

CURRICULUM VITAE

October 2026

Carola Wenk

Carola Wenk
 Tulane University
 Department of Computer Science
 School of Science and Engineering
 New Orleans, LA 70118, USA

Phone: +1-504-865-5782
 E-mail: cwenk@tulane.edu
 URL: cs.tulane.edu/~carola
 Date & place of birth: 5/17/73, Berlin, Germany
 German and US citizen

BIOGRAPHICAL SKETCH

Carola Wenk is a Professor of Computer Science at Tulane University, with an adjunct appointment in Mathematics. Her research develops algorithms for interpretable spatial, geometric, visual, and mobility data analysis. Across domains ranging from geospatial systems and intelligent transportation to biomedical imaging and digital pathology, her work aims to reveal meaningful structure in complex data and to provide principled explanations for where patterns occur, how they relate, and why they matter.

A central foundation of Dr. Wenk's research is computational geometry, with particular expertise in shape matching, trajectory analysis, graph comparison, and topological data analysis. She is an expert on the Fréchet distance and related distance measures for curves, trajectories, and geometric graphs. Her work on map matching, road map construction, and road map comparison has established algorithmic foundations for movement and transportation network analysis.

Her research also connects these foundations to AI-relevant problems in interpretable data analysis, topological machine learning, anomaly detection, biomedical image analysis, and large-scale agent-based simulation. Through DARPA- and IARPA-supported work, she has contributed to geosocial simulations of urban populations in which individual behaviors, constraints, and mobility decisions give rise to emergent patterns of life. This work supports the development and evaluation of methods for modeling human mobility, detecting behavioral anomalies, and understanding deviations from expected spatial and temporal patterns.

Dr. Wenk has received research, teaching, and service awards, including an NSF CAREER Award, multiple best paper awards, a 10-year impact award from ACM SIGSPATIAL GIS, and university-level teaching and service honors. She previously served as chair of Tulane's Department of Computer Science. Her research has been supported by NSF, NIH, DARPA, IARPA, ARPA-H, and other funding agencies.

EDUCATION

- Dr. rer. nat. (Ph.D.) 1998–2002, magna cum laude, Computer Science, Freie Universität Berlin. Thesis: “[Shape Matching in Higher Dimensions](#)”. Advisor: Helmut Alt
- Dipl. Math. (M.S. and B.S.) 1992–1998, Mathematics, Freie Universität Berlin. Thesis: “[Algorithmen für das Crossdating in der Dendrochronologie \(Algorithms for Crossdating in Dendrochronology\)](#)”. Advisor: Helmut Alt

ACADEMIC APPOINTMENTS

07/2017 – present	Professor, Computer Science, Tulane University
08/2012 – present	Adjunct (Associate) Professor, Mathematics, Tulane University
07/2021 – 06/2026	Chair, Department of Computer Science, Tulane University
08/2012 – 06/2017	Associate Professor, Computer Science, Tulane University
09/2008 – 07/2012	Associate Professor, Computer Science, University of Texas at San Antonio (UTSA)
01/2004 – 08/2008	Assistant Professor, Computer Science, UTSA
01/2002 – 12/2003	Assistant researcher, Computer Science, University of Arizona Postdoctoral advisor: Alon Efrat
10/1995 – 12/2001	Research and teaching assistant, Computer Science, Freie Universität Berlin, Germany

AWARDS AND HONORS

2025	Best Paper Award, CCCG.
2024	10 year impact award, ACM SIGSPATIAL GIS.
2024	Best Paper Award, IEEE Vis.
2023	Best Data Paper Award, ACM SIGSPATIAL GIS.
2021	Best Paper Award, ACM SIGSPATIAL International Workshop on Spatial Gems.
2018	Best Paper Award, International Workshop on Interactive and Spatial Computing.
2017	Best Paper Award, International Symposium on Spatial and Temporal Databases.
2014	Mortar Board Award for Excellence in Tenured Teaching, Tulane.
2012	President's Distinguished Achievement Award for Excellence in University Service, UTSA.
2009	Best Paper Award, Algorithms and Data Structures Symposium, Banff, Alberta, Canada.
2008	College of Sciences Teaching Excellence Award, UTSA.
2008	President's Distinguished Achievement Award for Teaching Excellence, UTSA.
2007	President's Distinguished Achievement Award for Research Achievement, UTSA.
2007	NSF CAREER Award, National Science Foundation.
2005	Faculty research award, "Locating GPS Curves in Roadmaps", UTSA.

PROFESSIONAL MEMBERSHIPS

ACM, Association for Computing Machinery

AMS, American Mathematical Society

AAUP, American Association of University Professors; 2020–2022: elected president of Tulane chapter

RESEARCH GRANTS AND CONTRACTS

- [G17] 8/15/24 – 8/14/28 “**MAGIC-SCAN: Machine Learning Assisted Gigantic Image Cancer Margin Scanner**”, Advanced Research Projects Agency for Health (ARPA-H), Role: Co-PI (with multi-PIs Quincy Brown and Brian Summa); \$22,937,420.
- [G16] 4/17/23 – 4/16/26 “**METROPOL (Modeling and Encoding TRajectories Of Patterns Of Life)**”, Intelligence Advanced Research Projects Agency (IARPA); **HAYSTAC program**; subcontract from L3Harris; \$782,070. Role: Subcontract PI.
- [G15] 9/28/22 – 6/30/26 “**R01: PathCAM: repairing the digital data pipeline in diagnostic pathology with onboard-camera variable resolution slide imaging**”, National Institutes of Health (NIH), R01GM143789, \$1,696,789. Role: Co-PI (with multi-PIs Quincy Brown and Brian Summa).
- [G14] 6/1/21–5/31/27 “**Collaborative Research: AF: Medium: A Unified Framework for Geometric and Topological Signature-Based Shape Comparison**”, National Science Foundation (NSF), NSF-CCF 2107434, \$473,760. Role: PI. Collaboration with Erin Chambers at Saint Louis University and Liz Munch at Michigan State University; \$1,247,301 total grant amount.
- [G13] 8/1/17–7/31/21 “**QuBBD: Collaborative Research: Quantifying Morphologic Phenotypes in Prostate Cancer - Developing Topological Descriptors for Machine Learning Algorithms**”, National Science Foundation (NSF) and National Institutes of Health (NIH), NSF-DMS 1664848, \$479,293. Role: PI. Collaboration with Co-PIs Quincy Brown (Biomedical Engineering), Andrew Sholl (Pathology), and Brian Summa (Computer Science) at Tulane and with Brittany Fasy at Montana State University; \$899,999 total grant amount.
- [G12] 9/1/16–8/31/21 “**AitF: Collaborative Research: Modeling Movement on Transportation Networks using Uncertain Data**”, National Science Foundation (NSF), NSF-CCF 1637576, \$317,681. Role: PI.
- [G11] 12/29/17–12/27/20 “**A Ground-Truth Simulator for Socio-Spatial Alternate Worlds**”, Defense Advanced Research Projects Agency (DARPA); **Ground Truth Program**; subcontract from George Mason University; \$370,275. Role: Subcontract-PI. Collaboration with PI Andreas Züfle, and Co-PIs Dieter Pfoser and Andrew Crooks at George Mason University; \$1,544,290 total contract amount.
Collaboration with Dieter Pfoser and Andreas Züfle at George Mason University; \$825,533 total grant amount.
Supplement: 9/1/16-8/31/17 REU supplement included in initial award.

- [G10] 7/1/16–6/30/19 “AF: Small: Collaborative Research: Geometric and Topological Algorithms for Analyzing Road Network Data”, National Science Foundation (NSF), NSF-CCF 1618469, \$158,052. Role: PI.
Collaboration with Brittany Fasy at Montana State University and with Yusu Wang at Ohio State University; \$499,975 total grant amount.
- [G9] 7/1/16–6/30/17 “Virtual Reality-Based Visual Field Testing”, Carol Lavin Bernick Faculty Grant Program, Tulane University, \$10,000. Role: PI. Collaboration with PI Ramesh Ayyala (Ophthalmology) at Tulane.
- [G8] 9/15/15–8/31/17 “QuBBD: Collaborative Research: Towards Automated Quantitative Prostate Cancer Diagnosis”, National Science Foundation (NSF) and National Institutes of Health (NIH), NSF-DMS 1557750, \$52,931. Role: PI. Collaboration with Co-PI Quincy Brown (Biomedical Engineering) at Tulane and with Brittany Fasy at Montana State University; \$99,570 total grant amount.
- [G7] 9/1/12–8/31/16 “AF: Small: Geometric Algorithms for Constructing Road Networks from Trajectories”, National Science Foundation (NSF), NSF-CCF 1301911, \$303,624. Role: PI.
Supplement: 12/13/13 – 8/31/16, \$10,001.
- [G6] 10/1/13–9/30/16 “CC-NIE Networking Infrastructure: Dedicated High-Speed Science Network”, National Science Foundation (NSF), NSF-ACI 1340454, \$498,655. Role: Co-PI; with PI Charles McMahon and other Co-PIs Lieu D. Tran, Ricardo Cortez, Caroline M. Taylor.
- [G5] 9/15/10–7/31/12 “Computational Systems Biology Core (CSBC)”, National Institutes of Health (NIH), NIH-NCRR 5G12RR013646-12, \$1,916,034 for duration 9/15/10 – 6/30/15, Role: PI, with Co-PIs Yufeng Wang and Fidel Santamaria. Part of the Research Centers for Minority Institutions grant “RCMI Center for Interdisciplinary Health Research”.
- [G4] 3/1/07–2/28/13 “CAREER: Application and Theory of Geometric Shape Handling”, National Science Foundation (NSF), NSF-CCF 1331009 (previously 0643597), \$400,468. Role: PI.
Supplements:
1) 8/1/09–7/31/10, REU (Research Experience for Undergraduates) Supplement, \$8,000.
2) 3/1/08–2/28/09, REU Supplement, \$12,000.
3) 8/1/07–7/31/08, REU Supplement, \$12,000.
- [G3] 9/1/06–8/31/07 “Developing New Spot Detection Algorithms for 2-Dimensional Gel Electrophoresis Image Analysis”, seed grant provided by the UTSA Computational Biology Initiative, \$10,000. Role: PI.

- [G2] 6/12/06–6/11/07 “SGER: Map-Matching and Reactive Routing Algorithms for Traffic Estimation and Prediction Systems”, National Science Foundation (NSF), NSF-CCF 0628809, \$25,480. Role: PI
- [G1] 2005 “Locating GPS Curves in Roadmaps”, Faculty Research Award, University of Texas at San Antonio, \$4,845.

BOOKS, BOOK CHAPTERS, INVITED ARTICLES

(The author list in most publications is in alphabetical order. Student co-authors are underlined.)

- [B6] “**Inferring movement patterns from geometric similarity**”, (M. Buchin, C. Wenk), invited article, *Journal of Spatial Information Science* 21: 63–69, 2020.
- [B5] “**Location-Based Social Simulation for Prescriptive Analytics of Disease Spread**”, (J.-S. Kim, H. Kavak, C.O. Rouly, H. Jin, A.T. Crooks, D. Pfoser, C. Wenk, A. Züfle), *SIGSPATIAL Special* 12(1): 53–61, 2020
- [B4] “**Comparing Directed and Weighted Road Maps**”, (A. Bittner, B.T. Fasy, M. Grudzien, S. Ghosh Hajra, J. Huang, K. Pelatt, C. Thatcher, A. Tumurbaatar, C. Wenk), *AWM-IMA Springer series: Research in Computational Topology*: 57–70, B.T. Fasy, E. Chambers, L. Ziegelmeier (eds.), Springer, 2018.
- [B3] “**Map Construction Algorithms**”, (M. Ahmed, S. Karagiorgou, D. Pfoser, C. Wenk), Springer, 2015.
- [B2] “**Skeleton-based recognition of shapes in images via the longest path**”, (G. Bal, J. Diebold, E.W. Chambers, E. Gasparovic, R. Hu, M. Shaker, K. Leonard, C. Wenk), *Research in Shape Modeling*, K. Leonard, S. Tari (eds.), Association for Women in Mathematics Series 1: 81–99, Springer, 2015.
- [B1] “**New Algorithmic Approaches to Protein Spot Detection and Pattern Matching in Two-Dimensional Electrophoresis Gel Databases**” (K.-P. Pleißner, F. Hoffmann, K. Kriegel, C. Wenk, S. Wegner, A. Sahlströhm, H. Oswald, H. Alt, E. Fleck), Chapter 22 in *From Genome to Proteome*: 175–185, Wiley, 2007.

