Dixin Luo

Assistant Professor, Associate Researcher
School of Computer Science and Technology, Beijing Institute of Technology
Homepage: `https://dixinluo.github.io/`
Github: `https://github.com/Dixin-Lab`
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EDUCATION

Ph.D., School of Electronic Information and Electrical Engineering — 2010-2016
Shanghai Jiao Tong University, China
Thesis: Group Behavior Modeling based on Event Sequences Analysis
Advisor: Prof. Wenjun Zhang

Visiting Scholar, College of Computing, — 2013-2014
Georgia Institute of Technology, USA
Advisor: Prof. Hongyuan Zha

Bachelor, School of Electronic Information and Electrical Engineering — 2006-2010
Shanghai Jiao Tong University, China

RESEARCH POSITIONS

Assistant Professor, Associate Researcher, — 2020-now
Beijing Institute of Technology, China.

Adjunct Associate Researcher, Tangshan Research Institute, China. — 2023-now

Postdoctoral Associate, Duke University, USA. — 2018-2020
Advisor: Prof. Lawrence Carin

Postdoctoral Fellow, University of Toronto, Canada. — 2016-2017
Advisor: Prof. Kelly Lyons

Research Intern, IBM China Research Lab, China. — Summer 2015
E-commerce recommendation system

RESEARCH INTERESTS

Machine learning, especially multi-modal learning and its applications in video understanding and generation.

Time series analysis, especially point process-based event sequence modeling and its applications in data science.

Graph analysis, especially optimal transport-based graph modeling and its applications.

RESEARCH FUNDING

General Program of Beijing Natural Science Foundation, **PI**, Multi-modal video understanding technology and application based on Optimal Transport theory, 200,000 RMB, 2026-2028.

NSF China, **PI**, Causality-assisted complex temporal data modeling and applications, 300,000 RMB, 2022-2024.

Key Laboratory of Artificial Intelligence, Ministry of Education, **PI**, Multi-modal learning and its applications in disease diagnosis under non-aligned data scenarios, 25,000 RMB, 2024-2025.

The Young Scholar Program, Beijing Institute of Technology, **PI**, Modeling and analysis of complex network temporal behaviors based on point process models, 400,000 RMB, 2021-2024.

The Technology Innovation Program, Beijing Institute of Technology, **PI**, Multimedia data representation and synthesis based on optimal transport theory, 300,000 RMB, 2021-2022.

TEACHING

Lecturer, Programming with Python, Undergraduate Course (in English)
Beijing Institute of Technology, Fall 2021, Fall 2022, Fall 2023, Fall 2024, Fall 2025

Lecturer, Programming with Python, Undergraduate Course
Beijing Institute of Technology, Spring 2022, Spring 2023, Spring 2024, Spring 2025

Lecturer, Swarm Intelligence, Graduate Course
Beijing Institute of Technology, Spring 2023, Spring 2024, Spring 2025

Teaching Assistant, Data Analytics: Introduction, Methods and Practical Approaches, Graduate Course
University of Toronto, Fall 2016
Instructor: Prof. Periklis Andritsos

Teaching Assistant, Modern signal processing, Graduate Course
Shanghai Jiao Tong University, Fall 2011, Fall 2012
Instructor: Prof. Rong Xie

INVITED TALKS

Inferring Directed Acyclic Graphs from Event Sequences via Learning Gromov-Wasserstein-Regularized Hawkes Processes, The Web Conference 2025, April 2025

Learning to Align: Multi-modal Video Understanding based on Optimal Transport, Forbidden City Young Scholars Forum, November 2024

Robust Graph Matching Using An Unbalanced Hierarchical Optimal Transport Framework, the Second General Science and Engineering Application Seminar, November 2024

An Optimal Transport Perspective of Multi-modal Video Understanding, Academic Frontier Lecture No. 77, Renmin University of China, June 2024

Group Sparse Optimal Transport for Sparse Process Flexibility Design, IJCAI'23, August 2023

Coupled Point Process-based Sequence Modeling for Privacy-preserving Network Alignment, IJCAI'23, August 2023

Robust representation and alignment of multi-modal data, the First General Science and Engineering Application Seminar, May 2023

Differentiable Hierarchical Optimal Transport for Robust Multi-view Learning, Workshop on Optimal Transport and Applications to Machine Learning, May 2022

