

# Michael Boyuan Zhu, ASA

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## Education

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| <b>Ph.D. Candidate – Actuarial Science</b> , University of Waterloo       | September 2020 – Present        |
| • Supervisor: Dr. Mario Ghossoub  |                                 |
| <b>Master of Mathematics – Actuarial Science</b> , University of Waterloo | September 2019 – September 2020 |
| • Supervisor: Dr. Mario Ghossoub  |                                 |
| • Completed Thesis: Cost Efficient Contingent Claims with Choquet Pricing |                                 |
| • Cumulative average: 96%   |                                 |
| <b>Exchange Student – Computer Science</b> , ETH Zürich                   | September 2016 – February 2017  |
| <b>Honours Bachelor of Mathematics</b> , University of Waterloo           | September 2013 – December 2018  |
| • Mathematical Finance, Computer Science Minor                            |                                 |
| • Graduation with Distinction   |                                 |

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## Professional Designation

**ASA:** Associate of the Society of Actuaries

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## Research Interests

Actuarial science, quantitative risk management,  
game theory, ambiguity and risk uncertainty, behavioral finance

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## Publications and Manuscripts

### Peer-reviewed journal articles

1. **Risk-Constrained Portfolio Choice under Rank-Dependent Utility** (with Mario Ghossoub). *Finance and Stochastics*, forthcoming. [SSRN]
2. **Stackelberg Equilibria with Multiple Policyholders** (with Mario Ghossoub). *Insurance: Mathematics and Economics*, 116(1):189-201, 2024. [↗]
3. **Pareto-Optimal Insurance with an Upper Limit on the Insurer's Exposure** (with Oma Coke, Mario Ghossoub). *Scandinavian Actuarial Journal*, 2024(3):227-251, 2024. [↗]
4. **Equilibria and Efficiency in a Reinsurance Market** (with Tim Boonen, Mario Ghossoub). *Insurance: Mathematics and Economics*, 113(1):24-49, 2023. [↗]

### Pre-publication manuscripts and working papers

1. **Efficiency in Pure-Exchange Economies with Risk-Averse Monetary Utilities** (with Mario Ghossoub). *Submitted*. [arXiv]

2. **Pareto-Optimal Peer-to-Peer Risk Sharing with Robust Distortion Risk Measures** (with Mario Ghossoub, Wing Fung Chong). *Under review at ASTIN Bulletin*. [arXiv]
  3. **Loss Aversion for Decision under Risk** (with Mario Ghossoub). *Working paper*.
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## Academic Presentations

1. **Pareto-Efficient Contracts in Centralized vs. Decentralized Insurance Markets, with an Application to Flood Risk** – 27th International Congress on Insurance: Mathematics and Economics (Jul. 2024)
  2. **Equilibria and Efficiency in a Reinsurance Market** – 26th International Congress on Insurance: Mathematics and Economics (Jul. 2023)
  3. **Insurance with Heterogeneous Beliefs: A Sequential Game Model** – Waterloo 3rd Student Conference in Statistics, Actuarial Science, and Finance (Oct. 2022)
  4. **Risk Sharing with Heterogeneous Beliefs** – University of Amsterdam (Jun. 2022)
  5. **Risk-Constrained Portfolio Choice via Quantiles** – Waterloo 2nd Student Conference in Statistics, Actuarial Science, and Finance (Nov. 2021), 56th Actuarial Research Conference (Aug. 2021), 24th International Congress on Insurance: Mathematics and Economics (Jul. 2021)
  6. **Cost-Efficient Contingent Claims with Choquet Pricing** – Canadian Operational Research Society Annual Conference (Jun. 2021), University of Waterloo Statistics and Actuarial Science Presentation Day (Feb. 2021)
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## Professional Service

- Conference Co-Chair** – 4th WSSAF October 27-28, 2023
- One of two student organizers in charge of the 4th Waterloo Student Conference in Statistics, Actuarial Science and Finance. Duties included contacting external speakers, managing volunteers, event logistics, etc.
- Research Mentor** – Women in Mathematics (WiM) Directed Reading Program January – April 2023
- Mentored a female undergraduate student from the Faculty of Mathematics as part of the WiM Directed Reading Program. Focused on the topic of economic equilibria from mathematical economics.
- Conference Volunteer, Session Chair** – 2nd, 3rd WSSAF October 2021, 2022
- Assisted with the 2nd and 3rd editions of the Waterloo Student Conference in Statistics, Actuarial Science and Finance. Reviewed abstracts and served as session chair.

## Peer-Review Service

- *ASTIN Bulletin*, *Scandinavian Actuarial Journal*.
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## Teaching Experience

**Sessional Instructor**, University of Waterloo

- ACTSC 446/846 – Mathematics of Financial Markets Fall 2023

**Teaching Assistant**, University of Waterloo

- ACTSC 971 – Finance 2 2021, 2024
- ACTSC 446/846 – Mathematics of Financial Markets 2020, 2021, 2023
- ACTSC 445/845 – Quantitative Enterprise Risk Management 2021
- ACTSC 631 – Financial Mathematics III 2020, 2021, 2022, 2023
- ACTSC 633 – Actuarial Risk Management 2022

- ACTSC 634 – Quantitative Risk Management 2020, 2021, 2023
  - ACTSC 635 – Professional Communications in Actuarial Science 2022
  - ACTSC 372 – Corporate Finance 2021, 2022
  - STAT 333 – Applied Probability 2019, 2020
  - STAT 231 – Statistics 2019
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## Selected Honors and Awards

- James C. Hickman Scholar – SOA 2022-2025
  - Ontario Graduate Scholarship 2022-2025
  - D.A. Sprott Entrance Award – University of Waterloo 2020
  - Actuarial Science Doctoral Entrance Award – University of Waterloo 2020
  - NSERC Undergraduate Student Research Award 2016
  - Top 350 (of 4275) in the Putnam Mathematical Competition 2015
  - Placed 30th nationally in the Canadian Mathematical Olympiad 2012
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## Work Experience

- Undergraduate Research Assistant – Pure Mathematics** January – April 2016  
*University of Waterloo – Waterloo, ON*
- Software Engineer Intern** May – August 2015  
*Wish – San Francisco, CA*
- Application Analyst** April – August 2014  
*National Bank Financial – Toronto, ON*

**Last updated: Dec. 2024**