REFEREED JOURNAL PUBLICATIONS

- [J43] “Ambient, Real-Time Datafication and Digitization of Glass Slide Microscopy Towards AI-at-the-Microscope” (C. Maira, M. Cooper, K. Ashman, A. Sholl, S. Fox, S. Halat, D. Manthey, R. Choudhury, J. Sears, C. Wenk, J.Q. Brown, B. Summa), accepted to *Nature Communications*, 2026.
- [J42] “**ROADSTER: Improved Algorithms for Subtrajectory Clustering and Map Construction**” (K. Buchin, M. Buchin, J. Gudmundsson, J. Hendriks, E. Hosseini Sereshgi, V. Sacristán, R. Silveira, J. Sleijster, F. Staals, C. Wenk), *Computers and Geosciences Journal* 196: 105845 (49 pages), 2025.
- [J41] “**Realizability of Free Spaces of Curves**” (H. Akitaya, M. Buchin, M. Mirzanezhad, L. Ryvkin, C. Wenk), *Journal of Computational Geometry: Theory and Applications (CGTA)*, 127: 102151, 2025.

- [J40] “[Rapid and Precise Topological Comparison with Merge Tree Neural Networks](#)” (Y. Qin, B.T. Fasy, C. Wenk, B. Summa), [[presentation videos](#)] *IEEE Transactions on Visualization and Computer Graphics* 31(1): 1322–1332, 2025. Best paper award.
- [J39] “[Graph Sampling for Map Comparison](#)” (J. Aguilar, K. Buchin, M. Buchin, E. Hosseini Sereshgi, R.I. Silveira, C. Wenk), *Transactions on Spatial Algorithms and Systems* 10(3): 20:1–20:24, 2024.
- [J38] “[In Silico Human Mobility Data Science: Leveraging Massive Simulated Mobility Data \(Vision Paper\)](#)” (A. Züfle, D. Pfoser, C. Wenk, A. Crooks, H. Kavak, T. Anderson, J.-S. Kim, N. Holt, A. DiAntonio), *Transactions on Spatial Algorithms and Systems* 10(2): 13 (1–27), 2024.
- [J37] “[Mobility Data Science: Perspectives and Challenges](#)” (M. Mokbel, M. Sakr, L. Xiong, A. Züfle, J. Almeida, T. Anderson, W. Aref, G. Andrienko, N. Andrienko, Y. Cao, S. Chawla, R. Cheng, P. Chrysanthis, X. Fei, G. Ghinita, A. Graser, D. Gunopulos, C. Jensen, J.-S. Kim, K.-S. Kim, P. Kröger, J. Krumm, J. Lauer, A. Magdy, M. Nascimento, S. Ravada, M. Renz, D. Sacharidis, F. Salim, M. Sarwat, M. Schoemans, C. Shahabi, B. Speckmann, E. Tanin, X. Teng, Y. Theodoridis, K. Torp, G. Trajcevski, M. van Kreveld, C. Wenk, M. Werner, R. Wong, S. Wu, J. Xu, M. Youssef, D. Zeinalipour, M. Zhang, E. Zimányi), , *Transactions on Spatial Algorithms and Systems* 10(2): 10 (1–35), 2024.
- [J36] “[Distance Measures for Geometric Graphs](#)” (S. Majhi, C. Wenk), *Computational Geometry: Theory and Applications* 118: 102056, 2024.
- [J35] “[Approximating Gromov-Hausdorff Distance in Euclidean Space](#)” (S. Majhi, J. Vitter, C. Wenk), *Computational Geometry: Theory and Applications* 116: 102034, 2024.
- [J34] “[Distances Between Immersed Graphs: Metric Properties](#)” (M. Buchin, E. Chambers, P. Fang, B.T. Fasy, E. Gasparovic, E. Munch, C. Wenk), *La Matematica* 2: 197–222, 2023.
- [J33] “[Combinatorial Properties of Self-Overlapping Curves and Interior Boundaries](#)”, (P. Evans, C. Wenk), *Discrete & Computational Geometry* 69:91–122, 2023.
- [J32] “[Urban Life: A Model of People and Places](#)”, (A. Züfle, C. Wenk, D. Pfoser, A. Crooks, J.-S. Kim, H. Kavak, U. Manzoor, H. Jin), *Computational and Mathematical Organization Theory; special issue on Ground Truth: In silico social science (GTIS3)* 29(1): 20–51, 2023.
- [J31] “[On the Reconstruction of Geodesic Subspaces of \$R^N\$](#) ” (B.T. Fasy, R. Komendarczyk, S. Majhi, C. Wenk), *International Journal on Computational Geometry and Applications* 32 (01n02): 91–117, 2022.
- [J30] “[A Domain-Oblivious Approach for Learning Concise Representations of Filtered Topological Spaces for Clustering](#)” (Y. Qin, B.T. Fasy, C. Wenk, B. Summa), *IEEE Transactions on Visualization and Computer Graphics* 28: 302–312, 2022. ([arXiv:2105.12208](#))
- [J29] “[Distance Measures for Embedded Graphs](#)”, (H.A. Akitaya, M. Buchin, B. Kilgus, S. Sijben, C. Wenk), *Computational Geometry: Theory and Applications*: 95, 101743, 2021.

- [J28] “[A Middle Curve Based on Discrete Fréchet Distance](#)”, (H.-K. Ahn, H. Alt, M. Buchin, E. Oh, L. Scharf, C. Wenk), *Computational Geometry: Theory and Applications*: 89, 101621, 2020.
- [J27] “[Map-Matching Using Shortest Paths](#)”, (B.T. Fasy, E.W. Chambers, Y. Wang, C. Wenk), *Transactions on Spatial Algorithms and Systems* 6(1), article 6, 2020.
- [J26] “[Fast Fréchet Distance Between Curves with Long Edges](#)”, (J. Gudmundsson, M. Mirzanezhad, A. Mohades, C. Wenk), *International Journal of Computational Geometry & Applications* 29(2): 161–187, 2019. ([arXiv:1710.10521](#))
- [J25] “[Persistent Homology for the Quantitative Evaluation of Architectural Features in Prostate Cancer Histology](#)”, (P. Lawson, A.B. Sholl, J.Q. Brown, B.T. Fasy, C. Wenk), *Scientific Reports* 9: 1139, 2019.
- [J24] “[Computing the Fréchet Distance Between Folded Polygons](#)” (A.F. Cook IV, A. Driemel, J. Sherette, C. Wenk), *Computational Geometry: Theory and Applications* 50: 1–16, 2015. ([arXiv:1103.2865](#))
- [J23] “[Path-Based Distance for Street Map Comparison](#)”, (M. Ahmed, B.T. Fasy, K.S. Hickmann, C. Wenk), *ACM Transactions on Spatial Algorithms and Systems (TSAS)* 1(1): article 3, 28 pages, 2015. ([arXiv:1309.6131](#))
- [J22] “[Conserved disulfide bond is not essential for the adenosine A2A receptor: extracellular cysteines influence receptor distribution within the cell and ligand-binding recognition](#)”, (A.N. Naranjo, A. Chevalier, G.D. Cousins, E. Ayettey, E. McCusker, C. Wenk, A.S. Robinson), *Biochimica et Biophysica Acta (BBA) - Biomembranes* 1848: 604–614, 2015.
- [J21] “[A Comparison and Evaluation of Map Construction Algorithms](#)”, (M. Ahmed, S. Karagiorgou, D. Pfoser, C. Wenk), *Geoinformatica* 19(3): 601–632, 2015. ([arXiv:1402.5138](#))
- [J20] “[Shortest Path Problems on a Polyhedral Surface](#)”, (A.F. Cook IV, C. Wenk), *Algorithmica* 69(1): 58–77, 2014.
- [J19] “[Median Trajectories](#)”, (K. Buchin, M. Buchin, M. van Kreveld, M. Löffler, R.I. Silveira, C. Wenk, L. Wiratma), *Algorithmica* 66(3): 595–614, 2013.
- [J18] “[Microwave & Magnetic \(\$M^2\$ \) Proteomics of the EAE Animal Model of Multiple Sclerosis](#)”, (I. Raphael, S. Mahesula, K. Kalsaria, V. Kotagiri, A.B. Purkar, M. Anjanappa, D. Shah, V. Pericherla, Y.L.A. Jadhav, M. Vaynberg, D. Noriega, N.H. Grimaldo, C. Wenk, J. Gelfond, T.G. Forsthuber, W.E. Haskins), *Electrophoresis* 33(24): 3810–3819, 2012.
- [J17] “[Approximating the Fréchet Distance for Realistic Curves in Near Linear Time](#)”, (A. Driemel, S. Har-Peled, C. Wenk), *Discrete & Computational Geometry* 48(1): 94–127, 2012. ([arXiv:1003.0460](#))
- [J16] “[Link Distance and Shortest Path Problems in the Plane](#)”, (A.F. Cook IV, C. Wenk), *Computational Geometry: Theory and Applications*: 44(8): 442–455, 2011.
- [J15] “[Geodesic Fréchet Distance Inside a Simple Polygon](#)” (A.F. Cook IV, C. Wenk), *ACM Transactions on Algorithms*: 7(1), 19 pages, 2010. ([arXiv:0802.2846](#))

- [J14] “Computing the Fréchet Distance Between Simple Polygons” (K. Buchin, M. Buchin, C. Wenk), *Computational Geometry: Theory and Applications (CGTA)* 41: 2–20, Elsevier, 2008.
- [J13] “NeuronMetrics: Software for Semi-Automated Processing of Cultured-Neuron Images” (M. Narro, F. Yang, R. Kraft, C. Wenk, A. Efrat, L. Restifo), *Brain Research* 1138: 57–75, Elsevier, 2007.
- [J12] “Drawing with Fat Edges” (C.A. Duncan, A. Efrat, S.G. Kobourov, C. Wenk), *International Journal of Foundations of Computer Science (IJFCS)* 17(5): 1143–1163, World Scientific, 2006.
- [J11] “Matching Polyhedral Terrains Using Overlays of Envelopes” (V. Koltun, C. Wenk), *Algorithmica* 41(3): 159–183, Springer, 2005.
- [J10] “Covering with Ellipses” (A. Efrat, F. Hoffmann, C. Knauer, K. Kriegel, G. Rote, C. Wenk), *Algorithmica* 38(2): 145–160, Springer, 2004.
- [J9] “Comparison of Distance Measures for Planar Curves” (H. Alt, C. Knauer, C. Wenk), *Algorithmica* 38(2): 45–58, Springer, 2004.
- [J8] “Matching Planar Maps” (H. Alt, A. Efrat, G. Rote, C. Wenk), *Journal of Algorithms* 49: 262–283, Elsevier, 2003.
- [J7] “Computing the Hausdorff Distance of Geometric Patterns and Shapes” (H. Alt, P. Braß, M. Godau, C. Knauer, C. Wenk), *Discrete and Computational Geometry - The Goodman-Pollack-Festschrift*, 65–76, Springer, 2003.
- [J6] “Applying an Edit Distance to the Matching of Tree Ring Sequences in Dendrochronology” (C. Wenk), *Journal of Discrete Algorithms* 1(5–6):367–385, Elsevier, 2003. (technical report)
- [J5] “Geometric Algorithms for the Analysis of 2D-Electrophoresis Gels” (A. Efrat, F. Hoffmann, K. Kriegel, C. Schultz, C. Wenk), *Journal of Computational Biology* 9(2): 299–316, Mary Ann Liebert publishers, 2002.
- [J4] “An Alternative Approach to Deal with Geometric Uncertainties in Computer Analysis of Two-Dimensional Electrophoresis Gels” (K. Kriegel, I. Seefeldt, F. Hoffmann, C. Schultz, C. Wenk, V. Regitz-Zagrosek, H. Oswald, E. Fleck), *Electrophoresis* 21:2637–2640, Wiley, 2000.
- [J3] “On the Number of Cylinders Touching a Ball” (P. Braß, C. Wenk), *Geometriae Dedicata* 81:281–284, Springer, 2000.
- [J2] “New Algorithmic Approaches to Protein Spot Detection and Pattern Matching in Two-Dimensional Electrophoresis Gel Databases” (K.-P. Pleißner, F. Hoffmann, K. Kriegel, C. Wenk, S. Wegner, A. Sahlströhm, H. Oswald, H. Alt, E. Fleck), *Electrophoresis* 20:755–765, Wiley, 1999.
- [J1] “An Applied Point Pattern Matching Problem: Comparing 2D Patterns of Protein Spots” (F. Hoffmann, K. Kriegel, C. Wenk), *Discrete Applied Mathematics* 93: 75–88, Elsevier, 1999.

