

Liyan Xie

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RESEARCH AREA

- **Statistical Machine Learning:** Diffusion generative models, large language models, transfer learning, differential privacy, adversarial robustness.
- **Statistical Inference:** Time series analysis, survival analysis, sequential testing and detection.
- **Applications:** Healthcare, spatio-temporal data analysis, community detection, quality control.

EDUCATION

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|-------|--|---|-------------|
| Ph.D. | Industrial Engineering <i>Major in Statistics</i> | School of Industrial and Systems Engineering Georgia Institute of Technology | 2016 - 2021 |
| B.S. | Statistics | University of Science and Technology of China | 2012 - 2016 |

PROFESSIONAL APPOINTMENTS

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|-------------------|---|---|
| 2024.08 - present | Assistant Professor | Department of Industrial and Systems Engineering University of Minnesota |
| 2021.09 - 2024.07 | Assistant Professor | School of Data Science The Chinese University of Hong Kong, Shenzhen |
| 2023.09 - 2024.02 | Visiting Fellow <i>Hosted by Vincent Poor</i> | Department of Electrical and Computer Engineering Princeton University |
| 2022.09 - 2022.12 | Visiting Scholar <i>Hosted by Xiuyuan Cheng</i> | Department of Mathematics Duke University |

PUBLICATION LIST

Journal Publications

- [J1] Mohamed Seif, Liyan Xie, Andrea J. Goldsmith, H. Vincent Poor. “Private Online Community Detection for Censored Block Models.” *IEEE Transactions on Information Forensics & Security*, 2025.
- [J2] Liyan Xie, Xi He, Pinar Keskinocak, and Yao Xie. “Survival Analysis with Graph-Based Regularization for Predictors.” *Statistics in Biosciences*, 2025.
- [J3] Jingge Wang, Liyan Xie, Yao Xie, Shao-Lun Huang, Yang Li. “Generalizing to unseen domains with Wasserstein distributional robustness under limited source knowledge.” *IEEE Journal of Selected Topics in Signal Processing*, 2024.
- [J4] Xiaojun Zheng, Simon Mak, Liyan Xie, and Yao Xie. “eRPCA: Robust Principal Component Analysis for Exponential Family Distributions.” *Statistical Analysis and Data Mining: The ASA Data Science Journal*, 2024.
- [J5] Liyan Xie, Yao Xie, and George Moustakides. “Window-limited CUSUM for Sequential Change Detection.” *IEEE Transactions on Information Theory*, 2023.
- [J6] Minghe Zhang, Liyan Xie, and Yao Xie. “Spectral CUSUM for Online Network Structure Change Detection.” *IEEE Transactions on Information Theory*, 2023.
- [J7] Xiaojun Zheng, Simon Mak, Liyan Xie, and Yao Xie. “Percept: A New Online Change-Point Detection Method using Topological Data Analysis.” *Technometrics*, 2022.

- [J8] Haoyun Wang, Liyan Xie, Alex Cuzzo, Simon Mak, and Yao Xie. “Sequential Change-Point Detection for Mutually Exciting Point Processes.” *Technometrics*, 2022.
- [J9] Shixiang Zhu, Alexander Bukharin, Liyan Xie, Shihao Yang, Pinar Keskinocak, and Yao Xie. “Early Detection of COVID-19 Hotspots Using Spatio-Temporal Data.” *IEEE Journal of Selected Topics in Signal Processing*, 2022.
- [J10] Liyan Xie, Shaofeng Zou, Yao Xie, and Venugopal V. Veeravalli. “Sequential Change Detection: Classical Results and New Directions.” *IEEE Journal on Selected Areas in Information Theory*, 2021.
- [J11] Liyan Xie and Yao Xie. “Sequential Change Detection by Optimal Weighted ℓ_2 Divergence.” *IEEE Journal on Selected Areas in Information Theory*, 2021.
- [J12] Shixiang Zhu, Alexander Bukharin, Liyan Xie, Mauricio Santillana, Shihao Yang, and Yao Xie. “High-Resolution Spatio-Temporal Model for County-level COVID-19 Activity in the US.” *ACM Transactions on Management Information Systems*, 2021.
- [J13] Rios, Renee T., Francesca Lolli, Liyan Xie, Yao Xie, and Kimberly E. Kurtis. “Screening Candidate Supplementary Cementitious Materials under Standard and Accelerated Curing Through Time-series Surface Resistivity Measurements and Change-Point Detection.” *Cement and Concrete Research*, 2021.
- [J14] Anatoli Juditsky, Arkadi Nemirovski, Liyan Xie, and Yao Xie. “Convex Parameter Recovery for Interacting Marked Processes.” *IEEE Journal on Selected Areas in Information Theory*, vol. 1, no. 3, pp. 799-813, 2020.
- [J15] Liyan Xie, George V. Moustakides, and Yao Xie. “Sequential Subspace Changepoint Detection.” *Sequential Analysis*, vol. 39, no. 3, pp. 307-335, 2020. (Finalist of INFORMS QSR Best Student Paper Award 2019.)
- [J16] Yang Cao, Liyan Xie, Yao Xie, and Huan Xu. “Sequential Change-Point Detection via Online Convex Optimization.” *Entropy*, vol. 20, no. 2, pp. 108, 2018.