Experience in teaching Python for data science majors, Python Advanced Computing Course Teaching Seminar, December 2022

Differentiable Hierarchical Optimal Transport for Robust Multi-view Learning, OT-SDM workshop, AAAI'22, February 2022

PROFESSIONAL SERVICES

Journal Reviewer
IEEE Transactions on Knowledge and Data Engineering
IEEE Transactions on Neural Networks and Learning Systems
IEEE Transactions on Emerging Topics in Computational Intelligence
Journal of the Royal Statistical Society: Series B
Journal of the Franklin Institute
Social Network Analysis and Mining

Conference Reviewer
International Conference on Neural Information Processing Systems (NeurIPS)
International Conference on Machine Learning (ICML)
International Conference on Learning Representation (ICLR)
AAAI Conference on Artificial Intelligence (AAAI)
International Conference on Computer Vision and Pattern Recognition (CVPR)
ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD)
The Web Conference (WWW)
ACM International Conference on Multimedia

Co-chair / Co-organizer
OT-SDMG: 2025 Workshop on Optimal Transport for Structured Data Modeling and Generation, The Web Conference 2025, Sydney, Australia, April 2025
The Workshop on Data-driven Knowledge Mobilization, CASCON 2016, Toronto, Canada, November 2016

PUBLICATIONS JOURNAL

1. **Dixin Luo**, H. Xu*, and L. Carin. "Differentiable Hierarchical Optimal Transport for Robust Multi-View Learning." IEEE Transactions on Pattern Analysis and Machine Intelligence 45.6 (2022): 7293-7307.
2. H. Xu, J. Liu, **Dixin Luo***, and L. Carin. "Representing graphs via Gromov-Wasserstein factorization." IEEE Transactions on Pattern Analysis and Machine Intelligence 45.1 (2022): 999-1016.
3. **Dixin Luo**, H. Xu, Y. Zhen, B. Dilkina, H. Zha*, X. Yang, W. Zhang. "Learning Mixtures of Markov Chains from Aggregate Data with Structural Constraints." IEEE Transactions on Knowledge and Data Engineering 28.6 (2016): 1518-1531.
4. **Dixin Luo**, H. Xu, H. Zha*, J. Du, R. Xie, X. Yang, W. Zhang. "You Are What You Watch and When You Watch: Inferring Household Structures from IPTV Viewing Data." IEEE Transactions on Broadcasting, 60.1 (2014): 61-72.

CONFERENCE

1. S. Zhu, Y. Wang, H. Xu, and **Dixin Luo***. "Weakly-supervised movie trailer generation driven by multi-modal semantic consistency." In 34th International Joint Conference on Artificial Intelligence, IJCAI 2025, pp. 10234-10242. 2025.
2. H. Cheng, and **Dixin Luo***. "Inferring Directed Acyclic Graphs from Event Sequences via Learning Gromov-Wasserstein-Regularized Hawkes Processes." In Companion Proceedings of the ACM on Web Conference, pp. 911-914. 2025.
3. M. Cheng, **Dixin Luo**, and H. Xu. "WatE: A Wasserstein t-distributed Embedding Method for Information-enriched Graph Visualization." In Proceedings of the AAAI Conference on Artificial Intelligence, vol. 39, no. 15, pp. 16010-16018. 2025.
4. Y. Wang, J. Teng, J. Cao, Y. Li, C. Ma, H. Xu, and **Dixin Luo***. "Efficient video face enhancement with enhanced spatial-temporal consistency." In Proceedings of the Computer Vision and Pattern Recognition Conference, pp. 2183-2193. 2025.
5. Y. Wang, S. Zhu, H. Xu, and **Dixin Luo***. "An Inverse Partial Optimal Transport Framework for Music-guided Trailer Generation." In Proceedings of the 32nd ACM International Conference on Multimedia, pp. 9739-9748. 2024.