REFEREED CONFERENCE PUBLICATIONS

- [C48] “LIAD: Lightweight Interpretable Mobility Anomaly Detection via Agent-Adaptive Behavioral Deviations” (C. Algama, E. Hosseini Sereshgi, C. Wenk), short paper, accepted to *34th International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL)*, 2026.
- [C47] “SF-ANOMALIES: A Mobility Dataset for Behavioral and Contextual Anomaly Detection” (M. Uppalapati and C. Wenk), short paper, accepted to *34th International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL)*, 2026.
- [C46] “Comparing Graph Distances”, (E.W. Chambers, R. Hasan, E. Hosseini, E. Munch, S. Percival, D. Selyuzhitsky, W. Rodman, E.X. Wang, C. Wenk), *38th Canadian Conference on Computational Geometry (CCCG)*: 295–301, 2026.
- [C45] “HD-GEN: A Software System for Large-Scale Human Mobility Data Generation Based on Patterns of Life”, (H. Amiri, R. Yang, S. Ruan, J.-S. Kim, H. Kavak, A. Crooks, D. Pfoser, C. Wenk, A. Züfle), *ACM SIGSPATIAL GIS*: 407–410, 2025.
- [C44] “The Kinetic Hourglass Data Structure for Computing the Bottleneck Distance of Dynamic Data” (E. Munch, E.X. Wang, C. Wenk), *37th Canadian Conference on Computational Geometry (CCCG)*: 362–368, 2025. Best paper award.
- [C43] “The Patterns of Life Human Mobility Simulation” (H. Amiri, W. Kohn, S. Ruan, J.-S. Kim, H. Kavak, A.T. Crooks, D. Pfoser, C. Wenk, A. Züfle), *ACM SIGSPATIAL GIS*: 653–656, 2024.
- [C42] “Metric and Path-Connectedness Properties of the Fréchet Distance for Paths and Graphs” (E. Chambers, B.T. Fasy, B. Holmgren, S. Majhi, C. Wenk), *35th Canadian Conference on Computational Geometry (CCCG)*: 213–224, 2023.
- [C41] “Massive Trajectory Data Based on Patterns of Life” (H. Amiri, S. Ruan, J.-S. Kim, H. Jin, H. Kavak, A. Crooks, D. Pfoser, C. Wenk, A. Züfle), *ACM SIGSPATIAL GIS*, article 49, 4 pages, 2023. Best data paper award.
- [C40] “On Length-Sensitive Fréchet Similarity” (E. Hosseini Sereshgi, K. Buchin, B.T. Fasy, C. Wenk), *18th Algorithms and Data Structures Symposium (WADS)*: 208–231, 2023.
- [C39] “From Curves to Words and Back Again: Geometric Computation of Minimum-Area Homotopy” (H.-C. Chang, B.T. Fasy, B. McCoy, D.L. Millman, C. Wenk), *18th Algorithms and Data Structures Symposium (WADS)*: 605–618, 2023.
- [C38] “Towards Large-Scale Agent-Based Geospatial Simulation” (U. Manzoor, H. Kavak, J.-S. Kim, A. Crooks, D. Pfoser, A. Züfle, C. Wenk), *International Conference on Social Computing, Behavioral-Cultural Modeling & Prediction and Behavior Representation in Modeling and Simulation*, 2021.
- [C37] “Location-Based Social Network Data Generation Based on Patterns of Life” (J.-S. Kim, H. Jin, H. Kavak, O.C. Rouly, A. Crooks, D. Pfoser, C. Wenk, A. Züfle), *21st IEEE International Conference on Mobile Data Management (MDM)*: 158–167, 2020.
- [C36] “Combinatorial Properties of Self-Overlapping Curves and Interior Boundaries” (P. Evans, B.T. Fasy, C. Wenk), *36th International Symposium on Computational Geometry (SoCG)*: 41:1–41:17, 2020.

- [C35] “Distance Measures for Embedded Graphs”, (H.A. Akitaya, M. Buchin, B. Kilgus, S. Si-jben, C. Wenk), *30th International Symposium on Algorithms and Computation (ISAAC)*: 55:1–55:15, 2019. ([arXiv:1812.09095](#))
- [C34] “Global Curve Simplification” (M. van de Kerkhof, I. Kostitsyna, M. Löffler, M. Mirzanezhad, C. Wenk), *European Symposium on Algorithms (ESA)*: 67:1–67:14, 2019 ([arXiv:1809.10269](#)).
- [C33] “Location-Based Social Simulation”, H. Kavak, J.-S. Kim, A.T. Crooks, D. Pfoser, C. Wenk, A. Züfle, vision paper, *16th International Symposium on Spatial and Temporal Databases (SSTD)*: 218–221, 2019.
- [C32] “Assessment of Sampling Adequacy Using Persistent Homology for the Evaluation of Heterogeneity in 3D Histology Acquired Through Inverted Selective Plane Illumination Microscopy (iSPIM)” (P. Lawson, B. Hu, B.T. Fasy, B. Summa, C. Wenk, J.Q. Brown), *Proc. SPIE 11073, Clinical and Preclinical Optical Diagnostics II*: 1107316, (*SPIE European Conferences on Biomedical Optics (ECBO)*, invited paper, 5 pages), 2019.
- [C31] “Quantifying prostate cancer morphology in 3D using light sheet microscopy and persistent homology”, conference presentation), (P.J. Lawson, B. Hu, B.T. Fasy, C. Wenk, J.Q. Brown), *Proc. SPIE 10472, Diagnosis and Treatment of Diseases in the Breast and Reproductive System IV*: 1047209, (*SPIE BiOS*), 2018. doi: 10.1117/12.2290994.
- [C30] “Clustering Trajectories for Map Construction”, (K. Buchin, M. Buchin, D. Duran, B.T. Fasy, R. Jacobs, V. Sacristán, R. Silveira, F. Staals, C. Wenk), *International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL)*: article 14 (10 pages), 2017.
- [C29] “A Unified Framework to Predict Movement [Vision Paper]”, (O. Gkountouna, D. Pfoser, C. Wenk, A. Züfle), *15th International Symposium on Spatial and Temporal Databases (SSTD)*: 393–397, 2017. Best paper award. doi:10.1007/978-3-319-64367
- [C28] “A Middle Curve Based on Discrete Fréchet Distance”, (H.-K. Ahn, H. Alt, M. Buchin, E. Oh, L. Scharf, C. Wenk), *12th Latin American Theoretical Informatics Symposium*: 14–26, 2016.
- [C27] “Choosing Thresholds for Density-Based Map Construction Algorithms”, (M. Ahmed, B.T. Fasy, M. Gibson, C. Wenk), *International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL)*, 2015.
- [C26] “High-area-throughput automated gigapixel imaging of whole prostate tumor resection surfaces using structured illumination microscopy”, (J.Q. Brown, M. Wang, H. Kimbrell, D. Tulman, T.S. Schlichenmeyer, C. Wenk, B. Lee), *SPIE Photonics West – BIOS*, paper 9313–15, 2015.
- [C25] “Local Persistent Homology Based Distance Between Maps”, (M. Ahmed, B.T. Fasy, C. Wenk), *International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL)*, 10 pages, 2014. 10 year impact award (SIGSPATIAL GIS), 2024.
- [C24] “Autofocus optimization for tracking tissue surface topography in large-area mosaicking structured illumination microscopy”, (T.S. Schlichenmeyer, M. Wang, C. Wenk, J.Q. Brown), *Frontiers in Optics Conference, Optical Society of America Technical Digest*, 3 pages, 2014.

- [C23] “Constructing Street Networks from GPS Trajectories”, (M. Ahmed, C. Wenk), *European Symposium on Algorithms (ESA)*: 60–71, Ljubljana, Slovenia, 2012. [slides]
- [C22] “Partial Matching Between Surfaces Using Fréchet Distance” (J. Sherette, C. Wenk), *Scandinavian Symposium and Workshops on Algorithm Theory (SWAT)*: 13–23, Helsinki, Finland, 2012. [slides]
- [C21] “Computing the Fréchet Distance Between Folded Polygons” (A.F. Cook IV, A. Driemel, S. Har-Peled, J. Sherette, C. Wenk), *Algorithms and Data Structures Symposium (WADS)*: 267–278, Brooklyn, New York, 2011.
- [C20] “Approximate Map Matching with respect to the Fréchet Distance”, (D. Chen, A. Driemel, L. Guibas, A. Nguyen, C. Wenk), *Proc. Workshop on Algorithm Engineering and Experiments (ALENEX)*: 75–83, San Francisco, California, 2011.
- [C19] “Median Trajectories”, (K. Buchin, M. Buchin, M. van Kreveld, M. Löffler, R.I. Silveira, C. Wenk, L. Wiratma), *Proc. 18th Annual European Symposium on Algorithms (ESA)*: 463–474, Liverpool, UK, 2010.
- [C18] “Approximating the Fréchet Distance for Realistic Curves in Near Linear Time”, (A. Driemel, S. Har-Peled, C. Wenk), *Proc. 20th ACM Symposium on Computational Geometry (SoCG’10)*: 365–374, 2010.
- [C17] “Visiting a Sequence of Points with a Bevel-Tip Needle” (S. Bitner, Y. K. Cheung, A.F. Cook IV, O. Daescu, A. Kurdia, C. Wenk), *Proc. 9th Latin American Theoretical Informatics Symposium*: 492–502, Oaxaca, Mexico, 2010.
- [C16] “A New Perspective on Efficient and Dependable Vehicle Routing”, (D. Pfoser, A. Efentakis, A. Voisard, C. Wenk), *Proceedings of the 17th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL GIS)*: 388–391, Seattle, Washington, 2009.
- [C15] “Shortest Path Problems on a Polyhedral Surface”, (A.F. Cook IV, C. Wenk), *Algorithms and Data Structures Symposium (WADS)*: 156–167, Banff, Alberta, Canada, 2009. Best Paper Award.
- [C14] “Link Distance and Shortest Path Problems in the Plane”, (A.F. Cook IV, C. Wenk), *Proc. Algorithmic Aspects in Information and Management (AAIM)*: 140–151, San Francisco, California, 2009.
- [C13] “Geodesic Fréchet Distance Inside a Simple Polygon” (A.F. Cook IV and C. Wenk), *Proc. 25th International Symposium on Theoretical Aspects of Computer Science (STACS)*: 193–204, Bordeaux, France, 2008.
- [C12] “Fréchet Distance for Curves, Revisited” (B. Aronov, S. Har-Peled, C. Knauer, Y. Wang, C. Wenk), *Proc. 14th Annual European Symposium on Algorithms (ESA)*: 52–63, LNCS 4168, Zurich, Switzerland, 2006. (arXiv:1504.07685)
- [C11] “Addressing the Need for Map-Matching Speed: Localizing Global Curve-Matching Algorithms” (C. Wenk, R. Salas, D. Pfoser), *Proc. 18th International Conference on Scientific and Statistical Database Management (SSDBM)*: 379–388, Vienna, Austria, 2006.
- [C10] “Computing the Fréchet Distance Between Simple Polygons in Polynomial Time” (K.

