

# Changyue Hu

## Biography

Changyue Hu is a Ph.D. student majoring in Actuarial Science at the University of Illinois at Urbana-Champaign, advised by Prof. Zhiyu Quan. Prior to joining the doctoral program, she obtained her Master's degree in Actuarial Science at the University of Illinois and her Bachelor's degree in Mathematics at Nankai University. Her research interests lie in machine learning applications in actuarial science. She has been a graduate supervisor of several InsurTech-related research projects in IRisk Lab since Spring 2021. She has also received the SOA James C. Hickman Scholar Doctoral Stipend, the State Farm Actuarial Science Scholarship, the Esther Portnoy Actuarial Science Scholarship, and the Student Presentation Rewards at the Actuarial Research Conferences.

## Education

- 2021–Present **Ph.D., Mathematics with a Concentration in Actuarial Science and Risk Analytics**, *University of Illinois Urbana-Champaign, USA*, Advisor: Professor Zhiyu Quan, PhD.
- 2019–2021 **M.S., Actuarial Science**, *University of Illinois Urbana-Champaign, USA*.
- 2016–2020 **B.S., Mathematics and Applied Mathematics**, *Nankai University, China*.

## Research Interest

Actuarial Science, Statistical Learning, Data Science, InsurTech, Tree-Based Models, Text Mining and Natural Language Processing

## Scholarships & Awards

- 2024 **James C. Hickman Scholar Doctoral Stipend**, *Society of Actuaries*.
- 2024 **2024 PARM Summer Research Fellowship**, *University of Illinois Urbana-Champaign*.
- 2023 **Esther Portnoy Actuarial Science Scholarship**, *University of Illinois Urbana-Champaign*.
- 2023 **Teachers Ranked as Excellent by Their Students**, *University of Illinois Urbana-Champaign*.
- 2022 **2022 ARC Presentation Prize - Honorable Mention**, *Society of Actuaries*.
- 2022 **Illinois Risk Lab Award**, *University of Illinois Urbana-Champaign*.
- 2022 **State Farm Actuarial Science Scholarship**, *University of Illinois Urbana-Champaign*.
- 2021 **2021 ARC Presentation Prize - Honorable Mention**, *Society of Actuaries*.

## Publications

### Refereed Journal Articles

- 2024 Zhiyu Quan, **Changyue Hu**, Panyi Dong, Emiliano A. Valdez. Improving business insurance loss models by leveraging InsurTech innovation. *North American Actuarial Journal*, Accepted. *arXiv preprint*: <https://doi.org/10.48550/arXiv.2401.16723>
- 2022 **Changyue Hu**, Zhiyu Quan, Wing Fung Chong. Imbalanced learning for insurance using modified loss functions in tree-based models. *Insurance: Mathematics and Economics*, <https://doi.org/10.1016/j.insmatheco.2022.04.010>

## Submitted Manuscripts

- 2024 Linfeng Zhang, **Changyue Hu**, Zhiyu Quan. NLP-Powered Repository and Search Engine for Academic Papers: A Case Study on Cyber Risk Literature with CyLit. *Submitted for publication*. *arXiv preprint*: <https://doi.org/10.48550/arXiv.2409.06226>

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## Presentations

- 2024 **NLP-Powered Repository and Search Engine for Academic Papers: A Case Study on Cyber Risk Literature with CyLit**, *the 27th International Congress on Insurance: Mathematics and Economics*, Depaul University, Chicago, Illinois, USA, 8-11 July 2024.
- 2023 **NLP-Powered Repository and Search Engine for Academic Papers: A Case Study on Cyber Risk Literature with CyLit**, *the 58th Actuarial Research Conference*, Drake University, Des Moines, USA, 30 July - 2 August 2023.
- Improving Business Insurance Loss Models by Leveraging InsurTech Innovation**, *National Center for Supercomputing Applications Student Conference*, University of Illinois Urbana-Champaign, Champaign, USA, 13 April 2023.
- 2022 **Improving Business Insurance Loss Models by Leveraging InsurTech Innovation**, *the 58th Actuarial Research Conference*, University of Illinois Urbana-Champaign, Champaign, USA, 3-6 August 2023.
- Improving Business Insurance Loss Models by Leveraging InsurTech Innovation**, *the Risk Analytics Symposium 2022*, University of Illinois Urbana-Champaign, Champaign, USA, 25 March 2022.
- 2021 **Imbalanced Learning using Actuarial Modified Loss Functions in Tree-based Models**, *the 2nd Waterloo Student Conference in Statistics, Actuarial Science and Finance*, University of Waterloo, Waterloo, Canada, 5-6 November 2021.  
On-line
- Imbalanced Learning using Actuarial Modified Loss Functions in Tree-based Models**, *the 56th Actuarial Research Conference*, DePaul University, Chicago, USA, 19-21 August 2021.  
On-line
- Imbalanced Learning using Actuarial Modified Loss Functions in Tree-based Models**, *United As One: 24th International Congress on Insurance: Mathematics and Economics*, University of Illinois Urbana-Champaign and Pennsylvania State University in United States, Ulm University in Germany, and the University of New South Wales (UNSW Sydney) in Australia, 5-9 July 2021.  
On-line

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## Teaching Experience

### Teaching Assistant, University of Illinois Urbana-Champaign

- Fall 2024 ASRM 461 Loss Models (SOA UEC FAM-S): *CD, DT, GD, OH*
- Spring 2024 ASRM 441 Statistics for Risk Modeling I (SOA UEC SRM-I): *DT, OH*  
ASRM 469 Casualty Actuarial Mathematics: *GD, OH*
- Fall 2023 ASRM 461 Loss Models (SOA UEC FAM-S): *CD, DT, GD, OH*  
ASRM 462/561 Advanced Loss Models (SOA UEC ASTAM): *CD, DT, GD, OH*  
MATH 563 Risk Modeling: *CD, GD*
- Fall 2022 ASRM 195 Foundations of Data Management: *DT, GD, OH*  
ASRM 461 Loss Models (SOA UEC FAM-S): *CD, DT, GD, OH*  
ASRM 561 Advanced Loss Models (SOA UEC ASTAM): *CD, DT, GD, OH*
- Spring 2022 ASRM 210 Theory of Interest: *DT, OH*  
ASRM 499 Statistics for Risk Modeling: *GD, OH*

Fall 2021 ASRM 510 Financial Mathematics: *GD, OH*  
MATH 225 Introductory Matrix Theory: *GD, OH*  
MATH 461 Probability: *GD, OH*  
Spring 2021 ASRM 455 Predictive Analytics: *CD, OH*  
ASRM 461 Loss Models: *CD, DT*  
*CD: Course Development; DT: Discussion Teaching; GD: Grading; OH: Office Hour*

## Research Experience

### Graduate Supervisor, Illinois Risk Lab

2022 Spatiotemporal Modeling on Foot Traffic Data to Unlock Auto Insurance Geo-risks  
2021-2022 COUNTRY Financial Business Owner's Policy (BOP) Loss Predictive Model  
2021 Pekin Insurance General Liability Insurance (GL) Loss Predictive Modeling

### Student Researcher, Illinois Risk Lab

2020 AI-Powered Lifecycle Financial Planning  
2020 Measuring Intra-day Systemic Risk in High-frequency Order Books

### Thesis Research

2020-2021 Imbalanced Learning using Actuarial Modified Loss Functions in Tree-based Models