

Panyi Dong

Biography

Panyi Dong is a Ph.D. student in Actuarial and Risk Management Sciences at the University of Illinois Urbana-Champaign. Prior to doctoral studies, he obtained his Master degree in Actuarial Science from UIUC and Bachelor degree with honors in Physics from Zhejiang University. His research focuses on applying data-driven AI techniques to solve real-world challenges in the insurance industry and to advance the actuarial profession. His work emphasizes privacy-preserving data collaboration, algorithmic bias and fairness, and interpretable AI systems. Panyi has led and contributed to interdisciplinary research projects in partnership with both academia and industry, including collaborations with the Society of Actuaries (SOA) Research Institute and Intel. His research has been published in peer-reviewed actuarial journals and presented at leading academic conferences. He is also a recipient of the SOA James C. Hickman Scholar Award. Beyond his academic research, he serves as a graduate supervisor at the IRisk Lab, where he mentors student teams and oversees a range of AI-focused research projects at the intersection of industry and academia.

Education

- 2022–Present **Ph.D. student, Actuarial and Risk Management Sciences**, *University of Illinois Urbana-Champaign*, Champaign, USA, Advisor: Professor Zhiyu Quan, PhD.
- 2020–2022 **M.S., Actuarial Science and Risk Management**, *University of Illinois Urbana-Champaign*, Champaign, USA.
- 2016–2020 **B.S., Physics**, *Zhejiang University*, Hangzhou, China.

Research Interest

Actuarial Science, Machine Learning (ML), Algorithmic Bias and Fairness, Interpretable AI, Privacy-preserving ML, Federated Learning (FL), Automated Machine Learning (AutoML)

Professional Experience

- 2022–Present **Graduate Supervisor**, *University of Illinois Urbana-Champaign*, Illinois Risk Lab, USA.
- 2022–Present **Graduate Research/Teaching Assistant**, *University of Illinois Urbana-Champaign*, Department of Actuarial and Risk Management Sciences, USA.
- 2021 **Intern**, *AIA Life Insurance Company Limited*, Reporting Team, Shanghai, China.

Publications

Refereed Journal Articles

- 2026 **Panyi Dong**, Zhiyu Quan. (2026) InsurTech innovation using natural language processing. *North American Actuarial Journal*, forthcoming.
- 2025 **Panyi Dong**, Zhiyu Quan. (2025). Automated Machine Learning (AutoML) in Insurance. *Insurance: Mathematics and Economics*, 120, 17-41.
- 2025 Zhiyu Quan, Changyue Hu, **Panyi Dong**, Emiliano A. Valdez. (2025). Improving Business Insurance Loss Models by Leveraging InsurTech Innovation. *North American Actuarial Journal*, 29(2), 247-274.

Working Manuscripts

- 2026 **Panyi Dong**, Runhuan Feng, Zhiyu Quan, Tianyang Wang. Bridging the Divide While Walking a Tightrope: Evidence from the Insurance Industry on Federated Data Sharing. *Under review*. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=6442024
- 2026 Jiayi Guo, **Panyi Dong**, Zhiyu Quan. Starting Off on the Wrong Foot: Pitfalls in DataPreparation. *Under review*. <https://arxiv.org/abs/2603.18190>
- 2026 **Panyi Dong**, Zhiyu Quan. Efficient and Interpretable Transformer for Counterfactual Fairness. *In preparation*. <https://arxiv.org/abs/2604.26188>
- 2026 Hybrid Tree-based Interpretable Pricing. (with Zhiyu Quan, Montserrat Guillen, Lluís Bermúdez) *In preparation*.
- 2025 Rare events data and zero reduction sampling. (with Zhiyu Quan, Haiying Wang, Jing Wang, Jiaqi Liu) *In preparation*.

Professional Publications

- 2024 **Panyi Dong**, Runhuan Feng, Zhiyu Quan, Tianyang Wang. Federated Learning for Insurance Companies. *Society of Actuaries Research Institute*, <https://www.soa.org/resources/research-reports/2024/federated-learning-insurance-companies/>

Other Publications

- 2024 **Panyi Dong**, Zhiyu Quan, Brandon Edwards, Shih-han Wang, Runhuan Feng, Tianyang Wang, Patrick Foley, Prashant Shah. Privacy-Enhancing Collaborative Information Sharing through Federated Learning—A Case of the Insurance Industry. <https://arxiv.org/abs/2402.14983>

Grants

- 2025 **SOA Research Institute / University Partnerships for Artificial Intelligence Topics**, *Society of Actuaries*, Co-PI.
- 2025 **Model Governance/Ethics for GenAI Models**, *Society of Actuaries*, Co-PI.