- Buchin, M. Buchin, C. Wenk), *Proc. 22nd ACM Symposium on Computational Geometry (SoCG)*: 80–87, Sedona, Arizona, 2006.
- [C9] “On Map-Matching Vehicle Tracking Data” (S. Brakatsoulas, D. Pfoser, R. Salas, C. Wenk), *Proc. 31st Conference on Very Large Data Bases (VLDB)*: 853–864, Trondheim, Norway, 2005.
 - [C8] “Matching Polyhedral Terrains Using Overlays of Envelopes” (V. Koltun, C. Wenk), *Proc. 9th Scandinavian Workshop on Algorithm Theory (SWAT)*: 114–126, LNCS 3111, Humlebaek, Denmark, 2004.
 - [C7] “Matching Planar Maps” (H. Alt, A. Efrat, G. Rote, C. Wenk), *Proc. 14th ACM–SIAM Symposium on Discrete Algorithms (SODA)*: 589–598, Baltimore, USA, 2003.
 - [C6] “Covering Shapes by Ellipses” (A. Efrat, F. Hoffmann, C. Knauer, K. Kriegel, G. Rote, C. Wenk), *Proc. 13th ACM–SIAM Symposium on Discrete Algorithms (SODA)*: 453–454, San Francisco, USA, 2002.
 - [C5] “Drawing with Fat Edges” (C.A. Duncan, A. Efrat, S.G. Kobourov, C. Wenk), *Proc. 9th International Symposium on Graph Drawing (GD)*: 162–177, Vienna, Austria, 2001.
 - [C4] “Geometric Algorithms for the Analysis of 2D-Electrophoresis Gels” (A. Efrat, F. Hoffmann, K. Kriegel, C. Schultz, C. Wenk), *Proc. 5th Annual International Conference on Research in Computational Molecular Biology (RECOMB)*: 114–123, Montreal, Canada, 2001.
 - [C3] “Matching Polygonal Curves with Respect to the Fréchet Distance” (H. Alt, C. Knauer, C. Wenk), *Proc. 18th International Symposium on Theoretical Aspects of Computer Science (STACS)*: 63–74, Dresden, Germany, 2001.
 - [C2] “Applying an Edit Distance to the Matching of Tree Ring Sequences in Dendrochronology” (C. Wenk), *Proc. 10th Annual Symposium on Combinatorial Pattern Matching (CPM)*: 223–242, LNCS 1645, Warwick, UK, 1999.
 - [C1] “Matching 2D patterns of protein spots” (F. Hoffmann, K. Kriegel, C. Wenk), *Proc. 14th Annual ACM Symposium on Computational Geometry (SoCG)*: 231–239, Minneapolis, USA, 1998.

WORKSHOP PAPERS, DEMONSTRATIONS, AND TECHNICAL REPORTS

- [W62] “SF-ANOMALIES: A Mobility Dataset for Behavioral and Contextual Anomaly Detection” (M. Uppalapati and C. Wenk), *3rd ACM SIGSPATIAL International Workshop on Geospatial Anomaly Detection*, 2026.
- [W61] “LIAD: Lightweight Interpretable Mobility Anomaly Detection via Agent-Adaptive Behavioral Deviations” (C. Algama, E. Hosseini Sereshgi, C. Wenk), *3rd ACM SIGSPATIAL International Workshop on Geospatial Anomaly Detection*, 2026.
- [W60] “Agentic-LIAD: Multi-Agent Reasoning over Behavioral Evidence for Mobility Anomaly Detection” (C. Algama, S. Gunasekara, C. Wenk), accepted to *3rd ACM SIGSPATIAL International Workshop on Geospatial Anomaly Detection*, 2026.
- [W59] “When Mobility Data Gets Noisy: The Need for Simulating Realistic Noise Models” (E. Hosseini Sereshgi, L. Kennedy, Y. Liu, M. Uppalapati, C. Wenk, A. Züfle), accepted to *9th ACM SIGSPATIAL International Workshop on Geospatial Simulation*, 2026.

- [W58] “The Anomaly Forge: Interactive, Self-Auditing Generation of Labeled Mobility Anomalies from Natural Language”, demo, (M. Uppalapati and C. Wenk), accepted to *34th International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL)*, 2026.
- [W57] “SF-LIFE: A Large-Scale Simulated Movement Dataset for the San Francisco Bay Area” (C. Algama, T. Anderson, H. Ferraz de Arruda, A. Crooks, N. Holt, E. Hosseini Sereshgi, J. Hunter, H. Kavak, L. Kennedy, Y. Liu, D. Pfoser, S. Martinelli Reia, D. Taylor, M. Uppalapati, B. Wang, C. Wenk, A. Züfle), arXiv:2606.00430, 2026.
- [W56] “Semantic Anomaly Detection in Human Trajectories: Preserving Behavioral Patterns Through Calendar Representations” (E. Hosseini Sereshgi, M. Uppalapati, Y. Liu, L. Kennedy, A. Züfle, C. Wenk) *2nd ACM SIGSPATIAL International Workshop on Geospatial Anomaly Detection*: 33–42, 2025.
- [W55] “Min-Complexity Graph Simplification under Fréchet-Like Distance” (O. Filtser, M. Mirzanezhad, C. Wenk), *36th International Workshop on Combinatorial Algorithms (IWOCOA)*: 44–57, Bozeman, Montana, 2025.
- [W54] “Map Stitcher: Graph Sampling-based Map Conflation” (E. Hosseini Sereshgi, C. Wenk), *3rd ACM SIGSPATIAL International Workshop on Spatial Big Data and AI for Industrial Applications (GeoIndustry)*, 5 pages, 2024.
- [W53] “Length-preserving Matching for Closed Curves” (E. Hosseini Sereshgi, M. Löffler, F. Staals, C. Wenk), *31st Fall Workshop on Computational Geometry*, 5 pages, 2024.
- [W52] “Clustering Points with Line Segments under the Hausdorff Distance is NP-hard” (H.A. Akitaya, M. Löffler, M. Mirzanezhad, C. Wenk), *31st Fall Workshop on Computational Geometry*, 4 pages, 2024.
- [W51] “Visualizing Topological Importance: A Class-Driven Approach” (Y. Qin, B.T. Fasy, C. Wenk, B. Summa), *Proceedings of the IEEE Workshop on Topological Data Analysis and Visualization*: 93–103, 2023.
- [W50] “Merging Roadmaps Using Graph Distance Measures” (E. Hosseini Sereshgi, C. Wenk), *30th Fall Workshop on Computational Geometry*, 5 pages 2022.
- [W49] “The Complexity of Realizing Free Spaces” (H. Akitaya, M. Buchin, M. Mirzanezhad, L. Ryvkin, C. Wenk), *30th Fall Workshop on Computational Geometry*, 4 pages, 2022.
- [W48] “Distance Measures for Geometric Graphs” (S. Majhi, C. Wenk), *30th Fall Workshop on Computational Geometry*, 4 pages, 2022.
- [W47] “Path-Connectivity of Fréchet Spaces of Graphs” (E. Chambers, B.T. Fasy, B. Holmgren, S. Majhi, C. Wenk), *Computational Geometry: Young Researchers Forum*: 33–36, 2022.
- [W46] “Free Space Realizability for Curves in 1D” (H. Akitaya, M. Buchin, M. Mirzanezhad, L. Ryvkin, C. Wenk), *38th European Workshop on Computational Geometry*: 59:1–59:8, 2022.
- [W45] “Measuring Length-Preserving Fréchet Correspondence for Graphs in $\mathbb{R}^2$ ” (K. Buchin, B.T. Fasy, E. Hosseini Sereshgi, C. Wenk), *29th Fall Workshop on Computational Geometry*, 5 pages, 2021

- [W44] “[Graph Sampling for Map Comparison](#)” (J. Aguilar, K. Buchin, M. Buchin, E. Hosseini Sereshgi, R.I. Silveira, C. Wenk), *3rd ACM SIGSPATIAL International Workshop on Spatial Gems*, 2021; published in *Spatial Gems, Volume 2*: 1–16, 2022. Best paper award.
- [W43] “[On Minimum-Complexity Graph Simplification](#)” (O. Filtser, M. Mirzanezhad, C. Wenk), *European Workshop on Computational Geometry*: 64:1-64:7, 2021.
- [W42] “[The Fréchet Distance for Plane Graphs](#)” (P. Fang, C. Wenk), *European Workshop on Computational Geometry*: 62:1-62:5, 2021.
- [W41] “[On the Realizability of Free Space Diagrams](#)” (M. Buchin, L. Ryvkin, C. Wenk), *European Workshop on Computational Geometry*: 51:1-51:7, 2021.
- [W40] “[Improved Map Construction using Subtrajectory Clustering](#)” (K. Buchin, M. Buchin, J. Gudmundsson, J. Hendriks, E. Hosseini Sereshgi, V. Sacristán, R. Silveira, J. Sleijster, F. Staals, C. Wenk), *4th ACM SIGSPATIAL Workshop on Location-Based Recommendations, Geosocial Networks, and Geoadvertising (LocalRec)*: article 5, 4 pages, 2020.
- [W39] “[Computing relevant subtrajectory bundles faster](#)” (E. Hosseini Sereshgi, C. Wenk), *Computational Geometry: Young Researchers Forum*, 2 pages, 2020.
- [W38] “[Multiscale three-dimensional pathology findings of COVID-19 diseased lung using high-resolution cleared tissue microscopy](#)”, (G. Li, S.E. Fox, B. Summa, B. Hu, C. Wenk, A. Akmatbekov, J.L. Harbert, R.S. Vander Heide, J.Q. Brown), bioRxiv 2020.04.11.037473, 2020.
- [W37] “[Simulating Urban Patterns of Life: A Geo-Social Data Generation Framework](#)”, demo, (J.-S. Kim, H. Kavak, U. Manzoor, A.T. Crooks, D. Pfoser, C. Wenk, A. Züfle), *27th International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL)*: 576–579, 2019.
- [W36] “[Shortest-Path Diversification through Network Penalization: A Washington DC Area Case Study](#)” (D. Cheng, O. Gkountouna, A. Züfle, D. Pfoser, C. Wenk), *12th ACM SIGSPATIAL International Workshop on Computational Transportation Science (IWCTS)*, 10 pages, 2019.
- [W35] “[Simplification of Indoor Space Footprints](#)” (J.-S. Kim, C. Wenk), *1st ACM SIGSPATIAL International Workshop on Spatial Gems (SpatialGems)*, 2019; published in *Spatial Gems, Volume 1*: 49–60, 2022. ([arXiv:2001.05564](#))
- [W34] “[Threshold-Based Graph Reconstruction Using Discrete Morse Theory](#)” (B.T. Fasy, S. Majhi, C. Wenk), *28th Annual Fall Workshop on Computational Geometry*, 4 pages, Queens College, Queens, NY, 2018.
- [W33] “[On Optimal Min-# Curve Simplification](#)” (M. van de Kerkhof, I. Kostitsyna, M. Löffler, M. Mirzanezhad, C. Wenk), *28th Annual Fall Workshop on Computational Geometry*, 4 pages, Queens College, Queens, NY, 2018.
- [W32] “[Fast Fréchet Distance for Curves with Long Edges](#)”, (J. Gudmundsson, M. Mirzanezhad, *3rd International Workshop on Interactive and Spatial Computing*: 52–58, Richardson, TX, 2018. Best paper award.

