Guanyu Jin

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SUMMARY

PhD in applied mathematics with 5 years of experience in data-driven decision-making, robust optimization, econometrics, and quantitative risk management. Proficient in Python and R programming. Keen to apply my expertise in a team-oriented environment.

EDUCATION

- **University of Amsterdam** — *2021 - 2025*
  PhD in Applied Mathematics, Data-Driven Optimization and Actuarial Science — Amsterdam, the Netherlands
  (Advisors: Prof. Roger J. A. Laeven and Prof. Dick den Hertog)

- **Columbia University** — *March 2024 - April 2024*
  Visiting PhD Researcher — New York, USA

- **Technion - Israel Institute of Technology** — *April 2023*
  Visiting PhD Researcher — Haifa, Israel

- **Leiden University** — *2014 - 2020*
  Master and Bachelor Mathematics (cum laude) + Propaedeutic Physics, Life Science and Technology (cum laude) — Leiden, the Netherlands

WORK EXPERIENCE

- **University of Amsterdam** — *Jan 2021 - July 2025*
  PhD Researcher at the Departement of Quantitative Economics — Amsterdam, the Netherlands
  - Conducted quantitative research on actuarial risk models and data-driven optimization to improve decision-making under risk and model uncertainty.
  - Presented research findings in top international scientific conferences, such as SIAM Conference on Optimization, European Conference on Operations Research (EURO), and inter-university PhD seminars for risk modelling.
  - Supervised master's theses for interns at A.S.R. and De Nederlandsche Bank; taught data science and econometrics courses covering linear regression, hypothesis testing, data preprocessing, PCA, correlation modeling, and risk premium calculations.

- **Centrum Wiskunde en Informatica** — *Jan 2020- Oct 2020*
  Machine Learning Research Intern — Amsterdam, the Netherlands
  - Improved computational efficiency of reinforcement learning models for designing AI opponents in computer games.

PROJECTS

A list of my academic papers is available on my website ([Link](#)). Below, I summarized my top three scientific projects.

- **Enhancing Risk Management Capabilities in Data-Driven Decision Systems**:
  Summary: Sophisticated risk models have been developed for tackling the complexity of 21st-century risk. Integrating these models into automated decision-making systems introduces new mathematical challenges. Together with researchers from the University of Amsterdam, we developed novel optimization techniques to overcome these challenges, thereby improving decision-making models widely used in the financial and retail industries.

- **Addressing Model Risk in Financial Risk Management**:
  Summary: The 2008 financial crisis and the collapse of Long-Term Capital Management highlighted the importance of model risk management. In this project, we developed a unifying framework that provides comprehensive guidance for risk managers in measuring model risk using the robust optimization methodology—from calibrating model uncertainty sets to calculating robust risk bounds.

- **Uncertainty Quantification**:
  Summary: Monte Carlo simulation is a popular technique used by risk quants to approximate the distribution of their financial portfolio and to calculate risk. This method is subject to sampling error and thus has to be quantified to ensure a thorough assessment of risk. Leveraging tools from non-parametric statistics, I developed explicitly computable statistical confidence bounds that allow risk quants to quantify the uncertainty of their simulation study.

Skills

- **Programming**: Python, R.

- **Optimization Packages**: CVXPY, GUROBI, MOSEK, IPOPT.

- **Statistics and Machine Learning**: Causal Inference, Linear Regression, Ridge and Lasso Regression, Generalized Method of Moments, Neural Networks, XGboost.

- **Mathematical Finance**: Stochastic Calculus, Martingale Pricing Theory.

- **Quantitative Risk Management**: Dependence modelling, Copulas, Value-at-Risk, Capital Requirement Calculations, Model Risk.

Languages

Dutch, English, Chinese