DR. MINGZHE LI

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ACADEMIC POSITION

University of Notre Dame, United States 11/2025-current
Postdoctoral Research Fellow, Department of Computer Science & Engineering

EDUCATION BACKGROUND

University of Utah, United States 8/2020-10/2025
Ph.D. in Computing (Data Management and Analysis)
Dissertation: Topological Descriptors for Complex and Scalable Data Analysis: Optimal Transport and Distributed Feature Extraction

University of Southern California, United States 1/2018-12/2019
M.S. in Computer Science

Zhejiang University, China 9/2013-6/2017
B.Eng. in Computer Science

RESEARCH INTEREST

- Data visualization, topological data analysis, computational topology, machine learning, high-performance computing

PUBLICATION

- Mingzhe Li, Fangfei Lan, Gunther Weber, Bei Wang. "Uncertainty Visualization for Approximated Barycenter of Contour Trees Based on Partial Optimal Transport." In *IEEE Visualization and Visual Analytics (VIS) Short Paper*, accepted, 2026.
- Mingzhe Li, Peer Nowack, Bei Wang. "Spatiotemporal Detection and Uncertainty Visualization of Atmospheric Blocking Events." *IEEE Transactions on Visualization and Computer Graphics (IEEE PacificVis 2026 TVCG Journal Track)*, 32(6), pages 4742-4752, 2026. DOI link
- Mingzhe Li, Dwaipayan Chatterjee, Franziska Glassmeier, Fabian Senf, Bei Wang. "Tracking Low-Level Cloud Systems with Topology." In *IEEE Workshop on Topological Data Analysis and Visualization (TopoInVis) at IEEE VIS*, pages 89-99, 2025. DOI link
- Mingzhe Li, Hamish Carr, Oliver Rübel, Bei Wang, Gunther H. Weber. "Extremely Scalable Distributed Computation of Contour Trees via Pre-Simplification." In *IEEE Symposium on Large Data Analysis and Visualization (LDAV)*, pages 1-11, 2025. DOI link
- Mingzhe Li, Xinyuan Yan, Lin Yan, Tom Needham, Bei Wang. "Flexible and Probabilistic Topology Tracking with Partial Optimal Transport." *IEEE Transactions on Visualization and Computer Graphics*, 31(10), pages 7951-7969, 2025. DOI link
- Mingzhe Li, Hamish Carr, Oliver Rübel, Bei Wang, Gunther H. Weber. "Distributed Augmentation, Hypersweeps, and Branch Decomposition of Contour Trees for Scientific Exploration." *IEEE Transactions on Visualization and Computer Graphics (IEEE VIS 2024)*, 31(1), pages 152-162, 2025. DOI link
- Mingzhe Li, Carson Storm, Austin Yang Li, Tom Needham, Bei Wang. "Comparing Morse Complexes Using Optimal Transport: An Experimental Study." In *IEEE Visualization and Visual Analytics (VIS) Short Paper*, pages 41-45, 2023. DOI link
- Mingzhe Li, Sourabh Palande, Lin Yan, Bei Wang. "Sketching Merge Trees for Scientific Visualization." In *IEEE Workshop on Topological Data Analysis and Visualization (TopoInVis) at IEEE VIS*, pages 61-71, 2023. DOI link
- Kamonphop Srisopha, Chukiat Phonsom, Mingzhe Li, Daniel Link, Barry Boehm. "On Building an Automatic Identification of Country-Specific Feature Requests in Mobile App Reviews: Possibilities and Challenges." In *Proceedings of the IEEE/ACM 42nd International Conference on Software Engineering Workshops (ICSEW'20)*, pages 494-498, 2020. DOI link

MANUSCRIPT

- Guangyu Meng, Mingzhe Li, Erin W. Chambers. "MS-COOT: Comparing Morse-Smale Complexes with Co-Optimal Transport". 2026. arXiv link

AWARDS AND HONORS

Provost's Postdoctoral Fellowship at the University of Notre Dame 9/2025

INVITED AND CONFERENCE TALKS

Workshop on Graph-Based Methods in TDA, Michigan State University 7/2026
- Poster presentation: Flexible & Probabilistic Topology Tracking with Partial Optimal Transport
- Serving as a panelist for Professional Development Panel