- [W31] “[Map-Matching Using Shortest Paths](#)”, (B.T. Fasy, E.W. Chambers, Y. Wang, C. Wenk), *3rd International Workshop on Interactive and Spatial Computing*: 44–51, Richardson, TX, 2018.
- [W30] “[Topological and Geometric Reconstruction of Metric Graphs in \$R^n\$](#) ”, (B.T. Fasy, R. Komendarczyk, [S. Majhi](#), C. Wenk), *27th Fall Workshop on Computational Geometry*: 78–82, Stony Brook, New York, 2017.
- [W29] “On Minimum Area Homotopies of Normal Curves in the Plane”, (B.T. Fasy, [S. Karakoç](#), C. Wenk), [arXiv:1707.02251](#), 2017.
- [W28] “[Distance Measures for Embedded Graphs](#)”, (M. Buchin, [S. Sijben](#), C. Wenk), *European Workshop on Computational Geometry*: 37–40, 2017.
- [W27] “[On Minimum Area Homotopies](#)”, (B.T. Fasy, [S. Karakoç](#), C. Wenk) *Computational Geometry: Young Researchers Forum*, 2 pages, 2016.
- [W26] “A Middle Curve Based on Discrete Fréchet Distance”, (H.-K. Ahn, H. Alt, M. Buchin, [E. Oh](#), L. Scharf, C. Wenk), *18th Korea-Japan Joint Workshop on Algorithms and Computation (WAAC)*, 2015.
- [W25] “[A Middle Curve Based on Discrete Fréchet Distance](#)”, (H.-K. Ahn, H. Alt, M. Buchin, L. Scharf, C. Wenk), *31st European Workshop on Computational Geometry (EuroCG)*: 204–207, 2015.
- [W24] “[New Techniques for Road Network Comparison](#)”, ([M. Ahmed](#), B.T. Fasy, C. Wenk), Grace Hopper Celebration of Women in Computing, Data Science in Practical Applications track, 2014.
- [W23] “[Simple Curve Embedding](#)”, ([J. Sherette](#), C. Wenk), [arXiv: 1303.0821](#), 2013.
- [W22] “[Probabilistic Street-Intersection Reconstruction from GPS Trajectories: Approaches and Challenges](#)”, ([M. Ahmed](#), C. Wenk), *ACM SIGSPATIAL International Workshop on Querying and Mining Uncertain Spatio-Temporal Data (QuesT)* (4 pages), Redondo Beach, CA, 2012.
- [W21] “[Simple Curve Embedding](#) “Partial Matching Between Surfaces Using Fréchet Distance” ([J. Sherette](#), C. Wenk), *21st Fall Workshop on Computational Geometry* (2 pages), City College of New York, Manhattan, NY, 2011.
- [W20] “Constructing Street-Maps from GPS Trajectories” ([M. Ahmed](#), C. Wenk), *21st Fall Workshop on Computational Geometry* (2 pages), City College of New York, Manhattan, NY, 2011.
- [W19] “Computing the Fréchet Distance Between Polyhedral Surfaces with Acyclic Dual Graphs” ([A.F. Cook IV](#), [J. Sherette](#), C. Wenk), *19th Fall Workshop on Computational Geometry*: 75–76, Tufts University, Medford, MA, 2009.
- [W18] “Visiting Points with a Bevel-Tip Needle” ([S. Bitner](#), [Y. K. Cheung](#), [A.F. Cook IV](#), [O. Daescu](#), [A. Kurdia](#), C. Wenk), *19th Fall Workshop on Computational Geometry*: 61–62, Tufts University, Medford, MA, 2009.
- [W17] “[Shortest Path Problems on a Polyhedral Surface](#)”, ([A.F. Cook IV](#), C. Wenk) *UTSA Technical Report CS-TR-2009-001*, 2009.

- [W16] “Exploiting Road Network Properties in Efficient Shortest-Path Computation” (D. Pfoser, A. Efentakis, A. Voisard, C. Wenk), *ICSI Technical Report* TR-09-007, International Computer Science Institute, UC Berkeley, 2009.
- [W15] “Shortest Path Problems on a Polyhedral Surface” (A.F. Cook IV, C. Wenk), *25th European Workshop on Computational Geometry (EuroCG’09)*: 179-182, Brussels, Belgium, 2009.
- [W14] “Min-Link Shortest Path Maps and Fréchet Distance” (A.F. Cook IV, C. Wenk), *UTSA Technical Report* CS-TR-2008-0011, 2008.
- [W13] “Geodesic Fréchet Distance With Polygonal Obstacles” (A.F. Cook IV, C. Wenk), *UTSA Technical Report* CS-TR-2008-0010, 2008.
- [W12] “Geodesic Fréchet Distance Inside a Simple Polygon” (A.F. Cook IV, C. Wenk), *17th Fall Workshop on Computational Geometry*, IBM Hawthorne, 2007.
- [W11] “Dynamic Routing”, (N. Kalinowski, C. Wenk), *UTSA Technical Report* CS-TR-2007-005, 2007.
- [W10] “Geodesic Fréchet and Hausdorff Distance Inside a Simple Polygon”, (A.F. Cook IV, C. Wenk), *UTSA Technical Report* CS-TR-2007-004, 2007.
- [W9] “How Difficult is it to Walk the Dog?”, (K. Buchin, M. Buchin, C. Knauer, G. Rote, C. Wenk), *23rd European Workshop on Computational Geometry*: 170–173, Graz, Austria, 2007.
- [W8] “Shortest Tour of a Sequence of Disjoint Segments in L_∞ ” (E. Arkin, A. Efrat, C. Erten, F. Hurtado, J. Mitchell, V. Polishchuk, C. Wenk), *16th Fall Workshop on Computational Geometry*, Smith College, 2006.
- [W7] “Computing the Fréchet Distance Between Simple Polygons in Polynomial Time” (K. Buchin, M. Buchin, C. Wenk), *22nd European Workshop on Computational Geometry*, Delphi, Greece, 2006.
- [W6] “Fréchet Distance Between Simple Polygons” (K. Buchin, M. Buchin, C. Wenk), *15th Annual Fall Workshop on Computational Geometry*, Philadelphia, Pennsylvania, 2005.
- [W5] “Matching Planar Maps” (H. Alt, A. Efrat, G. Rote, C. Wenk), *12th Annual Fall Workshop on Computational Geometry*, Rutgers, Piscataway, New Jersey, 2002.
- [W4] “Bounding the Fréchet Distance by the Hausdorff Distance” (H. Alt, C. Knauer, C. Wenk), *Proc. 17th European Workshop on Computational Geometry*: 166–169, Berlin, Germany, 2001.
- [W3] “A Geometric Approach to Protein Identification in 2D Electrophoretic Gel Images” (F. Hoffmann, K. Kriegel, C. Wenk), *15th European Workshop on Computational Geometry*: 173–174, Antibes, France, 1999.
- [W2] “A Simple and Robust Geometric Algorithm for Landmark Registration in Computer Assisted Neurosurgery” (F. Hoffmann, K. Kriegel, S. Schönherr, C. Wenk), *Technical Report B 99-21*, Freie Universität Berlin, Fachbereich Mathematik und Informatik, December 1999.

- [W1] “New Algorithmic Tools for comparing 2D Patterns of Protein Spots” (F. Hoffmann, K. Kriegel, C. Wenk), *14th European Workshop on Computational Geometry*, Barcelona, Spain, 1998.

POSTERS, VIDEOS, SOFTWARE, WEBSITES

- [P21] “**Graph Tiles**” (O. Aichholzer, R. Ganian, P. Keldenich, M. Löffler, G. Meijer, A. Weinberger, C. Wenk), poster, *Graph Drawing*: 51:1–51:5, 2025.
- [P20] “Rapid and Precise Topological Comparison with Merge Tree Neural Networks (MTNN)” (Y. Qin, B.T. Fasy, C. Wenk, B. Summa), *11th Conference on Algebraic Topology: Methods, Computation, & Science (ATMCS)*, Bozeman, MT, 2025.
- [P19] “Computational Geometry Concept Videos: A Dual-Use Project in Education and Outreach (Media Exposition)” (M. Haagsman, M. Löffler, C. Wenk), *40th International Symposium on Computational Geometry (SoCG 2024)*, LIPIcs 293: 88 (88:1–88:4), 2024.
- [P18] “Topological Descriptors for Quantitative Prostate Cancer Morphology Analysis”, poster, (P. Lawson, E. Berry, J.Q. Brown, B.T. Fasy, C. Wenk), *Conference on Digital Pathology, part of SPIE Medical Imaging*, 2017. Poster award (honorable mention).
- [P17] “Homotopy visualizer”, (P. Evans, A. Burns, C. Wenk), Java code to visualize minimum-area homotopies contracting closed curves to a point, 2016.
- [P16] “On Minimum Area Homotopies”, poster, (B.T. Fasy, S. Karakoç, C. Wenk), *Topology, Geometry, and Data Analysis Conference*, Ohio State University, May 2016.
- [P15] “Towards an Automated Quantitative Diagnosis of Prostate Cancer”, poster, (P. Lawson, C. Miller, B.T. Fasy, Q. Brown, C. Wenk), *BD2K All-Hands Grantee Meeting*, NIH, November 2015.
- [P14] Map Construction Portal, mapconstruction.org, (M. Ahmed, S. Karagiorgou, D. Pfoser, C. Wenk), since 2013.
- [P13] Fréchet-based map construction code, 2013. Based on: “Constructing Street Networks from GPS Trajectories”, (M. Ahmed, C. Wenk), *European Symposium on Algorithms (ESA)*: 60–71, Ljubljana, Slovenia, 2012. Available on mapconstruction.org; integrated into Google’s codebase.
- [P12] Path-based distance measure code for map comparison, 2013. Based on: “Path-Based Distance for Street Map Comparison”, (M. Ahmed, B.T. Fasy, K.S. Hickmann, C. Wenk), (arXiv:1309.6131), 2013. Available at mapconstruction.org.
- [P11] “Constructing Street-Maps from GPS Trajectories” (M. Ahmed, C. Wenk), poster, *Grace Hopper Celebration of Women in Computing*, 2011.
- [P10] “An Efficient Computing Infrastructure for Computational Systems Biology at the University of Texas at San Antonio” (Z. Wang, J.M. Bower, K.A. Robbins, F. Santamaria, Y. Wang, C. Wenk), poster, *12th RCFI International Symposium on Health Disparities*, 2010.
- [P9] “Building an institutional base for Computational Neuroscience: the CBI at UTSA / UTHSCSA”, (Z. Wang, K.A. Robbins, Y. Wang, C. Livi, A.D. Coop, F. Santamaria, C. Wenk, J.M. Bower), poster, *19th Annual Computational Neuroscience Meeting: CNS*2010*, San Antonio, TX; BMC Neuroscience 2010, 11(Suppl 1):P67, 20 July 2010.

- [P8] “A New Perspective on Efficient and Dependable Vehicle Routing”, poster, (D. Pfoser, A. Efentakis, A. Voisard, C. Wenk), *17th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL GIS)*, Seattle, Washington, 2009.
- [P7] “Models for Teardrop Spots in 2-DE Gels”, (S.M. Pivek, S.T. Weintraub, C. Wenk), poster, *11th RCM International Symposium on Health Disparities*, Honolulu, HI, 2008.
- [P6] “NeuronMetrics”, Software for Semi-Automated Processing of Cultured-Neuron Images, 2007. Based on: “NeuronMorphometrics: A Tool for Semi-Automated Processing of Cultured Neuronal Cell Images” (M. Narro, F. Yang, R. Kraft, C. Wenk, A. Efrat, L. Restifo), *Brain Research* 1138: 57–75, Elsevier, 2007.
- [P5] “Finding a Curve in a Map” (C. Wenk, H. Alt, A. Efrat, L. Palaniappan, G. Rote), video, *19th Annual ACM Symposium on Computational Geometry (SoCG)*, San Diego, USA, 2003.
- [P4] “Drawing Fat Graphs” (A. Efrat, S.G. Kobourov, M. Stepp, C. Wenk), video, *18th Annual ACM Symposium on Computational Geometry (SoCG)*, Barcelona, Spain, 2002.
- [P3] CAROL - a tool for spot detection in and matching of two-dimensional electrophoresis gels: <http://gelmatching.inf.fu-berlin.de> (K. Kriegel, C. Wenk, C. Schultz, F. Hoffmann, D. Dimitrov). Software. Integrated into the gel analysis software PDQUEST by BioRad since 2001.
- [P2] “Identification of Proteins by Point Pattern Matching of Two-Dimensional Gel Electrophoresis Databases” (H. Alt, F. Hoffmann, K. Kriegel, C. Wenk, E. Fleck, H. Oswald, K.-P. Pleissner, S. Wegener), poster, *Jahrestagung der Humangenetischen Gesellschaft*, 1998.
- [P1] “CAROL - New Algorithmic Tools for Comparing Two-Dimensional Electrophoretic Gel Images” (H. Alt, F. Hoffmann, K. Kriegel, C. Wenk, K.-P. Pleissner), poster P21, *Electrophoresis Forum*, Strasbourg, 1997.

INTELLECTUAL PROPERTY

- [I2] “System And Method for Real-Time Adaptive Resolution Microscope Slide Imaging”, (K.L. Ashman, J.Q. Brown, C.M. Licorish, B.M. Summa, C. Wenk), provisional patent, 2021.
- [I1] “NeuronMetrics”, Software for Semi-Automated Processing of Cultured-Neuron Images, (M. Narro, F. Yang, R. Kraft, C. Wenk, A. Efrat, L. Restifo), Arizona Board of Regents Technology #ua07-056, Trademarked, 2007.

