

# Liangliang Zhuang

## Curriculum Vitae

Jiangsu, China

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Homepage, Google Scholar, ResearchGate



## Education

- 2022.9–2025.6 **Ph.D. in Statistics**, Zhejiang Gongshang University
  - Supervisor: Prof. Ancha Xu
- 2024.1–2025.1 **Visiting Ph.D. Student**, National University of Singapore
  - Supervisors: Prof. Loon Ching Tang and Prof. Zhisheng Ye

## Research Experience

- 2021.7–2022.1 **Research Assistant**, Hong Kong Polytechnic University
  - Supervisor: Prof. Xiaolin Wang
- 2025.8–present **Postdoctoral Research Fellow**, Nanjing University of Science and Technology
  - Supervisor: Prof. Yizhong Ma

## Research Interests

Reliability statistics; Predictive maintenance; Degradation modeling; Bayesian methods; Industrial analytics

## Selected Publications

- **Zhuang L**, Ma Y, Fang G, Xu A\*. Modeling two-scale degradation with heterogeneity: A unified random-effects inverse Gaussian framework, *IISE Transactions*, 2026.
- **Zhuang L**, Ma Y, Wang J, Pan R, Xu A\*. From statistical modeling to AI-integrated inverse Gaussian Process: A comprehensive review for prognostics and health management, *Engineering Management*, 2026.
- **Zhuang L**, Xu A\*, Wang Y, et al. Remaining useful life prediction for two-phase degradation model based on reparameterized inverse Gaussian process[J]. *European Journal of Operational Research*, 2024, 319(3): 877-890.
- **Zhuang L.**, Xu A\*, Fang G, et al. Multivariate reparameterized inverse Gaussian processes with common effects for degradation-based reliability prediction[J]. *Journal of Quality Technology*, 2025, 57(1): 51-67.
- Xu A, Fang G, **Zhuang L\***, et al. A multivariate Student-t process model for dependent tail-weighted degradation data[J]. *IISE Transactions*, 2025, 57(9): 1071-1087.
- **Zhuang L**, Xu A\*, Wang X\*. A prognostic driven predictive maintenance framework based on Bayesian deep learning[J]. *Reliability Engineering & System Safety*, 2023, 234: 109181.
- Xu A, Wang R, **Zhuang L\***. Strategic integration of adaptive sampling and ensemble techniques in federated learning for aircraft engine remaining useful life prediction[J]. *Applied Soft Computing*, 2025, 175: 113067.
- **Zhuang L**, Xu A\*, Wang B, et al. Data analysis of progressive-stress accelerated life tests with group effects[J]. *Quality Technology & Quantitative Management*, 2023, 20(6): 763-783.
- **Zhuang L**, Xu A\*, Pang J. Product reliability analysis based on heavily censored interval data with batch effects[J]. *Reliability Engineering & System Safety*, 2021, 212: 107622.

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## Books and Monographs

- 徐安察, 汤银才, 庄亮亮 (2025). 随机退化过程与统计建模. 科学出版社.
- 庄亮亮, 赵子茜 (2024). *R 速成: 统计分析和科研数据分析快速上手* (译书). 电子工业出版社.
- 庄亮亮等 (2021). *R Markdown 指南*. online book.

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## Working Papers

- **Zhuang L**, Gauthier B\*, Ye Z. Data-Driven KNN Modeling for Mixed Data: An Optimized Weighted Distance Approach, *Applied Soft Computing*, under 3rd round review.
- Xu A, **Zhuang L\*** (2026). Modeling Multivariate degradation with time-varying mean-variance dynamics for reliability assessment: a hierarchical Bayesian approach, *Journal of Quality Technology*, under review.

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## Awards and Honors

- National Scholarship for Ph.D. Students, Ministry of Education of China (Nov. 2024).
- Excellent Paper Award, Annual Conference of the Operations Research Society of China (Dec. 2023).
- Recipient of the National Scholarship Council (CSC) Grant for Joint Ph.D. Study, China (Aug. 2023).
- Best Student Paper Award, 4th International Conference on System Reliability and Safety Engineering (Dec. 2022).
- Second Prize, 6th National Academic Forum for Ph.D. Students in Statistics (Nov. 2022).
- National Scholarship for Master's Students, Ministry of Education of China (Sep. 2021).
- Outstanding Graduate of Zhejiang Province (Aug. 2021).

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## Research Grants

- Analysis on the Influencing Factors of the Comprehensive Competitiveness of Chinese Cities, *National Innovation and Entrepreneurship Training Program*, Jan. 2018 – Jan. 2020, PI.
- Reliability Analysis Based on Interval Data with Batch Effects, *Graduate Innovation Foundation of Wenzhou University*, Jan. 2019 – Jan. 2020, PI.
- Statistical Analysis of Lifetime Data with Batch Effects, *Research Foundation of the Zhejiang Provincial Education Department, China*, Jun. 2020 – Jun. 2021, PI.
- Innovative Applications of Reliability Analysis, *Zhejiang Xinmiao Talents Program*, Jul. 2021 – Jul. 2022, PI.

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## Academic Outreach

- Founder of a WeChat official account focusing on programming and statistical learning, with over 300 original posts, 40,000 followers, and 1.2 million total views.
- Produced two online tutorial courses, *Data Visualization* and *Document Communication*, on Bilibili (100,000+ total views).