Workshop on Foundations of Computational Geometry and Topology, ICERM, Brown University 5/2026
- Invited talk: Comparing Morse-Smale Complexes via Co-Optimal Transport

Workshop on Topological Data Visualization, University of Iowa 6/2025
- Invited talk: Comparing and Tracking Topological Structures via Optimal Transport

Graduate Research Symposium, Kahlert School of Computing, University of Utah 1/2025
- Invited talk: Sketching Merge Trees for Scientific Visualization

VIS Full Paper at IEEE VIS 2024 (virtual) 10/2024
- Conference talk for the paper "Distributed Augmentation, Hypersweeps, and Branch Decomposition of Contour Trees for Scientific Exploration"

Workshop on Topological Data Analysis and Visualization & VIS Short Paper at IEEE VIS 2023, Melbourne, Australia 10/2023
- Conference talk for the papers "Sketching Merge Trees for Scientific Visualization" and "Comparing Morse-Smale Complexes Using Optimal Transport: An Experimental Study"

RELATED COURSEWORK

- Computational Topology, Advanced Algorithms, Scientific Data Visualization, Advanced Data Visualization, Machine Learning, Data Mining, Natural Language Processing, Parallel Computing

TEACHING ACTIVITIES

- CSCI 570 - Analysis of Algorithms, Course Producer, University of Southern California, Fall 2018 & Spring 2019
- CSCI 587 - Geospatial Information Management, Course Producer, University of Southern California, Fall 2019
- CS 2100 - Discrete Structures, Teaching Assistant, University of Utah, Fall 2021
- MATH 4100 / COMP 5360 - Introduction to Data Science, Teaching Assistant, University of Utah, Spring 2022
- CS 6966 - Advanced Data Visualization, Guest Lecturer, University of Utah, 04/22/2025
  - Lecture title: Topology Toolkit Tutorial

SERVICE

IEEE Transactions on Visualization and Computer Graphics: Reviewer - 2025, 2026
EuroVis: Reviewer - 2025, 2026
IEEE PacificVis TVCG Journal Track: Reviewer - 2025
IEEE VIS Full Papers: Reviewer - 2025, 2026
IEEE VIS Short Papers: Reviewer - 2025, 2026
ChinaVis: Reviewer - 2026

SELECTED WORK EXPERIENCES

University of Notre Dame, IN, USA 11/2025-current
Postdoctoral Research Fellow, Department of Computer Science and Engineering
Supervisor: Prof. Erin Chambers
- Independent & collaborative research advised by Prof. Erin W. Chambers
- Mentoring graduate students at the University of Notre Dame

Lawrence Berkeley National Laboratory, CA, USA 5/2024-8/2024
Graduate Student, Scientific Data Division
Supervisor: Dr. Gunther Weber
- Extending distributed computations on contour trees to enhance the performance of important contour extraction

Lawrence Berkeley National Laboratory, CA, USA 5/2023-8/2023
Graduate Student, Scientific Data Division
Supervisor: Dr. Gunther Weber
- Collaborated on designing and developing distributed algorithms to simplify contour trees for scientific visualization tasks

Los Alamos National Laboratory, NM, USA 5/2022-8/2022
Graduate Student, ISTI
Supervisor: Dr. Li-Ta Lo
- Collaborated with VTK-m contributors to verify, test, and refactorize the code to compute augmented contour trees.

Microsoft, Beijing, China 5/2019-8/2019
Software Engineer Intern, STCA
- Collaborated on extending Microsoft Excel's max path length limit, enabling access to long-path files.
- Updated document inspector and compatibility checker (C/C++) to support backward compatibility with legacy Excel files.

Desay SV Automotive, Nanjing, China 8/2017-11/2017
Machine Learning Intern, R&D department
- Collaborating with machine learning scientists to apply real-world road videos to distinguish lanes for autonomous driving
- Designed and implemented a model of road lane recognition using different neural networks; achieved an accuracy of 96% for lane recognition