MANUSCRIPTS IN PREPARATION

- [M3] “Distances for Uncertain Shapes” (A. Popov, M. Löffler, H.-K. Ahn, H.B. Bjerkevik, K. Buchin, M. Buchin, C. Wenk, S.D. Yoon), in preparation.
- [M2] “Length-Preserving Matching Between Curves” (E. Hosseini Sereshgi, M. Löffler, F. Staals, C. Wenk), in preparation.

- [M1] “Global Curve Simplification” (M. van de Kerkhof, I. Kostitsyna, M. Löffler, M. Mirzanezhad, C. Wenk), journal version, in preparation.

INVITED TALKS

- 09/2026 “Matching and Simplifying Curves and Geometric Graphs”, *Rhein-Ruhr Computational Geometry Workshop*, TU Dortmund, Germany.
- 08/2026 “Geometric Graph Similarity: Distances, Matchings, and Algorithms”, *Graph Drawing 2026 PhD School*, Brock University, Ontario, Canada.
- 08/2026 “Geometric Distances for Curves and Graphs: From Matching to Simplification”, Godfried Toussaint Memorial Talk at the *38th Canadian Conference on Computational Geometry*, Lakehead University, Orillia, Ontario, Canada.
- 08/2026 “Geometric Distances for Curves and Graphs: From Matching to Simplification”, Algorithms and Complexity Seminar, University of Waterloo, Ontario, Canada.
- 07/2026 “A Survey on Distance Measures and Matching for Discrete Geometric Shapes”, *ICERM Workshop on Rigidity Theory meets Geometric Data Science for Applications in Chemistry and Biology*, ICERM, Brown University.
- 10/2025 “One-to-one matchings for shape comparison: from persistent homology transform to graph sampling”, *AMS Southeastern Sectional Meeting; Special Session on Advances in Applied Topology and Topological Data Analysis*, Tulane University
- 8/2025 “One-to-one matchings for shape comparison: from persistent homology transform to graph sampling”, *11th Conference on Algebraic Topology: Methods, Computation, & Science (ATMCS)*, Montana State University
- 6/2022 “Comparing Embedded and Immersed Graphs”, *Rote-Alt Fest*, CG Week, Freie Universität Berlin
- 5/2021 “Comparing Embedded and Immersed Graphs”, *Seminar on Computational Geometry, Schloss Dagstuhl*, Online
- 3/2021 “Comparing Embedded and Immersed Graphs”, Geometry Seminar, Courant Institute of Mathematical Sciences, New York University
- 10/2019 “Topological Data Analysis for Prostate Cancer Tissue Analysis and Map Comparison”, Department of Mathematics, Universitat Politècnica de Catalunya, Spain
- 10/2019 “Topological Data Analysis for Prostate Cancer Tissue Analysis and Map Comparison”, ICAR at LIRMM, Université de Montpellier, France
- 9/2019 “Fast Fréchet Distance and Global Curve Simplification”, Fakultät für Mathematik, Ruhr-Universität Bochum, Germany
- 9/2019 “Fast Fréchet Distance and Global Curve Simplification”, Fakultät für Informatik, Technische Universität Dortmund, Germany
- 9/2019 “Topological Data Analysis for Prostate Cancer Tissue Analysis and Map Comparison”, Informatikkolloquium, FernUniversität Hagen, Germany
- 8/2019 “Curves, Distance Measures, and Homotopies”, *Seminar on Computation in Low-Dimensional Geometry and Topology, Schloss Dagstuhl*, Wadern, Germany
- 10/2018 “On Map Construction, Map Comparison, and Trajectory Clustering”, Norm Asbjornson College of Engineering Seminar, Montana State University

-
- 08/2018 “On Map Construction, Map Comparison, and Trajectory Clustering”; distinguished lecture at the *30th Canadian Conference on Computational Geometry*, University of Manitoba, Canada
- 05/2018 “Applications of Persistent Homology to Low-Dimensional Data”, *TGDA@OSU TRIPODS Center Workshop on “Theory and Foundations of TGDA”*, Ohio State University.
- 03/2018 “Algorithms for Map Construction and Comparison”, lecture series, *10th Winter School on Computational Geometry*, Amirkabir University of Technology, Iran.
- 04/2017 “On Minimum-Area Homotopies of Curves in the Plane”, *Special Session on Applications of Topology and Geometry, Association for Women in Mathematics (AWM) Research Symposium*, University of California Los Angeles.
- 03/2017 “Applications of Computational Geometry and Topology in Shape Matching”, *Association of Women in Mathematics (AWM) Student Chapter*, Tulane.
- 03/2015 “Road Map Construction and Comparison”, *Seminar on Computational Geometry, Schloss Dagstuhl*, Wadern, Germany
- 09/2014 “Road Map Construction and Comparison”, Department of Mathematics and Computer Science, Eindhoven University of Technology, Netherlands
- 08/2014 “Constructing Road Maps from Trajectories”, Department of Electrical and Computer Engineering, North Carolina State University
- 02/2014 “Geometric Algorithms for Shapes And Trajectories”, Workshop *Morphogenesis, Regeneration and the Analysis of Shape*, Mathematical Biosciences Institute, Ohio State University
- 01/2014 “On Map Construction and Map Comparison”, Association for Women in Mathematics Workshop, Joint Mathematics Meetings, Baltimore
- 10/2013 “Geometric Algorithms for Shapes And Trajectories”, Biomedical Engineering Seminar, Tulane University
- 06/2012 “Shape Analysis and Reconciliation of Geospatial Trajectory Data”, GEOCROWD summer school, Crete, Greece
- 03/2011 “Computing the Fréchet Distance for Folded Polygons”, *Seminar on Computational Geometry, Schloss Dagstuhl*, Wadern, Germany
- 04/2009 “The Computational Biology Initiative at the University of Texas at San Antonio”, RTRN Bioinformatics & Comp Bio Working Group Webinar Series, Research Centers in Minority Institutions Translational Research Network (RTRN), www.rtrn.net
- 03/2009 “Fréchet Distance Variants for Curves and Surfaces”, Texas A&M University, Computer Science and Engineering Department
- 03/2009 “Shortest Path Problems on a Polyhedral Surface”, *Seminar on Computational Geometry, Schloss Dagstuhl*, Wadern, Germany
- 02/2009 “Fréchet Distance Variants for Curves and Surfaces”, University of Texas at Austin, Computer Science Department
- 02/2009 “Towards traffic-aware routing using GPS vehicle trajectories”, University of Texas - Pan American, Computer Science Department
- 10/2007 “Towards traffic-aware routing using GPS vehicle trajectories”, City College New York, Computer Science Department.
-

- 12/2005 “Imaging and Analysis of 2D-Electrophoresis Gels”, Tools in Genomics and Proteomics Workshop, UT Health Science Center, San Antonio.
- 10/2005 “Applications of Geometric Shape Matching”, City College New York, Computer Science Department.
- 05/2005 “Shape Matching for Curves and Graphs”, *Seminar on Graph Drawing, Schloss Dagstuhl*, Wadern, Germany.
- 07/2004 “Matching and Comparing Curves”, Lancaster University, Computing Department, UK.
- 09/2003 “Geometric Algorithms for Biomedical Applications”, International Workshop on Object Recognition, Taormina, Sicily, Italy.
- 05/2003 “Applications of Geometric Shape Matching”, University of Arizona, Department of Management Information Systems.
- 03/2003 “Finding a Curve in a Map”, video presentation, *Seminar on Computational Geometry, Schloss Dagstuhl*, Wadern, Germany.
- 01/2003 “Two Topics in Shape Matching: Matching Electrophoresis Gels and Finding a Curve in a Map”, Tel Aviv University, Computer Science Department.
- 03/2002 “Geometric Algorithms for Biomedical Applications”, Arizona State University, Department of Bioengineering.
- 04/2001 “Applications of Geometric Shape Matching”, University of Arizona, Computer Science Department.
- 03/2001 “Approximate Matching of Polygonal Curves with Respect to the Fréchet Distance”, *Seminar on Computational Geometry, Schloss Dagstuhl*, Wadern, Germany.
- 11/2000 “Approximate Matching of Polygonal curves with Respect to the Fréchet Distance”, graduate program “Computational Discrete Mathematics”, Freie Universität Berlin.
- 02/2000 “Geometric Pattern Matching with Applications”, *Berliner Algorithmentag (BAT)*, Technische Universität Berlin, Germany

PAPER AND POSTER PRESENTATIONS

- 08/2025 “Rapid and Precise Topological Comparison with Merge Tree Neural Networks (MTNN)” (Y. Qin, B.T. Fasy, C. Wenk, B. Summa), *11th Conference on Algebraic Topology: Methods, Computation, & Science (ATMCS)*, Bozeman, MT.
- 06/2024 “Computational Geometry Concept Videos: A Dual-Use Project in Education and Outreach” (M. Haagsman, M. Löffler, C. Wenk), *40th International Symposium on Computational Geometry (SoCG 2024)*, 2024.
- 04/2018 “Map-Matching Using Shortest Paths”, (B.T. Fasy, E.W. Chambers, Y. Wang, C. Wenk), *3rd International Workshop on Interactive and Spatial Computing*: 44–51, Richardson, TX
- 11/2017 “Clustering Trajectories for Constructing Maps”, *International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL)*, Redondo Beach, CA.
- 07/2012 “Partial Matching Between Surfaces Using Fréchet Distance”, *Scandinavian Symposium and Workshops on Algorithm Theory (SWAT)*, Helsinki, Finland.

- 12/2008 “Models for Teardrop Spots in 2-DE Gels”, poster, *11th RCM International Symposium on Health Disparities*, Honolulu, HI.
- 11/2005 “Fréchet Distance Between Simple Polygons”, *15th Annual Fall Workshop on Computational Geometry and Visualization*, Pennsylvania, PA.
- 07/2004 “Matching Polyhedral Terrains Using Overlays of Envelopes”, *9th Scandinavian Workshop on Algorithm Theory (SWAT)*, Humlebaek, Denmark.
- 01/2003 “Matching Planar Maps”, *14th ACM-SIAM Symposium on Discrete Algorithms (SODA)*, Baltimore, USA.
- 11/2002 “Matching Planar Maps”, *DIMACS Workshop on Computational Geometry*, Piscataway, USA.
- 01/2002 “Covering Shapes by Ellipses”, *13th ACM-SIAM Symposium on Discrete Algorithms (SODA)*, San Francisco, USA.
- 09/2001 “Drawing with Fat Edges”, *9th Int. Symp. on Graph Drawing*, Vienna, Austria.
- 03/2001 “Bounding the Fréchet distance by the Hausdorff distance”, *17th European Workshop on Computational Geometry*, Freie Universität Berlin, Germany.
- 07/1999 “Applying an Edit Distance to the Matching of Tree Ring Sequences in Dendrochronology”, *10th Ann. Symposium on Combinatorial Pattern Matching (CPM)*, Warwick, UK.

EDITORIAL ACTIVITIES AND STEERING COMMITTEES

- Editorial board member, ACM Transactions on Spatial Algorithms and Systems. Since 2026.
- Nominating committee member, ACM SIGSPATIAL, 2025-2026.
- Editorial board member, International Journal of Computational Geometry and Applications. Since 2021.
- Steering committee member, ACM SIGSPATIAL International Workshop on GeoSpatial Simulation (GeoSim). Since 2020.
- Editorial board member, Computational Geometry: Theory and Applications. Since 2019.
- General co-chair, 2nd ACM SIGSPATIAL International Workshop on GeoSpatial Simulation (GeoSim), 2019.
- Editorial board member, Journal of Spatial Information Science. Since 2018.
- Steering committee member, International Workshop on Interactive and Spatial Computing. 2018.
- Co-editor (with Dieter Pfoser) of the Geoinformatica special issue on Crowdsourcing Geospatial Information, 2015.
- Co-editor (with Afra Zomorodian) of the Computational Geometry: Theory and Applications (CGTA) special issue on SoCG 2009.

