JIE GAO

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Computer Science Department
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Research Interests

Algorithms, Networking, Computational Geometry.

Education

Sep 1999 – Aug 2004	Ph.D. in Computer Science, **Stanford University**, Stanford, CA Dissertation: Hierarchical Data Structures for Mobile Networks Advisor: Prof. Leonidas J. Guibas
Sep 1994 – Jul 1999	B.S., Computer Science, **Univ. of Sci. & Tech. China**(USTC), Hefei, China Special Class for the Gifted Young, 5-year program

Honors and Awards

2021 EWSN Best Paper Award.
2016 Excellence in Research and Graduate Teaching, Computer Science, Stony Brook University.
2012 Excellence in Research, Computer Science department, Stony Brook University.
2009 Best Paper Award from ACM SIGCOMM Internet Measurement Conference.
2006 National Science Foundation (NSF) Faculty Early Career Award
2003 IBM Ph.D Fellowship 2003-2004

Research Experience

Jan 2020 - now	Professor, Computer Science Department, **Rutgers, State University of New Jersey**, Piscataway, NJ
Sep 2018 – Dec 2019	Professor, Computer Science Department, **Stony Brook University**, Stony Brook, NY
Sep 2011 – Aug 2018	Associate Professor, Computer Science Department, **Stony Brook University**, Stony Brook, NY
Aug 2005 – Sep 2011	Assistant Professor, Computer Science Department, **Stony Brook University**, Stony Brook, NY Hired for fall 2004. Deferred for a year for a postdoc at Caltech.
Aug 2004 – Aug 2005	Postdoc Fellow, Center for the Mathematics of Information, **California Institute of Technology**, Pasadena, CA Worked with Prof. Jehoshua (Shuki) Bruck and Prof. Leonard Schulman
Jan 2000 – Aug 2004	Research Assistant, **Stanford University**, Stanford, CA Advisor: Prof. Leonidas J. Guibas

Grants

NSF **AI Institute for Agent-based Cyber Threat Intelligence and Operation (ACTION)**, total $\sim$ 20M, \$610K for Rutgers, subcontract of IIS-2229876, 9/01/2023-08/31/2028.

NSF DMS-2220271 **ATD: Algorithms and Geometric Methods for Community and Anomaly Detection and Robust Learning in Complex Networks**, PI: Feng Luo, co-PI: Jie Gao, $\$300,000$, 08/01/2023-07/31/2026.

NSF DMS-2311064 **Unravel machine learning blackboxes – A general, effective and performance-guaranteed statistical framework for complex and irregular inference problems in data science**, PI: Minge Xie, co-PI: Jie Gao, $300,000, 07/01/2023-06/30/2026.

NSF CRCNS-2207440 **CRCNS Research Proposal: Modeling Human Brain Development as a Dynamic Multi-Scale Network Optimization Process**, Jie Gao, Caterina Stamoulis (Harvard Medical School), Prodromos Daoutidis (University of Minnesota), total $\sim$ 1M, $261,966 for Rutgers, 9/01/2022-08/31/2026.

NSF CCF-2208663 **Collaborative Research: AF: Small: Promoting Social Learning Amid Interference in the Age of Social Media**, Jie Gao, Grant Schoenebeck (Univ Michigan), Jason Jones (Stony Brook), total $\sim$ 600K, $270,000 for Rutgers, 10/01/2022- 09/30/2025.

NSF CNS-2137245 **IUCRC Planning Grant Rutgers University: Center for Standards and Ethics in Artificial Intelligence (CSEAI)**, PI: Joege Ortiz, co-PI: Jie Gao, Dario Pompili, Yuqian Zhang, $20,000, 03/01/2022-02/28/2023.

NSF CCF-2118953 **Collaborative Research: PPoSS: LARGE: Principles and Infrastructure of Extreme Scale Edge Learning for Computational Screening and Surveillance for Health Care**, total $\sim$ 5M, $923,636 for Rutgers, 10/01/2021-09/30/2026. The project is collaborated with Fan Ye (Stony Brook), Elinor Schoenfeld (Stony Brook), Song Han (MIT), Ting Wang (Penn State).