Refereed Conference Papers

- [C1] Aoran Zhang, Wenbin Zhou, Liyan Xie, Shixiang Zhu. “Recurrent Neural Goodness-of-Fit Test for Time Series.” *International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2025.
- [C2] Yidong Ouyang, Liyan Xie, Hongyuan Zha, Guang Cheng. “Transfer Learning for Diffusion Models.” *Conference on Neural Information Processing Systems (NeurIPS)*, 2024.
- [C3] Liyan Xie, Yuchen Liang, Venugopal V. Veeravalli. “Distributionally Robust Quickest Change Detection using Wasserstein Uncertainty Sets.” *International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2024.
- [C4] Yiran Yang and Liyan Xie. “Sequential Wasserstein Uncertainty Sets for Minimax Robust Online Change Detection.” *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, 2024.
- [C5] Yidong Ouyang, Liyan Xie, and Guang Cheng. “Improving Adversarial Robustness by Contrastive Guided Diffusion Process.” *International Conference on Machine Learning (ICML)*, 2023.
- [C6] Shixiang Zhu, Liyan Xie, Minghe Zhang, Rui Gao, and Yao Xie. “Distributionally Robust weighted k-Nearest Neighbors.” *Conference on Neural Information Processing Systems (NeurIPS)*, 2022.
- [C7] Liyan Xie. “Minimax Robust Quickest Change Detection using Wasserstein Ambiguity Sets.” *IEEE International Symposium on Information Theory (ISIT)*, 2022.

- [C8] Liyan Xie and Yao Xie. “Optimality of Graph Scanning Statistic for Online Community Detection.” *IEEE International Symposium on Information Theory (ISIT)*, 2021.
- [C9] Haoyun Wang, Liyan Xie, Alex Cuzzo, Simon Mak, and Yao Xie. “Uncertainty Quantification for Inferring Hawkes Networks.” *Conference on Neural Information Processing Systems (NeurIPS)*, 2020.
- [C10] Minghe Zhang, Liyan Xie, and Yao Xie. “Online Community Detection by Spectral CUSUM.” *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, 2020.
- [C11] Liyan Xie, Yao Xie, and George V. Moustakides. “Asynchronous Multi-Sensor Change-Point Detection for Seismic Tremors.” *IEEE International Symposium on Information Theory (ISIT)*, pp. 787–791, 2019.
- [C12] Rui Gao, Liyan Xie, Yao Xie, and Huan Xu. “Robust Hypothesis Testing Using Wasserstein Uncertainty Sets.” *Advances in Neural Information Processing Systems (NeurIPS)*, pp. 7902–7912, 2018. (spotlight)
- [C13] Liyan Xie, George V. Moustakides, and Yao Xie. “First-Order Optimal Sequential Subspace Change-point Detection.” *IEEE Global Conference on Signal and Information Processing (GlobalSIP)*, pp. 111–115, 2018.
- [C14] Yang Cao, Liyan Xie, Yao Xie, and Huan Xu. “Nearly Second-Order Optimality of Online Joint Detection and Estimation via One-Sample Update Schemes.” *Proceedings of the Twenty-First International Conference on Artificial Intelligence and Statistics (AISTATS)*, vol. 84, pp. 519–528, 2018.
- [C15] Liyan Xie, Yao Xie, Sin-Mei Wu, Fan-Chi Lin, and WenZhan Song. “Communication Efficient Signal Detection for Distributed Ambient Noise Imaging.” *IEEE Asilomar Conference on Signals, Systems, and Computers*, pp. 1779–1783, 2018.
- [C16] Liyan Xie and Yao Xie. “Sequential Detection of Low-Rank Changes Using Extreme Eigenvalues.” *IEEE 7th International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP)*, pp. 1–5, 2017.

HONORS AND AWARDS

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| 2021 | Robert Goodell Brown Fellowship for excellence in research (Data Science and Statistics), ISyE |
| 2020 | IDEaS-TRIAD and ARC-TRIAD Research Fellowships, Georgia Tech |
| 2020 | Selected to participate in EECS Rising Stars Workshop |
| 2020 | Outstanding Graduate Teaching Assistant Award, ISyE, Georgia Tech |
| 2019 | Runner up for INFORMS Computing Society Student Paper Prize |
| 2019 | Finalist of INFORMS QSR Best Student Paper Award |
| 2019 | Poster Award, Georgia Statistics Day |
| 2019 | Poster Award, WuFest Conference |
| 2018 | Poster Award, Georgia Statistics Day |

PROFESSIONAL SERVICE

Associate Editor, Statistics and Computing, since 2024.

Journal Referee of IEEE Transactions on Signal Processing, Sequential Analysis, Electronic Journal of Statistics, Journal of the Royal Statistical Society: Series B, Journal of the American Statistical Association, IEEE Transactions on Information Theory, Management Science, etc.

Conference Reviewer for: ICML, NeurIPS, ICLR, AISTATS, AAAI, ISIT, etc.