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 robust optimization—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. 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