6. S. Zhu, and **Dixin Luo***. "Enhancing Multi-modal Contrastive Learning via Optimal Transport-Based Consistent Modality Alignment." In Chinese Conference on Pattern Recognition and Computer Vision (PRCV), pp. 157-171. 2024.
7. H. Liu, **Dixin Luo**, and H. Xu. "Inferring Iterated Function Systems Approximately from Fractal Images." In 33rd International Joint Conference on Artificial Intelligence, IJCAI 2024, pp. 7699-7707. 2024.
8. J. Liang†, H. Liu†, H. Xu, and **Dixin Luo***. "Generalizable Face Landmarking Guided by Conditional Face Warping." In Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition, pp. 2425-2435. 2024.
9. A. Yue, **Dixin Luo**, and H. Xu. "A Plug-and-Play Quaternion Message-Passing Module for Molecular Conformation Representation." In Proceedings of the AAAI Conference on Artificial Intelligence, vol. 38, no. 15, pp. 16633-16641. 2024.
10. Y. Wang, H. Xu, and **Dixin Luo***. "Self-supervised Video Summarization Guided by Semantic Inverse Optimal Transport." In Proceedings of the 31st ACM International Conference on Multimedia (ACM MM), pp. 6611-6622. 2023.
11. **Dixin Luo**, T. Yu, and H. Xu*. "Group sparse optimal transport for sparse process flexibility design." In Proceedings of the Thirty-Second International Joint Conference on Artificial Intelligence (IJCAI), pp. 6121-6129. 2023.
12. **Dixin Luo**†, H. Cheng†, Q. Li, and H. Xu*. "Coupled point process-based sequence modeling for privacy-preserving network alignment." In Proceedings of the Thirty-Second International Joint Conference on Artificial Intelligence (IJCAI), pp. 6112-6120. 2023.
13. Y. Xiang, **Dixin Luo**, and H. Xu*. "Privacy-preserved evolutionary graph modeling via Gromov-Wasserstein autoregression." In Proceedings of the AAAI Conference on Artificial Intelligence (AAAI), vol. 37, no. 12, pp. 14566-14574. 2023.
14. **Dixin Luo**, Y. Wang, A. Yue, and H. Xu*. "Weakly-supervised temporal action alignment driven by unbalanced spectral fused Gromov-Wasserstein distance." In Proceedings of the 30th ACM International Conference on Multimedia (ACM MM), pp. 728-739. 2022.
15. H. Xu, **Dixin Luo***, L. Carin, and H. Zha. "Learning graphons via structured Gromov-Wasserstein barycenters." In Proceedings of the AAAI Conference on Artificial Intelligence (AAAI), vol. 35, no. 12, pp. 10505-10513. 2021.
16. H. Xu†*, **Dixin Luo**†*, R. Henao, S. Shah, L. Carin. "Learning Autoencoders with Relational Regularization." In International Conference on Machine Learning (ICML), pp. 10576-10586. PMLR, 2020.
17. **Dixin Luo***, H. Xu, L. Carin. "Adversarial Self-Paced Learning for Mixture Models of Hawkes Processes." Time Series Workshop, International conference on machine learning (ICML) 2019.
18. H. Xu*, **Dixin Luo**, H. Zha, L. Carin. "Gromov-wasserstein learning for graph matching and node embedding." In International conference on machine learning (ICML), pp. 6932-6941. PMLR, 2019.
19. **Dixin Luo**†, H. Xu†, L. Carin*. "Fused Gromov-Wasserstein Alignment for Hawkes Processes." Learning with Temporal Point Processes Workshop, Advances in neural information processing systems (NeurIPS) 2019.
20. H. Xu*, **Dixin Luo***, L. Carin*. "Scalable Gromov-Wasserstein learning for graph partitioning and matching." Advances in neural information processing systems (NeurIPS) 32 2019.

21. H. Xu, **Dixin Luo**, X. Chen and L. Carin*. "Benefits from superposed Hawkes processes." In International Conference on Artificial Intelligence and Statistics (AISTATS), pp. 623-631. PMLR, 2018.
22. H. Xu, **Dixin Luo**, L. Carin*. "Online Continuous-Time Tensor Factorization Based on Pairwise Interactive Point Processes." In International Joint Conferences on Artificial Intelligence (IJCAI), pp. 2905-2911. 2018.
23. H. Xu*, **Dixin Luo***, H. Zha*. "Learning Hawkes processes from short doubly-censored event sequences." In International Conference on Machine Learning (ICML), pp. 3831-3840. PMLR, 2017.
24. K. Lyons, E. Stroulia, **Dixin Luo***, R. Miller, and V. Onut. "Data-driven knowledge mobilization." In Proceedings of the 26th Annual International Conference on Computer Science and Software Engineering, pp. 280-282. 2016.
25. **Dixin Luo**, H. Xu, Y. Zhen, B. Dilkina, H. Zha*, X. Yang, W. Zhang. "Learning mixtures of Markov chains from aggregate data with structural constraints." In IEEE 33rd International Conference on Data Engineering (ICDE), pp. 35-36. IEEE, 2017.
26. H. Xu†, L. Yu†, **Dixin Luo**, H. Zha, Y. Xu*. "Dictionary learning with mutually reinforcing group-graph structures." In Proceedings of the AAAI Conference on Artificial Intelligence (AAAI), vol. 29, no. 1. 2015.
27. **Dixin Luo**†*, H. Xu†, Y. Zhen, X. Ning, H. Zha, X. Yang, W. Zhang. "Multi-task multi-dimensional Hawkes processes for modeling event sequences." In Proceedings of the 24th International Joint Conference on Artificial Intelligence (IJCAI), pp. 3685-3691. 2015.
28. H. Xu, **Dixin Luo**, X. Huo, X. Yang*. "World expo problem and its mixed integer programming based solution." In International Workshop on Behavior and Social Informatics, BSI 2013, and International Workshop on Behavior and Social Informatics and Computing, BSIC 2013, pp. 56-67. Springer International Publishing, 2013.
29. **Dixin Luo**, R. Xie, J. Wang, W. Zhang*. "Model-Based Robust Prediction of Cumulative Participant Curve in Large-Scale Events." In Advances on Digital Television and Wireless Multimedia Communications: 9th International Forum on Digital TV and Wireless Multimedia Communication, IFTC 2012. Proceedings, pp. 390-395. Springer Berlin Heidelberg, 2012.

PREPRINT

1. S. Zhu, H. Xu, and **Dixin Luo***. "Self-Paced and Self-Corrective Masked Prediction for Movie Trailer Generation." arXiv preprint arXiv:2512.04426. 2025.
2. H. Cheng, **Dixin Luo***, and H. Xu. "Robust Graph Matching Using An Unbalanced Hierarchical Optimal Transport Framework." arXiv:2310.12081 (2023).
3. **Dixin Luo**, H. Xu, L. Carin. "Interpretable ICD Code Embeddings with Self- and Mutual-Attention Mechanisms." arXiv preprint arXiv:1906.05492 (2019).
4. **Dixin Luo***, and K. Lyons. "CASCONet: A Conference dataset." arXiv preprint arXiv:1706.09485 (2017).

† The authors contribute equally. * The correspondence authors.

PATENTS

1. An audio-guided video generation method, device and medium, ZL2024111743976, issued 2025-11-25, China
2. A domain adaptation method for a facial landmark detector based on spatial deformation, ZL202410643252X, issued 2025-09-29, China
3. A self-supervised video summarization method, ZL2023111045541, issued 2025-07-04, China
4. A text audio image contrast learning method, device and storage medium, ZL2023 11534788X, issued 2024-01-30, China
5. A process flexible sparse structure design method, equipment and storage medium, ZL2023108169074, issued 2023-09-15, China
6. An account alignment method, device, and storage medium, ZL2023108169089, issued 2023-09-08, China
7. A video retrieval method, ZL2022114040210, issued 2023-06-09, China
8. A video understanding method, ZL2022114059575, issued 2023-06-02, China
9. A user behavior analysis method based on online program watching records, ZL201310032682X, issued 2016-04-13, China

HONORS

Outstanding Master's Degree Thesis, Advisor, Beijing Institute of Technology 2025
Outstanding Bachelor's Degree Thesis, Advisor, Beijing Institute of Technology 2024
The 17th Education and Teaching Achievement Award (Graduate Student), Beijing Institute of Technology 2024
Guanghua Scholarship, Shanghai Jiao Tong University 2014-2015
Visiting Scholar Special Scholarship, Shanghai Jiao Tong University 2013-2014
Outstanding Paper Award of the Fourteenth Annual Meeting of Shanghai Institute of Communications (First Author) 2013
University Honor Roll Student, Shanghai Jiao Tong University 2010-2012
University Outstanding Scholarship, Shanghai Jiao Tong University 2006-2008