NSF OAC-1939459 **Collaborative Research: From Brains to Society: Neural Underpinnings of Collective Behaviors Via Massive Data and Experiments**, 10/01/2019-09/30/2021, PI: Caterina Stamoulis, co-PI: Jie Gao, Brandon Behlendorf, Brandon Sepulvado, Mark Wilson, Prodromos Daoutidis. Total 1.7m, my share: $218,888.

NSF DMS-1737812 **Collaborative Research: ATD: Theory and Algorithms for Discrete Curvatures on Network Data from Human Mobility and Monitoring**, $100,000, 08/01/2017-07/31/2020. PI: Jie Gao, co-PI: Xianfeng Gu.

NSF CCF-1743861 REU supplement **AitF: FULL: Collaborative Research: Modeling and Understanding Complex Influence in Social Networks**, $16,000, 07/01/2017-08/31/2018.

NSF CNS-1618391 **NeTS: Small: Geometric and Topological Analysis on Trajectory Sensing: Collection, Classification and Anonymization**, $250,000, 09/01/2016-08/31/2019. Sole PI.

NSF CCF-1535900 **AitF: FULL: Collaborative: Medium: Modeling and Understanding Complex Influence in Social Networks**, PI Jie Gao, co-PI Jason Jones, $356,845, 09/01/2015-08/31/2018.

AFOSR FA9550-14-1-0193 **Riemannian Geometric and Stochastic Methods for Robust and High Performance Network Communications**, PI Xin Wang, co-PI Xianfeng Gu, Jie Gao, $900,000, 09/30/2014-09/29/2017.

NSF DMS-1418255 **Collaborative Research: Geometric Analysis of Computer and Social Networks**, PI: Jie Gao, co-PI Xianfeng Gu, $249,998, 09/01/2014-08/31/2017.

NSF DMS-1221339 **Collaborative Research: ATD: Algorithmic Aspects of Geometry for Using LIDAR and Wireless Sensor Networks for Combating Chemical Terror Attacks**, PI Xianfeng Gu, co-PI Jie Gao, $320,000, 07/01/2012-06/30/2015.

NSF CNS-1217823 **NeTS: Small: Collaborative: Non-isotropic Networked Sensor Deployment for Smart Buildings**, $229,342, 07/01/2012-06/30/2015. Sole PI.

NSF CNS-1116881 **NeTS: Small: Algorithmic Foundations for Joint Information Processing and Optimization in a Hybrid Mobile Sensor Network**, $257,581, 07/01/2011-06/30/2014. Sole PI.

DARPA **GLAD-PC - Graph Learning for Anomaly Detection using Psychological Context**, ADAMS program under contract W911NF-11-C-0216, 06/2011-06/2013. PI: Oliver Brdiczka, co-PI: Jie Gao, Kamalika Das, and Elise Weaver. Total amount: $3,514,890. My share: $140,000.

NSF CNS-1016829 **NeTS: Small: Large Scale Sensor Network Routing using Conformal Geometry**, $450,000, 07/01/2010-06/30/2013. PI: Jie Gao, co-PI: Xianfeng Gu.

NSF CNS-0643587 **CAREER: Geometric Algorithms for Wireless Sensor Networks**, $400,000, 01/01/2007-12/31/2011.

Publications

Electronic versions are available at `http://sites.rutgers.edu/jie-gao`.

Total citation: 8816. h-index: 45, i10-index: 101 (by July 2024)

Book chapters

1. Jie Gao, Xianfeng David Gu, Feng Luo, Discrete Ricci Flow for Geometric Routing, *Encyclopedia of Algorithms*, 556-563, 2016.
2. Jie Gao, Leonidas Guibas, Geometric Algorithms for Sensor Networks, invited to *Philosophical Transactions of the Royal Society A*, 370, 27-51, 2012.
3. Jie Gao, Geometric Routing in Wireless Sensor Networks, invited to *Guide to Wireless Sensor Networks*, Pages 113-157 Springer-Verlag, 2009.
4. Jie Gao, Li Zhang, Well-Separated Pair Decomposition for Unit-Disk Graphs, *Encyclopedia of Algorithms*, 2007. Updated 2371-2374, 2016.