PROGRAM COMMITTEES AND CONFERENCE SERVICE

- 34th International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL), Riverside, California, 2026; vice PC chair, workshop co-chair.
- 3rd ACM SIGSPATIAL International Workshop on Geospatial Anomaly Detection (GeoAnomalies), 2026; general co-chair.

- 42nd European Workshop on Computational Geometry (EuroCG), Hagen, Germany, 2026
- 42nd International Symposium on Computational Geometry (SoCG), Rutgers, NJ, 2026
- 2nd ACM SIGSPATIAL International Workshop on Geospatial Anomaly Detection (GeoAnomalies), 2025; general co-chair.
- 33rd International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL), Minneapolis, Minnesota, 2025; vice PC chair, short papers co-chair.
- 1st ACM SIGSPATIAL International Workshop on Geospatial Anomaly Detection (GeoAnomalies), 2024; general co-chair.
- 32nd International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL), Atlanta, Georgia, 2024; vice PC chair, poster/demo co-chair.
- 40th International Computational Geometry Media Exposition (CG:ME), Athens, Greece, 2024.
- 31st International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL), Hamburg, Germany, 2023; vice PC chair.
- 5th ACM SIGSPATIAL International Workshop on Spatial Gems (SpatialGems), 2023.
- 30th International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL), Seattle, Washington, 2022; senior program committee member.
- 38th Symposium on Computational Geometry (SoCG), Berlin, Germany, 2022.
- 29th International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL), Beijing, China, 2021.
- 22nd IEEE International Conference on Mobile Data Management (MDM), 2021.
- 37th European Workshop on Computational Geometry (EuroCG), 2021.
- 17th Algorithms and Data Structures Symposium (WADS), 2021.
- 17th International Symposium on Spatial and Temporal Databases (SSTD), 2021.
- 28th International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL), Seattle, WA, 2020.
- Spring Simulation Conference (SpringSim), 2020.
- 6th International ACM SIGMOD Workshop on Managing and Mining Enriched Geo-Spatial Data (GEORICH), 2020.
- 3rd Iranian Conference on Computational Geometry, 2020.
- Workshop on Applications of Topological Data Analysis (ATDA), 2019.
- Winter Simulation Conference, Big Data in Simulation track, 2019.
- 16th International Symposium on Spatial and Temporal Databases (SSTD), Vienna, Austria, 2019.
- 31st Canadian Conference on Computational Geometry (CCCG), University of Alberta, Canada, 2019.
- 26th International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL), Seattle, WA, 2018.
- 1st ACM SIGSPATIAL International Workshop on GeoSpatial Simulation (GeoSim), 2018.
- 5th International ACM SIGMOD Workshop on Managing and Mining Enriched Geo-Spatial Data (GEORICH), 2018.
- Chair of the Workshop Committee for Computational Geometry Week, 2018.

- 26th Annual European Symposium on Algorithms (ESA), Track B (Engineering and Application Track), Helsinki, Finland, 2018.
- 34th European Workshop on Computational Geometry (EuroCG), Berlin, Germany, 2018.
- 25th International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL), Redondo Beach, CA, 2017.
- 15th International Symposium on Spatial and Temporal Databases (SSTD), Arlington, 2017.
- 4th International ACM SIGMOD Workshop on Managing and Mining Enriched Geo-Spatial Data (GEORICH), 2017.
- 33rd European Workshop on Computational Geometry (EuroCG), Malmö, Sweden, 2017.
- Meeting on Algorithms Engineering and Experiments (ALENEX), Barcelona, Spain, 2017.
- 24th International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL), San Francisco, CA, 2016.
- Young Researchers Forum, associated with the International Symposium on Computational Geometry (SoCG), 2016.
- 3rd International ACM SIGMOD Workshop on Managing and Mining Enriched Geo-Spatial Data (GEORICH), 2016.
- 23rd International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL), Seattle, WA, 2015.
- 14th International Symposium on Spatial and Temporal Databases (SSTD), Seoul, South Korea, 2015.
- 14th Algorithms and Data Structures Symposium (WADS), University of Victoria, BC, Canada, 2015.
- 2nd International ACM SIGMOD Workshop on Managing and Mining Enriched Geo-Spatial Data (GEORICH), 2015.
- 6th International Conference on Bioinformatics and Computational Biology (BICoB), Las Vegas, NV, 2014.
- 23rd Annual Fall Workshop on Computational Geometry, City College of New York, 2013.
- 13th International Symposium on Spatial and Temporal Databases (SSTD), Munich, Germany, 2013.
- 5th International Conference on Bioinformatics and Computational Biology (BICoB), Honolulu, Hawaii, 2013.
- 7th International Frontiers of Algorithmics Workshop (FAW) and the 9th International Conference on Algorithmic Aspects of Information and Management (AAIM), Dalian, China, 2013.
- 29th Annual Symposium on Computational Geometry (SoCG), Rio de Janeiro, Brazil, 2013.
- 29th European Workshop on Computational Geometry (EuroCG), Braunschweig, Germany, 2013.

- 6th Annual International Conference on Combinatorial Optimization and Applications (COCOA), Banff, Canada, 2012.
- 20th Annual European Symposium on Algorithms (ESA), Ljubljana, Slovenia, 2012.
- 17th Annual International Computing and Combinatorics Conference (COCOON), Dallas, TX, 2011.
- 12th Symposium on Spatial and Temporal Databases (SSTD), Minneapolis, MN, 2011.
- 25th ACM Annual Symposium on Computational Geometry (SoCG), Aarhus, Denmark, June 8-10, 2009.
- 8th International Conference on Mobile Data Management (MDM), Mannheim, Germany, 2007.

GRANT REVIEWER SERVICE

- Review Panel Member, German Research Foundation (DFG), 2026.
- NSF Review Panel Member, 2007, 2008, 2013, 2015, 2017–2019, 2021–2022, 2025.
- NSF Site Visit Member, 2024.
- Reviewer for NSF, 2016, 2018, 2025.
- Reviewer for National Science and Research Council of Canada, 2010, 2015, 2019, 2021.
- Reviewer for Netherlands Organisation for Scientific Research, 2010, 2011, 2017.
- Reviewer for Swiss National Science Foundation, 2009.

REVIEWER SERVICE

- Journals:

ACM Transactions on Algorithms, Algorithmica, BMC Bioinformatics, Computational Geometry: Theory and Applications, Computer-Aided Geometric Design, Discrete and Computational Geometry, Discrete Mathematics, IEEE Transactions on Computers, IEEE Transactions on Neural Networks, Information Processing Letters, International Journal of Computational Geometry and Applications, International Journal of Geographical Information Science, International Journal of Knowledge Discovery in Bioinformatics, International Journal of Robotics Research, ISPRS Journal of Photogrammetry and Remote Sensing, Journal of Bioinformatics and Computational Biology, Journal of Combinatorial Optimization, Journal of Discrete Algorithms, Journal of Spatial Information Science, Journal for Graph Algorithms and Applications, Nordic Journal of Computing, Pattern Recognition, PLOS One, Sensors, SIAM Journal on Computing, Theoretical Computer Science, Transactions on Spatial Algorithms and Systems

- Conferences:

ACM SIGSPATIAL GIS, ALENEX, CCCG, CIAC, ESA, FOCS, ICALP, ISAAC, MFCS, SAC-DSGC, SEA, SoCG, SODA, STACS, STOC

- Books and other reviewing activities:

Addison-Wesley, MIT Press, Springer, Mathematical Reviews;

Member of the review panel for Grace Hopper Celebration scholarships, 2007–2014.

ORGANIZATION OF SCIENTIFIC EVENTS

- Co-organizer (with M. Löffler and E. Oh) of the Dagstuhl seminar series on “Computational Geometry”, 2026–2030.
- Co-organizer (with B. Burton, M. Löffler, E.W. Chambers) of the Dagstuhl seminar on “Applications of Topology to the Analysis of 1-Dimensional Objects”, February 12-17, 2017.
- Co-organizer (with Rolf A. de By) of the 3rd ACM SIGSPATIAL International Workshop on Crowdsourced and Volunteered Geographic Information (GEOCROWD), November 4, 2014.
- Co-organizer (with A. Efrat) and treasurer of the 22nd Annual ACM Symposium on Computational Geometry (SoCG), June 5-7 2006, Sedona, Arizona.
- Co-organizer (with H. Alt) of the 17th European Workshop on Computational Geometry, March 26-28 2001, Freie Universität Berlin, Germany.
- Co-organizer (with B. Felsner) of the ALT-FEST, Colloquium on the occasion of the 50th birthday of Prof. Dr. Helmut Alt, with talks, May 9th 2000, Freie Universität Berlin.

TEACHING

- Classes taught at Tulane University
 - CMPS 1500 “Introduction to Computer Science I”, undergraduate; Fall 2013, Spring 2019
 - CMPS 1600 “Introduction to Computer Science II”, undergraduate; Spring 2014, Spring 2021
 - CMPS/MATH 2170 “Introduction to Discrete Mathematics”, undergraduate; Fall 2013, Fall 2014, Fall 2015, Fall 2020, Spring 2022
 - CMPS 2200 “Introduction to Algorithms”, undergraduate; Fall 2012, Fall 2014, Fall 2015, Fall 2017
 - CMPS 3130/6130 “Introduction to Computational Geometry”, undergraduate with a graduate section; Spring 2013, Spring 2015, Spring 2017, Spring 2020
 - CMPS 6130 “Introduction to Computational Geometry”, graduate; Fall 2023, Spring 2026
 - CMPS 6610/4610 “Algorithms”, graduate with an undergraduate section; Fall 2016, Fall 2018, Fall 2020
 - CMPS 6640/4040 “Computational Geometry”, graduate with an undergraduate section; Spring 2016
 - CMPS 7010 “Research Seminar”, Fall 2015, Fall 2016, Fall 2017
 - TIDE 1022 “Computational Thinking for Work and Play”, undergraduate; Fall 2014
- Classes taught at University of Texas at San Antonio
 - CS 6463 “Advanced Topics: Computational Geometry”, graduate; Fall 2006, Fall 2010
 - CS 5633 “Analysis of Algorithms”, graduate; Spring 2004, Spring 2005, Spring 2006, Spring 2008, Spring 2009, Spring 2010, Spring 2012
 - CS 3343 “Analysis of Algorithms”, undergraduate; Spring 2009, Fall 2010, Fall 2011

- CS 3233 “Discrete Mathematical Structures”, undergraduate; Fall 2004, Fall 2009
- CS 1723/2123 “Data Structures”, undergraduate; Fall 2006, Spring 2007, Fall 2007, Spring 2010
- CS 1713 “Introduction to Computer Science”, undergraduate; Fall 2005
- Classes taught at University of Arizona
 - CSc 437/537 “Geometric Algorithms”, mixed undergraduate and graduate; Fall 2002
 - CSc 445 “Algorithms”, undergraduate; Summer 2003
 - CSc 345/346 “Analysis of Discrete Structures”, undergraduate; Spring 2003
 - CSc 344 “Foundations of Computing”, undergraduate; Fall 2002
 - CSc 227 “Program Design and Development”, undergraduate; Summer 2002
- Classes taught at Arizona State University
 - CSE 591 “Computational Geometry”, graduate; Spring 2002
- At Freie Universität Berlin
 - Taught summer block course “Programming in C”
 - Teaching assistant for “Introduction to Algorithms and Data Structures I and II”, “Design and Analysis of Algorithms”, and “Programming in Java”

POSTDOCTORAL RESEARCHERS SUPERVISED

2023 – 2024 Yuke Li
2019 – 2020 Ovi Chris Rouly (Now at the National Geospatial-Intelligence Agency)
2018 – 2019 Umar Manzoor (Now Reader in AI at University of Wolverhampton)
2013 – 2015 Brittany Fasy (Now Associate Professor at Montana State University)

EXTERNAL MEMBER ON PHD COMMITTEES

- Lukas Plätz, Ruhr-Universität Bochum, Germany, 2026.
- Jérôme Urhausen, Utrecht University, Netherlands, 2023.
- Leonie Ryvkin, Ruhr-Universität Bochum, Germany, 2021.
- Samuel Micka, Montana State University, 2017–2020
- Amin Gheibi, Carleton University, Canada, 2015.
- Wouter Meulemans, Eindhoven University of Technology, Netherlands, 2014.
- Masoud Omran, Carleton University, Canada, 2014.

STUDENTS (TULANE)

- PhD students (7+1)
 - Chanuka Algama, 2nd year, Computer Science; trajectory data analysis and anomaly detection.
 - Mauryan Uppalapati, 3rd year, Computer Science; trajectory data analysis and anomaly detection.

-
- Yu (Demi) Qin, graduated Spring 2025; Computer Science, co-advised with Brian Summa; analyzing prostate cancer histopathology images with quantitative descriptors.
Now: Research Scientist, National Laboratory of the Rockies (NLR).
 - Erfan Hosseini Sereshgi, graduated Spring 2025; Computer Science; road map construction and comparison.
Now: Postdoc, CS and Murphy Institute, Tulane University.
 - Majid Mirzanezhad, graduated Summer 2021; Computer Science; geometric algorithms and data structures for curves and graphs.
Now: Assistant professor, Ohio University.
 - Sushovan Majhi, graduated Fall 2020; Mathematics; topological reconstruction.
Now: Assistant professor, George Washington University, Data Science Program.
 - Peter Lawson, graduated Fall 2020; Bioinnovation, co-advised with J. Quincy Brown; quantitative descriptors for prostate cancer histopathology images.
Now: Librarian for data and visualization, Johns Hopkins University, Sheridan Libraries.

 - Andrea N. Naranjo, graduated 2014, Chemical and Biomolecular Engineering; collaborated on research to study trafficking behavior of membrane proteins.

 - Masters students (1)
 - Pan Fang, Computer Science; distance measures for embedded graphs.

 - Undergraduate students (25)
 - Mackenzie Bookamer, 2023 – 2024, supervised research on detecting anomalous movement trajectories.
 - Merrilee Montgomery, 2022 – 2024, supervised research on detecting anomalous movement trajectories and Honors thesis on "A geospatial analysis of human trafficking predictors: A system-network approach".
 - Will Rodman, 2021 – 2024, supervised research on visualizing shape distance signatures and Honors thesis on "Application of geometric graph distances in machine learning classification".
 - Emily Powers, 2021 – 2022, supervised research on Traversal distance computation.
 - Rena Repenning, 2021 – 2022, supervised research on Traversal distance computation.
 - Justin Phillips, 2021, supervised research on an image analysis pipeline for prostate cancer tissue images.
 - Raphael Deykin, 2021, supervising research on an image analysis pipeline for prostate cancer tissue images.
 - Joseph Allen, 2019 – 2020, supervised research on tools for labeling prostate cancer histology images
 - Jason Georgis, 2018 – 2019, supervised CS coordinate major research on convergence properties of map construction
 - Amy Grouse, 2018 – 2019, supervised CS coordinate major research on analyzing the shortest path structure of movement trajectories
 - Po-Yu (Timmy) Wu, 2018, (external student), supervised research on an image analysis pipeline for prostate cancer tissue images.
-

- Parker Evans, 2016 – 2018, supervised Honors thesis research on self-overlapping curves, interior boundaries, and minimum area homotopies.
- Emily Dong, 2017, (external student), supervised research on movement models on transportation networks.
- Ethan Bogart, 2016 – 2017, supervised research on movement models on transportation networks.
- Myranda Summers, 2016 – 2017, supervised research on movement models on transportation networks.
- Winona Richey, 2016 – 2017, supervised CS coordinate major research on analyzing laser direct write techniques for cell printing.
- Xiaoxiao Ma, 2016 – 2017, supervised CS coordinate major research on developing cost-efficient VR-based technology for visual field testing for glaucoma detection.
- Andrea Burns, 2016, supervised research on computing self-overlapping curves.
- Gianna Capezio, 2015-2016, supervised CS coordinate major research on analyzing New Orleans community data.
- Kai Kuroda, 2015-2016, supervised CS coordinate major research on algorithms for map construction using Reeb graphs.
- Elaine Chang, 2015-2016, supervised CS coordinate major research on developing cost-efficient VR-based technology for visual field testing for glaucoma detection.
- Benjamin Slavin, 2015, supervised CS coordinate major research on developing cost-efficient VR-based technology for visual field testing for glaucoma detection.
- Cody Licorish, 2013-2015, supervised research on analyzing, clustering, and detecting movement patterns in trajectory data.
- Joel Gotthelf, 2015, co-supervised CS coordinate major research (together with Brent Venable) on comparison and classification of shark teeth.
- Matthew Fortuna, 2014-2015, supervised CS coordinate major research on algorithms to optimize the geometric arrangement of nanoantennas for light spectrum splitting.
- Tyler Schlichenmeyer, 2013-2014, supervised CS coordinate major research on algorithms to improve structured illumination microscopy for prostate cancer surgery.
- Greg Cousins, 2013, supervised research on Hausdorff-based image comparison to quantify trafficking behavior of membrane proteins.
- Taylor Huntington, 2013, co-supervised research on trajectory generation.
- Isaac Rodriguez, 2013, supervised research on trajectory extraction from OpenStreetMap.
- Evan Cordell, graduated Spring 2013; supervised Honors thesis research on computing the Fréchet distance for simple polygons.

STUDENTS (UTSA)

- PhD students (3+8)

- Mahmuda Ahmed; graduated Summer 2015; supervised research on trajectory analysis and map construction; co-chair of PhD committee (together with Matt Gibson).
Now: Senior Software Engineer at Google.
- Jessica L. Sherette, graduated Fall 2013; supervised research on distance measures for surfaces; co-chair of PhD committee (together with Kay Robbins).
Now: Assistant Professor of Instruction, Department of Computer Science at the University of Texas at San Antonio.

- Atlas F. Cook IV, graduated Fall 2009; supervised research on obstacle-avoiding similarity metrics and shortest path problems; chair of PhD committee.
- Jared Bennat, 2011–2012, supervised research on the computation of integral Fréchet distance.
- Dragana Veljkovich, graduated Fall 2010; member of PhD committee.
- Anthonoy Castaldo, graduated Fall 2010; member of PhD committee.
- Keith Harrison, dissertation proposal Fall 2010; member of PhD committee.
- Areej Al-Bataineh, dissertation proposal Spring 2010; member of PhD committee.
- Yijuan Lu, graduated Spring 2008; member of PhD committee.
- Yie (Jerry) Yue, graduated Spring 2007; member of PhD committee.
- Lisa Tate, dissertation proposal Spring 2006; member of PhD committee.
- Masters students (5+10)
 - Nazul Grimaldo, graduated Summer 2012; supervised research on protein quantification using LC-MS/MS data for protein biomarker detection; chair of MS committee.
 - Jayanthi Nalini, graduated Fall 2012; supervised research on shape matching implementations using the Fréchet distance.
 - Justin Leonard, graduated Fall 2010; chair of MS committee.
 - Allen Fouty, graduated Spring 2010; supervised research on dynamic travel-time databases, member of MS committee.
 - Randall Salas, graduated Fall 2006; supervised research on GPS trajectory analysis for dynamic travel-time databases; chair of MS committee.
 - Chad Zalkin, graduated Spring 2011; member of MS committee.
 - Robert Mireles, graduated Spring 2009; member of MS committee.
 - Kevin Do, graduated Spring 2008; member of MS committee.
 - Neil Kalinowski, graduated Fall 2007, supervised research on GPS trajectory analysis and reactive routing for dynamic travel-time databases, member of MS committee.
 - Anthony Castaldo, graduated Summer 2007; member of MS committee.
 - Jason Cochetti, graduated Fall 2006; member of MS committee.
 - Mark Robinson, graduated Fall 2006; member of MS committee.
 - Rachel Smith, graduated Spring 2006; member of MS committee.
 - Stephanie Daecon, graduated Fall 2005 (Applied Mathematics); member of MS committee.
 - Jun Pan, graduated Summer 2005; member of MS committee.
- Undergraduate students (8+5)
 - Mikey Segura, supervised research on live cell imaging trajectory analysis.
 - Ali Scissons, supervised research on mobile computing and GPS trajectory analysis for dynamic travel-time databases.
 - Jessica Stahley, supervised research on mobile computing and GPS trajectory analysis for dynamic travel-time databases.
 - Matt Moore, supervised MBRS-RISE research rotation.
 - Miriam Winter, supervised research on GPS trajectory analysis for dynamic travel-time databases.
 - Sean Pivek, supervised research on analyzing 2D electrophoresis gels.
 - Bianca Castillo, supervised MBRS-RISE research rotation.

- Drew Shaw, supervised research on analyzing 2D electrophoresis gels.
- Michael Anzaldua, supervised internship at USAA, Fall 2007.
- Ashley Price, supervised internship at Cisco, Summer 2007.
- Natalya Jeffords, supervised internship at USAA, Summer 2006.
- Dennis Andrade, supervised internship at Sonatest, Spring 2006.
- James Packer, graduated Fall 2006; reader for Honors thesis.

OTHER TEACHING ACTIVITIES

- Faculty advisor for the Zeta chapter of Upsilon Pi Epsilon at Tulane; 2015–2016.
- Faculty advisor for the Association for Computing Machinery (ACM) student chapter at UTSA; 2007–2012.
- Faculty advisor for the Bangladesh Student Association at UTSA; 2011–2012.

INSTITUTIONAL SERVICE (EXTERNAL)

2022 – 2023 Member and sub-committee chair of the Principles Review Committee; Southern Association of Colleges and Schools Commission on Colleges (SACSCOC)

INSTITUTIONAL SERVICE (TULANE)

2012 – present Newcomb Fellow
 2016 – 2024 Member of the Faculty Handbook Committee
 2020 – 2021 Member of the SSE Nominating Committee
 2020 – 2021 Member of the Senate Committee on Committees
 2015 – 2021 SSE representative on the University Senate
 2016 – 2019 Member of the President's Faculty Advisory Committee
 2018 – 2019 Chair of the SSE Graduate Studies Committee (member since 2016)
 2015 – 2019 Graduate coordinator, Department of Computer Science
 2016 – 2018 Member of the ad hoc senate committee on reform of the University Senate
 2015 – 2016 Co-organizer (with Bruce Gibb) of the SSE Lunch-time Faculty Research Seminars
 2013 – 2016 Member of the SSE Curriculum Committee
 2012 – 2016 Proposal development for the PhD program in Computer Science

SHARED GOVERNANCE (UT SYSTEM)

2009 – 2012 University of Texas System Faculty Advisory Council (UTFAC), member
 2011 – 2012 Executive Committee (UTFAC), member
 2011 – 2012 Co-Chair of the Academic Affairs and Faculty Quality Committee (UTFAC)

SHARED GOVERNANCE (UTSA)

2010 – 2012 Chair of the Faculty Senate (vice chair 2009–2010, member 2008–2010)
 2008 – 2012 Faculty Senate Executive Committee, member (chair since Fall 2010)
 2009 – 2010 Faculty Senate Handbook of Operating Procedures Committee, member
 2009 – 2010 Faculty Senate Budget Committee, member

UNIVERSITY COMMITTEES (UTSA)

2011 – 2012	Executive Leadership Council, member
2009 – 2012	Strategic Resource Planning Council, member
2010	Resource Strategy Team, member
2010 – 2012	Committee on the Handbook of Operating Procedures, member
2010 – 2012	Facilities and Administration (F&A) Task Force, member

COLLEGE SERVICE (UTSA)

2010 – 2012	Head of the Computational Biology Initiative (CBI; cbi.utsa.edu)
2005 – 2007	College Policy Committee, member
2006 – 2007	Dissertation Awards Committee, member
2011 – 2012	College Faculty Review Advisory Council (CFRAC), member
2011 – 2012	Cyber Security Council, member

DEPARTMENTAL SERVICE (UTSA)

2007 – 2012	Chair of the Communications Committee and Communications Director
2004 – 2007	Faculty Search Committee, member
2009 – 2010	Faculty Search Committee, member
2005 – 2007	Secretary of the Department Faculty Forum
2004 – 2012	PhD Exam Committee (Algorithms Portion), member
2006 – 2007	Theory Sub-Committee, member
2005 – 2009	Graduate Studies Committee, member
2009 – 2012	Graduate Recruitment Committee, member
2009	Faculty Mentoring Task Force, member