

- Coordinating the **affairs** of class members and organizing various class activities, such as basketball and football games, that promote teamwork and social interaction in my class.
- **Gathering opinions** and feedback from class members on various topics related to the school.

Additional Information

Interest: Stochastic Control, Mathematical Finance, Optimization, PDE, Duality, Machine Learning, Reinforcement Learning

Skills: Modeling, Python, Matlab, C & C++, Machine Learning and Deep Learning coding, PS & PR

Language: English (TOEFL 100 & GRE 326 + 3.5), Mandarin (Native), Cantonese (Native)