Awards & Honors

- 2025 & 2026 **SOA James C. Hickman Scholar Doctoral Stipend**, *Society of Actuaries*.
- 2024 & 2025 **PARM Summer Research Fellows**, *University of Illinois Urbana-Champaign*.
- 2020 **Certificate of Chu Kochen Honor Program**, *Zhejiang University*.
- 2016-2020 **Second-Class Scholarship for Elite Students in Basic Science**, *Zhejiang University*.

Presentations

- 2026 **Hybrid Tree-based Interpretable Pricing**, *29th International Congress on Insurance: Mathematics and Economics (IME)*, Sungkyunkwan University, Seoul, Korea, Jun. 29-Jul. 3, 2026.
- Efficient and Interpretable Transformer for Counterfactual Fairness**, *61th Actuarial Research Conference (ARC)*, The Ohio State University, Columbus, USA, Jul. 21-24, 2026.
- 2025 **Hybrid Tree-based Interpretable Pricing**, *60th Actuarial Research Conference (ARC)*, York University, Toronto, Canada, Jul. 29-Aug. 1, 2025.
- 2024 **Automated Machine Learning (AutoML) in Insurance**, *27th International Congress on Insurance: Mathematics and Economics (IME)*, DePaul University, Chicago, USA, Jul. 8-11, 2024.
- 2023 **Privacy-Preserving Collaborative Information Sharing Through Federated Learning**, *58th Actuarial Research Conference (ARC)*, Drake University, Des Moines, USA, Jul. 30-Aug. 2, 2023.

Privacy-Preserving Collaborative Information Sharing Through Federated Learning, *National Center for Supercomputing Applications (NCSA) Student Conference, University of Illinois Urbana-Champaign*, Champaign, USA, Apr. 13, 2023.

Privacy-Preserving Collaborative Information Sharing Through Federated Learning, *Probabilistic Safety Assessment and Management (PSAM) Topical Conference 2023, University of Illinois Urbana-Champaign*, Abstract accepted.

2022 **Automated Machine Learning (AutoML) in Insurance**, *57th Actuarial Research Conference (ARC), University of Illinois Urbana-Champaign*, Champaign, USA, Aug. 3-6, 2022.

Academic Services

Peer Review

Variance

North American Actuarial Journal (NAAJ)

Technological Forecasting and Social Change (IF: 12.9)

IEEE Transactions on Big Data (IF: 7.5)

Professional Exams

SOA (Society of Actuaries): Exam P, FM, IFM, LTAM, STAM, SRM, VEE Mathematics Statistics. Towards ASA.

Research Experience

Graduate Supervisor, Illinois Risk Lab

Fall 2025 Model Governance and Ethics for GenAI Models

2022 Insurance Privacy Preservation in Federated Learning Collaboration

Fall 2022 Algorithm Bias and Explainable Artificial Intelligence (XAI)

Graduate Researcher, Illinois Risk Lab

2022 Enhance Insurance Models through Insurtech Innovations

Fall 2021 Automated Machine Learning in Insurance

Teaching Experience

Course Instructor, University of Illinois Urbana-Champaign

Fall 2026 **ASRM 195 Foundations of Data Management**, *Course Development, Course Teaching.*

Teaching Assistant, University of Illinois Urbana-Champaign

NOTE: * Teachers Ranked as Excellent by Their Students.

Spring 2026 **ASRM 510 Financial Mathematics**, *Course Development, Grading, Office Hour.*

ASRM 539 Risk Analytics & Decision Making, *Course Development.*

Fall 2025 **ASRM 471 Life Contingencies I (SOA UEC FAM-L)**, *Course Development, Discussion Session, Office Hour.*

Spring 2025 **ASRM 471 Life Contingencies I (SOA UEC FAM-L)**, *Course Development, Discussion Session, Office Hour.*

ASRM 539 Risk Analytics and Decision Making, *Office Hour.*

Fall 2024 **ASRM 471 Life Contingencies I (SOA UEC FAM-L)**, *Course Development, Discussion Session, Grading, Office Hour.*

Spring 2024 **ASRM 471 Life Contingencies I***, *Course Development, Discussion Session, Grading, Office Hour.*

ASRM 555 Advanced Predictive Analytics, *Course Development, Office Hour.*

Fall 2023 **ASRM 471 Life Contingencies I (SOA UEC FAM-L)***, *Course Development, Discussion Session, Grading, Office Hour.*

ASRM 454 Generalized Linear Models, *Grading.*

ASRM 499 Deep Learning for Finance & Insurance, *Grading.*

Fall 2022 **ASRM 471 Life Contingencies I (SOA UEC FAM-L)***, *Course Development, Discussion Session, Grading, Office Hour.*

MATH 563 Risk Modeling and Analysis, *Course Development, Grading.*

Miscellaneous

Podcast

2025 **From Actuarial Science to Scalable Workflow**, <https://www.youtube.com/watch?v=bECgDIzxnB4>.