Journal publications

1. Skylar J Brooks, Victoria O Jones, Haotian Wang, Chengyuan Deng, Staunton GH Golding, Jethro Lim, Jie Gao, Prodromos Daoutidis, Catherine Stamoulis, Community Detection in the Human Connectome: Method Types, Differences and Their Impact on Inference, Human Brain Mapping, 45(5), e26669, 2024.
2. Haotian Wang, Abhirup Ghosh, Jiaxin Ding, Rik Sarkar, Jie Gao, Heterogeneous Interventions Reduce the Spread of COVID-19 in Simulations on Real Mobility Data, *Scientific Reports*, (2021) 11(1), 1-12, article 7809, 8th of April 2021.
3. Hua Huang, Chien-Chun Ni, Xiaomeng Ban, Andrew T. Schneider, Jie Gao, Shan Lin, Connected Wireless Camera Network Deployment with Visibility Coverage, *ACM Transactions on Internet of Things*, Article 25, Volume 1, Issue 4, 25:1-25:19, July 2020.
4. Chien-Chun Ni, Yu-Yao Lin, Feng Luo, Jie Gao, Community Detection on Networks with Ricci Flow, *Scientific Reports*, 9, Article number 9984, published 10 July 2019. Software: discrete Ricci curvature flow package on Github[1] has been downloaded over **120,000** times and has received over 200 stars.

[1] `https://github.com/saibalmars/GraphRicciCurvature`

5. Roozbeh Ebrahimi, Jie Gao, Golnaz Ghasemiesfeh, Grant Schoenebeck, Complex Contagions in Preferential Attachment Models and Other Time-Evolving Networks, *IEEE Transactions on Network Science and Engineering*, 4(4): 201–214, 2017.
6. Siming Li, Wei Zeng, Dengpan Zhou, Xianfeng Gu, Jie Gao, Compact Conformal Map for Greedy Routing in Wireless Mobile Sensor Networks, *IEEE Transactions on Mobile Computing (TMC)*, 15(7): 1632–1646, 2016.
7. Pankaj K. Agarwal, Jie Gao, Leonidas J. Guibas, Haim Kaplan, Natan Rubin, Micha Sharir, Stable Delaunay Graphs, *Discrete & Computational Geometry*, 54(4): 905–929, 2015.
8. Xin Zhao, Zhengyu Su, Xianfeng David Gu, Arie Kaufman, Jian Sun, Jie Gao, Feng Luo, Area-preservation Mapping using Optimal Mass Transport, *IEEE Transactions on Visualization and Computer Graphics (IEEE TVCG)*, 19(12), 2838–2847, 2013.
9. Rik Sarkar, Jie Gao, Differential Forms for Target Tracking and Aggregate Queries in Distributed Networks, *IEEE/ACM Transactions on Networking*, 21(4), 1159-1172, 2013.
10. Rik Sarkar, Xianjin Zhu, Jie Gao, Distributed and Compact Routing Using Spatial Distributions in Wireless Sensor Networks, *ACM Transactions on Sensor Networks*, 9(3):32, 2013.
11. Jie Gao, Dengpan Zhou, The Emergence of Sparse Spanners and Well-Separated Pair Decomposition Under Anarchism, *Journal of Computational Geometry*, 3(1), 1-19, 2012.
12. Rik Sarkar, Xianjin Zhu, Jie Gao, Hierarchical Spatial Gossip for Multi-Resolution Representations in Sensor Networks, *ACM Transactions on Sensor Networks*, 8(1), 4:1-4:24, February, 2012.
13. Steve Y. Oudot, Leonidas J. Guibas, Jie Gao, Yue Wang, Geodesic Delaunay Triangulations in Bounded Planar Domains, invited to a special issue of *ACM Transactions on Algorithms (TALG)*, 6(4), 61:1–61:47, 2010.
14. Jie Gao, Radu Sion, Sol Lederer, Collaborative Location Certification for Sensor Networks, *ACM Transactions on Sensor Networks (TOSN)*, 6(4), 30:1-30:26, 2010.
15. Jie Gao, Michael Langberg, Leonard J. Schulman, Clustering Lines in High Dimensional Space: Classification of Incomplete Data, *ACM Transaction on Algorithms*, 7(1), 8:1-8:26, 2010.
16. Rik Sarkar, Xianjin Zhu, Jie Gao, Double Rulings for Information Brokerage in Sensor Networks, *IEEE/ACM Transactions on Networking*, 17(6), 1902-1915, 2009.
17. Sol Lederer, Yue Wang, Jie Gao, Connectivity-based Localization of Large Scale Sensor Networks with Complex Shape, *ACM Transactions on Sensor Networks*, 5(4), 31:1–31:32, November, 2009.
18. Xianjin Zhu, Rik Sarkar, Jie Gao, Segmenting a Sensor Field: Algorithms and Applications in Network Design, *ACM Transactions on Sensor Networks*, 5(2), 1-32, May, 2009.
19. Jie Gao, Li Zhang, Tradeoffs between Stretch Factor and Load Balancing Ratio in Routing on Growth Restricted Graphs, *IEEE Transactions on Parallel and Distributed Systems*, 20(2), 171-179, February, 2009.
20. Jehoshua Bruck, Jie Gao, Anxiao Jiang, Localization and Routing in Sensor Networks by Local Angle Information, *ACM Transaction on Sensor Networks*, 5(1), 1-31, February, 2009.

21. Jie Gao, Michael Langberg, Leonard J. Schulman, Analysis of Incomplete Data and an Intrinsic-Dimension Helly Theorem, *Discrete and Computational Geometry*, 40(4), 537-560, 2008.
22. Jehoshua Bruck, Jie Gao, and Anxiao Jiang, MAP: Medial Axis Based Geometric Routing in Sensor Networks, *Wireless Networks (WINET)*, 13(6), 835-853, 2007.
23. Jie Gao, Leonidas J. Guibas, An Nguyen, Deformable Spanners and Applications, *Computational Geometry : Theory and Applications*, vol. 35, Issues 1-2, 2-19, 2006.
24. Jie Gao, Li Zhang, Load Balanced Short Path Routing in Wireless Networks, *IEEE Transactions on Parallel and Distributed Systems, Special Issue on Localized Communications*, 17(4), 377-388, April, 2006.
25. Qing Fang, Jie Gao, Leonidas J. Guibas, Locating and Bypassing Routing Holes in Sensor Networks, *ACM Mobile Networks and Applications (MONET), Special Issue on Foundations of Mobile Computing*, 11(2), 187-200, 2006.
26. Jie Gao, Li Zhang, Well-Separated Pair Decomposition for the Unit-Disk Graph Metric and its Applications, *SIAM J. Computing*, 35(1), 151-169, 2005.
27. Jie Gao, Leonidas J. Guibas, John Hershberger, Li Zhang, An Zhu, Geometric Spanners for Routing in Mobile Networks, *IEEE Journal on Selected Areas in Communications (J-SAC), Special Issue on Wireless Ad Hoc Networks*, 23(1), 174-185, Jan, 2005.
28. Jie Gao, Leonidas J. Guibas, John Hershberger, Li Zhang, An Zhu, Discrete Mobile Centers, *Discrete and Computational Geometry*, 30(1), 45-65, 2003.

Refereed conference publications

1. Chengyuan Deng, Jie Gao, Kevin Lu, Feng Luo, Hongbin Sun, Cheng Xin, Neuc-MDS: Non-Euclidean Multidimensional Scaling Through Bilinear Forms, *The Thirty-eighth Annual Conference on Neural Information Processing Systems (NeurIPS)*, December 9-15, 2024.
2. Kevin Lu, Jordan Chong, Matt Lu, Jie Gao, Enabling Asymptotic Truth Learning in a Social Network. *Proceedings of the 20th Conference on Web and Internet Economics (WINE'24)*, December 2-5th, 2024.
3. Shahrzad Haddadan, Cheng Xin, Jie Gao, Optimally Improving Cooperative Learning in a Social Setting, *Proceedings of the 41st International Conference on Machine Learning (ICML 2024)*, PMLR 235:17148-17188, Vienna, Austria, July 21-27, 2024.
4. Greg Bodwin, Chengyuan Deng, Jie Gao, Gary Hoppenworth, Jalaj Upadhyay and Chen Wang, The Discrepancy of Shortest Paths, *Proceedings of the 51st EATCS International Colloquium on Automata, Languages and Programming (ICALP 2024)*, 27:1-27:20, Tallinn, Estonia, July 8-12, 2024.
5. Hsien-Chih Chang, Jie Gao, Hung Le, Computing Diameter+2 in Truly Subquadratic Time for Unit-Disk Graphs, *Proceedings of the 40th International Symposium on Computational Geometry (SoCG 2024)*, 38:1-38:14, June 11-14, 2024.
6. Guang-Yuan Hao, Hengguan Huang, Haotian Wang, Jie Gao, Hao Wang, Composite Active Learning: Towards Multi-Domain Active Learning with Theoretical Guarantees, *Proceedings of the 38th AAAI Conference on Artificial Intelligence (AAAI-24)*, 38(11), 12286-12294, February 20-27, 2024.
7. Prathamesh Dharangutte, Zongxing Xie, Jie Gao, Elinor Schoenfeld, Yindong Hua, and

Fan Ye, HeartInsightify: Interpreting Longitudinal Heart Rate Data for Health Insights through Conformal Clustering, *Proceedings of the 13th International Workshop on Biomedical and Health Informatics (BHI 2023)*, December 7-8, 2023.

8. Prathamesh Dharangutte, Zongxing Xie, Jie Gao, Yindong Hua, Elinor Schoenfeld and Fan Ye, Data Analytics for Health Relevant Events Detection based upon Longitudinal Fitbit Heart Rate Data, accepted for presentation at *The Gerontological Society of America (GSA) 2023 Annual Scientific Meeting*, Tampa, Florida, November 8-12, 2023. Innovation in Aging, Volume 7, December 2023, Page 873, Published: 21 December 2023.
9. Vikrant Ashvinkumar, Sepehr Assadi, Chengyuan Deng, Jie Gao, Chen Wang, Evaluating Stability in Massive Social Networks: Efficient Streaming Algorithms for Structural Balance, *Proceedings of the International Conference on Randomization and Computation (RANDOM 2023)*, 58:1–58:23, September 11-13, 2023.
10. Chengyuan Deng, Jie Gao, Jalaj Upadhyay, Chen Wang, Differentially Private Range Query on Shortest Paths, *Proceedings of the 18th Algorithms and Data Structures Symposium (WADS 2023)*, 340–370, July 31-August 2, 2023.
11. Prathamesh Dharangutte, Jie Gao, Ruobin Gong, Fang-Yi Yu, Integer Subspace Differential Privacy, *Proceedings of the 37th AAAI Conference on Artificial Intelligence (AAAI-23)*, 7349–7357, February 7-14, 2023.
12. Jie Gao, Mayank Goswami, Karthik C. S., Meng-Tsung Tsai, Shih-Yu Tsai, Hao-Tsung Yang, Obtaining Approximately Optimal and Diverse Solutions via Dispersion, *Proceedings of the 15th Latin American Theoretical Informatics Symposium (LATIN 2022)*, 222–239, November 7-11, 2022.
13. Peyman Afshani, Mark de Berg, Kevin Buchin, Jie Gao, Maarten Löffler, Amir Nayyeri, Benjamin Raichel, Rik Sarkar, Haotian Wang and Hao-Tsung Yang, On Cyclic Solutions to the Min-Max Latency Multi-Robot Patrolling Problem, *Proceedings of the 38th International Symposium on Computational Geometry (SoCG 2022)*, 2:1–2:14, June 7-10, 2022. Invited to *Highlights of Algorithms (HALG'23)*, June 2-4, 2023.
14. Jiaxin Ding, Abhirup Ghosh, Jie Gao, Rik Sarkar, Publishing Asynchronous Event Times with Pufferfish Privacy, *Proceedings of the 18th International Conference on Distributed Computing in Sensor Systems (DCOSS'22)*, May 30 to June 1, 2022.
15. Haotian Wang, Jie Gao, Minge Xie, Clustering of Trajectories Using Non-Parametric Conformal DBSCAN Algorithm, *Proceedings of the 21st ACM/IEEE Conference on Information Processing in Sensor Networks (IPSN 2022)*, 451–462, May 4-6, 2022.
16. Darshan Chakrabarti, Jie Gao, Aditya Saraf, Grant Schoenebeck, Fang-Yi Yu, *Optimal Local Bayesian Differential Privacy over Markov Chains, Proc. of the 21st International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2022)*, 1563–1565, May 9-13, 2022.
17. Jie Gao, Ruobin Gong, Fang-Yi Yu, Subspace Differential Privacy, *Proceedings of the 36th AAAI Conference on Artificial Intelligence (AAAI-22)*, 3986–3995, February 22-March 1st, 2022.
18. Haotian Wang, Feng Luo, Jie Gao, Co-evolution of Opinion and Social Tie Dynamics Towards Structural Balance, *Proceedings of the ACM-SIAM Symposium on Discrete Algorithms (SODA'22)*, 3362–3388, January 9-12, 2022.
19. Aria Rezaei, Jie Gao, Anand D. Sarwate, Influencers and the Giant Component: the

Fundamental Hardness in Privacy Protection for Socially Contagious Attributes, *Proceedings of the SIAM International Conference on Data Mining (SDM'2021)*, 217–225, April 29-May 1, 2021.

20. Aria Rezaei, Chaowei Xiao, Jie Gao, Bo Li, Sirajum Munir, Application-Driven Privacy-Preserving Data Publishing with Correlated Attributes, *Proceedings of the 18th International Conference on Embedded Wireless Systems and Networks (EWSN 2021)*, 91–102, February 17-19, 2021. Received the **EWSN Best Paper Award**.

21. Esther Arkin, Rathish Das, Jie Gao, Mayank Goswami, Joseph Mitchell, Valentin Polishchuk and Csaba Toth, Cutting Polygons into Small Pieces with Chords: Laser-Based Localization, *Proceedings of the 28th Annual European Symposium on Algorithms (ESA 2020)*, 7:1–7:23, September 7-11, 2020.

22. Yanjun Pan, Alon Efrat, Ming Li, Boyang Wang, Hanyu Quan, Joseph Mitchell, Esther Arkin, Jie Gao, Data Inference from Encrypted Databases: A Multi-dimensional Order-Preserving Matching Approach, *Proceedings of the Twenty-First International Symposium on Theory, Algorithmic Foundations, and Protocol Design for Mobile Networks and Mobile Computing (MobiHoc 2020)*, 151–160, October 11-14, 2020.

23. Peyman Afshani, Mark De Berg, Kevin Buchin, Jie Gao, Maarten Löffler, Amir Nayyeri, Benjamin Raichel, Rik Sarkar, Haotian Wang and Hao-Tsung Yang, Approximation Algorithms for Multi-Robot Patrol-Scheduling with Min-Max Latency, *Proceedings of the 14th International Workshop on the Algorithmic Foundations of Robotics (WAFR'20)*, 107-123, June 21-23, 2021.

24. Haotian Wang, Jie Gao, Distributed Human Trajectory Sensing and Partial Similarity Queries, *Proc. of the 19th International Symposium on Information Processing in Sensor Networks (IPSN'20)*, 253–264, April 21-24, April, 2020.

25. Ye Ze, Kin Sum Liu, Tengfei Ma, Jie Gao and Chao Chen, Curvature Graph Network, *Proceedings of the 8th International Conference on Learning Representations (ICLR 2020)*, April 26-30, 2020.

26. Abhirup Ghosh, Jiaxin Ding, Rik Sarkar, Jie Gao, Differentially Private Range Counting in Planar Graphs for Spatial Sensing, *Proceedings of the 39th Annual IEEE International Conference on Computer Communications (INFOCOM'20)*, 2233-2242, April 27-30, 2020.

27. Haotian Wang, Niranjini Rajagopal, Anthony Rowe, Bruno Sinopoli, Jie Gao, Efficient Beacon Placement Algorithms for Time-of-Flight Indoor Localization, *Proceedings of the 27th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL/GIS'19)*, 119–128, November 5-8, 2019.

28. Aria Rezaei, Jie Gao, On the Privacy of Socially Contagious Attributes, *Proceedings of the 19th IEEE International Conference on Data Mining (ICDM'19)*, 1294-1299, November 8-11, 2019.

29. Kin Sum Liu, Chaowei Xiao, Bo Li, Jie Gao, Performing Co-Membership Attacks Against Deep Generative Models, *Proceedings of the 19th IEEE International Conference on Data Mining (ICDM'19)*, 459-467, November 8-11, 2019.

30. Shih-Yu Tsai, Hao-Tsung Yang, Kin Sum Liu, Shan Lin, Rezaul Chowdhury and Jie Gao, Multi-Channel Assignment and Link Scheduling for Prioritized Latency-Sensitive Applications, *Proceedings of the 15th International Symposium on Algorithms and Experiments for Wireless Sensor Networks (ALGOSENSORS 2019)*, 137–157, September 12-13, 2019.

31. Jie Gao, Grant Schoenebeck, Fang-Yi Yu, The Volatility of Weak Ties: Co-evolution of Selection and Influence in Social Networks, *Proceedings of the 18th International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2019)*, 619-627, May 13-17, 2019.

32. Hao-Tsung Yang, Shih-Yu Tsai, Kin Sum Liu, Shan Lin, Jie Gao, Patrol Scheduling Against Adversaries with Varying Attack Durations, *Proceedings of the 18th International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2019)*, 1179-1188, May 13-17, 2019.

33. Kin Sum Liu, Brent Schiller, Jie Gao, Shan Lin, Joseph S. B. Mitchell, Optimizing Sensor Deployment With Line-Of-Sight Constraints: Theory and Practice, *Proceedings of the 16th International Conference on Embedded Wireless Systems and Networks (EWSN'19)*, 95-105, February 25-27, 2019.

34. Aria Rezaei, Jie Gao, Jeff Phillips, Csaba Toth, Improved Bounds on Information Dissemination by Manhattan Random Waypoint Model, *Proceedings of the 26th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL/GIS'18)*, 139-148, November 6-9, 2018.

35. Chien-Chun Ni, Yu-Yao Lin, Jie Gao, Xianfeng Gu, Network Alignment by Discrete Ollivier-Ricci Flow, *Proceedings of the 26th International Symposium on Graph Drawing and Network Visualization (GD'18)*, 447-462, September 26-28, 2018.

36. Kin Sum Liu, Jie Gao, Xiaobing Wu, Shan Lin, On-Street Parking Guidance with Real-Time Sensing Data for Smart Cities, *Proceedings of the IEEE International Conference on Sensing, Communication and Networking (SECON'18)*, 154-162, June 11-13, 2018.

37. Boris Aronov, Alon Efrat, Ming Li, Jie Gao, Joseph S. B. Mitchell, Valentin Polishchuk, Boyang Wang, Hanyu Quan, Jiaxin Ding, Are Friends of My Friends Too Social? Limitations of Location Privacy in a Socially-Connected World, *Proceedings of the 19th ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc'18)*, 280-289, June 26-29, 2018.

38. Jie Gao, Grant Schoenebeck, Fang-Yi Yu, Cascades and Myopic Routing in Nonhomogeneous Kleinberg's Small World Model, *Proceedings of the 13th Conference on Web and Internet Economics (WINE 2017)*, 383-394, December 17-20, 2017.

39. Jiaxin Ding, Chien-Chun Ni, Jie Gao, Fighting Statistical Re-Identification in Human Trajectory Publication, *Proceedings of the 25th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL 2017)*, 82:1-82:4, November, 2017.

40. Jiemin Zeng, Gaurish Telang, Matthew P. Johnson, Rik Sarkar, Jie Gao, Esther Arkin, Joseph S. B. Mitchell, Mobile r-gather: Distributed Geographic Clustering for Location Anonymity, *Proceedings of the 18th ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc'17)*, 7:1-7:10, July 10-13, 2017.

41. Hao Tsung Yang, Kin Sum Liu, Jie Gao, Shan Lin, Sirajum Munir, Kamin Whitehouse, John Stankovic, Reliable Stream Scheduling with Minimum Latency for Wireless Sensor Networks, *Proceedings of 2017 IEEE International Conference on Sensing, Communication and Networking (SECON'17)*, 1–9, June 12-14, 2017.

42. Yu-Yao Lin, Chien-Chun Ni, Na Lei, Xianfeng David Gu, Jie Gao, Robot Coverage Path Planning for General Surfaces Using Quadratic Differentials, *Proceedings of 2017 IEEE International Conference on Robotics and Automation (ICRA'17)*, 5005–5011, May 29 -

June 3, 2017, Marina Bay Sands Convention Centre, Singapore.

43. Su Jia, Xin Jin, Golnaz Ghasemiesfeh, Jiaxin Ding, Jie Gao, Competitive Analysis for Online Scheduling in Software-Defined Optical WAN, *Proceedings of the 36th Annual IEEE International Conference on Computer Communications (INFOCOM'17)*, May, 2017.

44. Kin Sum Liu, Tyler Mayer, Hao Tsung Yang, Esther Arkin, Jie Gao, Mayank Goswami, Matthew P. Johnson, Nirman Kumar, Shan Lin, Joint Sensing Duty Cycle Scheduling for Heterogeneous Coverage Guarantee, *Proceedings of the 36th Annual IEEE International Conference on Computer Communications (INFOCOM'17)*, May, 2017.

45. Jiaxin Ding, Chien-Chun Ni, Mengyu Zhou, Jie Gao, MinHash Hierarchy for Privacy Preserving Trajectory Sensing and Query, *Proc. of the 16th International Symposium on Information Processing in Sensor Networks (IPSN'17)*, 17–28, April, 2017.

46. Jie Gao, Bo Li, Grant Schoenebeck, Fang-Yi Yu, Engineering Agreement: The Naming Game with Asymmetric and Heterogeneous Agents, *Proceedings of the 31st AAAI Conference on Artificial Intelligence (AAAI-17)*, 537–543, February 4–9, 2017.

47. Su Jia, Jie Gao, Joseph Mitchell and Lu Zhao, Exact and Approximation Algorithms for Time-Window TSP and Prize Collecting Problem, *Proceedings of the International Workshop on the Algorithmic Foundations of Robotics (WAFR'16)*, December, 2016.

48. Esther Arkin, Jie Gao, Adam Hesterberg, Joseph Mitchell and Jiemin Zeng, The Shortest Separating Cycle Problem, *Proceedings of the 14th Workshop On Approximation and Online Algorithms (WAOA'16)*, 1–13, August, 2016.

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Workshop Papers

1. Prathamesh Dharangutte, Jie Gao, Ruobin Gong, Guanyang Wang, Differentially Private Range Queries with Correlated Input Perturbation, *Workship on Theory and Practice of Differential Privacy (TPDP)*, August 20-21, 2024.

2. Jie Gao, Mayank Goswami, Karthik C. S., Meng-Tsung Tsai, Shih-Yu Tsai, Hao-Tsung

Yang, Obtaining Approximately Optimal and Diverse Solutions via Dispersion, *The 30th Annual Fall Workshop on Computational Geometry*, October 13-14, 2022.

3. Darshan Chakrabarti, Jie Gao, Aditya Saraf, Grant Schoenebeck and Fang-Yi Yu, Optimal Local Bayesian Differential Privacy over Markov Chains, *The 4th Workshop on Mechanism Design for Social Good (MD4SG'20)*, August 17-19, 2020.
4. Ye Ze, Kin Sum Liu, Tengfei Ma, Jie Gao and Chao Chen, Curvature Graph Network, *NeurIPS 2019 Graph Representation Learning Workshop (GRL 2019)*, December, 2019.
5. Jie Gao, Golnaz Ghasemiesfeh, Jason Jones, Grant Schoenbeck, Penny For the Poor: Complex Contagions in Charitable Donations, *The First Workshop on Behavioral EC*, June, 2019.
6. Aria Rezaei, Chaowei Xiao, Jie Gao, Bo Li, Protecting Sensitive Attributes via Generative Adversarial Networks, *Security and Privacy of Machine Learning Workshop*, June 14th, 2019.
7. Shih-Yu Tsai, