

QIANQIAN WANG

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EDUCATION

Southern University of Science and Technology (SUSTech)
PhD Student in Mathematics, Department of Statistics and Data Science

Shenzhen, China
Sept. 2023 – Now

Southern University of Science and Technology (SUSTech)
M.S. in Mathematics, Department of Statistics and Data Science

Shenzhen, China
Sept. 2020 – June 2022

Henan University
B.S. in Information and Computing Science, School of Mathematics and Statistics

Kaifeng, China
Sept. 2014 – June 2018

RELATED COURSES

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|---|-----------------------------------|----------------------------------|
| • Selected Lectures on the Frontiers of Statistics I (A+) | Processing (A-) | • Numerical Algebra (94) |
| • Categorical Data Analysis (A-) | • Functional Data Analysis (A-) | • Database (94) |
| • Machine Learning (A+) | • Data Structures(92) | • Combinatorial Mathematics (93) |
| • Advanced Natural Language | • Optimal Calculation Method (94) | • Probability theory (90) |

RESEARCH EXPERIENCES

Traffic Accident Risk Prediction Analysis and Emergency Response Technology Research based on Multi-mode Mixed Travel

Subject No.: 2021ZDZX1069

Shenzhen, China
March 2022 – Now

Investigator

Supervisor: **Prof. Lili Yang**, Department of Statistics and Data Science, SUSTech, China

- Analyze multi-source heterogeneous traffic data and construct a molecular dynamics-based multi-vehicle interaction exposure.
- Establish a multi-layer mixed effect accident frequency prediction model.
- Quantitative assessment of accident casualty level based on exposure and Bayesian theory.

R&D and Application Demonstration of Public Safety Risk Prevention and Control System

Subject No.: 2019yfc0810700

Shenzhen, China

Responsible for the unmanaged enterprise intelligent push model

July 2020 – Dec. 2021

Supervisor: **Prof. Lili Yang**, Department of Statistics and Data Science, SUSTech, China

- Develop an intelligent push model for unmanaged enterprises and form technical reports.
- Write and complete a test scenario for the model.
- Assist the project team to complete and pass the test of the third-party testing agency.
- Write a patent for enterprise management based on a decision tree model.

Research on Crowd Flow Prediction and Emergency Evacuation Technology for Mass Events in Urban Activity Venues

Subject No.: JCYJ20200109141218676

Shenzhen, China
July – Aug. 2020

Investigator

Supervisor: **Prof. Lili Yang**, Department of Statistics and Data Science, SUSTech, China

- Analyze the intrinsic correlation and causality of massive pedestrian flows.
- Construct a large-scale activity scenario deduction model under emergencies based on Bayesian network.
- Perform natural language processing on pedestrian flow data to build a knowledge map of safety management under emergencies.

PUBLICATIONS

- **Qianqian Wang**, Wenwu Gong, Yunshan Li, Ruili Wang, Zhenqing Wu, and Lili Yang., Environment-Adaptive Causal Representation Learning for Robust Recommendation. (2025). IEEE TRANSACTIONS ON KNOWLEDGE AND DATA ENGINEERING (Working paper)
- **Qianqian Wang**, Jiawen Zeng, Yunshan Li, Wenwu Gong, and Lili Yang., Diffusion-Guided Causal Alignment Recommendation against User Preference Shifts. (2026). Information Processing & Management (Working paper)
- **WANG Qianqian**, MENG Fanyu, ZENG Yiping, ZHANG Shaobiao, WU Guohua, YANG Lili. Calculation method of fire risk for urban areas based on DBSCAN clustering: A case study of Yantian District, Shenzhen[J]. Journal of Safety Science and Technology, 2021, 17 (02) : 177-182.
- Gan, Y., **Wang, Q.**, Huang, Z. and Yang, L., 2024. Attention-based causal representation learning for out-of-distribution recommendation. Applied Intelligence, 54(24), pp.12964-12978.
- Yang, M., **Wang, Q.**, Yang, L. and Huang, Z., 2023, November. Attention-based bidirectional long short-term memory for urban traffic prediction using multivariate data. In Third International Conference on Artificial Intelligence, Virtual Reality, and Visualization (AIVRV 2023) (Vol. 12923, pp. 237-250). SPIE.
- Ding, Y., **Wang, Q.**, Qi, Z., Zhu, L., Zhu, Y., Luo, L. and Yang, L., 2023, December. A Causal Inference Method Based on Front-Door Criterion and Difference in Differences for Analyzing Traffic Conditions. In 2023 4th International Conference on Computer, Big Data and Artificial Intelligence (ICCBD+ AI) (pp. 6-12). IEEE.
- Zhang, A., **Wang, Q.**, Huang, Z., Yin, J. and Yang, L., 2024, May. Multi-model traffic accident clearance time prediction framework. In Fourth International Conference on Smart City Engineering and Public Transportation (SCEPT 2024) (Vol. 13160, pp. 204-210). SPIE.
- **Wang, Q.**, Zeng, J., Li, Y., Xu, X., Gong, W., Fu, H. and Yang, L., 2025. Deciphering spatiotemporal heterogeneity in urban networks with functional clustering. In: Proceedings of the 2025 6th International Conference on Computer, Big Data and Artificial Intelligence (ICCBD+ AI). [Forthcoming]. IEEE.
- Li, Y., **Wang, Q.**, Xu, X., Gong, W. and Yang, L., 2025. Transfer learning-based spatiotemporal urban mobility forecasting under abnormal situations. In: Proceedings of the 2025 6th International Conference on Computer, Big Data and Artificial Intelligence (ICCBD+ AI). [Forthcoming]. IEEE.
- Wang, R., Tang, H., **Wang, Q.**, Huang, Z. and Yang, L., 2024, February. A novel computational approach to gas dynamic analogous exposure without observable collision angles. In International Conference on Smart Transportation and City Engineering (STCE 2023) (Vol. 13018, pp. 1322-1332). SPIE.
- Ding, Y., Zhu, Y., Qi, Z., **Wang, Q.**, Wang, H. and Wu, S., 2024, November. The Propensity-Weighted Causal Learner (PWCL) for Efficient Machine Learning. In 2024 5th International Conference on Computer, Big Data and Artificial Intelligence (ICCBD+ AI) (pp. 193-198). IEEE.

PATENTS

- National invention patent “a construction method of traffic state prediction model and traffic state prediction method”. Patent number: 202111342354.0

PROJECTS

Shenzhen, China	Categorical Data Analysis with Grouped and Ungrouped Data
Class Instructor: Prof. Xiyun Jiao , Department of Statistics and Data Science, SUSTech	Mar. – June 2022
• Implemented categorical models including Logit, Probit, baseline Logit/Probit, Bayesian models, etc.	
• Carried out inferences to address significance with likelihood ratio, Pearson chi-square, and Wald test.	
Functional Data Analysis of Fruit Fly and Swedish Life Table	Shenzhen, China
Class Instructor: Prof. Jianqing Shi , Department of Statistics and Data Science, SUSTech	Mar. – June 2021
• Fit with appropriate basis and dimension reduction with PLS, functional PCA, dynamic fPCA.	
• Created and compared different scalar-on-function models, functional time series models, Gaussian Process Regression etc.	
Base on SVM-RFE Studying the pathological changes of colon tissue	Shenzhen, China
Class Instructor: Prof. Xin Chen , Department of Statistics and Data Science, SUSTech	Sept.–Dec. 2020

- Implemented Logistic Regression, Recursive Feature Elimination and Support Vector Machine, Recursive Feature Elimination to iteratively screen genes and build a binary classification model.
- Judging whether the colon tissue is diseased through the optimal model

WORKING

Shenzhen Maiman Technology Co., Ltd.

Shenzhen, China

Anti-fraud data analyst

Nov. 2018 – June 2019

- Use SAS or Python to design daily anti-fraud monitoring report template and generate daily anti-fraud monitoring report.
- Monitor reports, timely find and solve problems, daily data analysis, anti-fraud strategy development, policy deployment online.

Aurora Mobile

Shenzhen, China

Data analyst

Apr. – Oct. 2018

- Responsible for advertising analysis, real-time tracking of advertising effects.
- Coordinate with the advertising operation team to provide timely and effective data analysis support and solutions in the launching process of loan, game, e-commerce.

HONORS

2021 Second prize of the 18th China graduate mathematical modeling national award of "Huawei Cup"

2017 First prize of the first Quantitative Investment Simulation Trading Contest of Colleges and universities in Henan Province

2017 Scholarship of Henan University and Merit Student of Henan University

2017 Excellent Award of National College Students General Translation Award

2017 Certificate of Completion of Undergraduate Innovation and Entrepreneurship Training Program of Henan University

2016 Excellence Award of the 8th National Mathematics Competition for College Students

TEACHING

2024 Teaching assistant of STA5002-Mathematical Statistics @SUSTech

2021 Teaching assistant of STA5003-Categorical Data Analysis @SUSTech

2021 Teaching assistant of MA212-Probability Theory and Mathematical Statistics @SUSTech

SOFTWARE SKILLS

Python, SQL, R, SAS, Latex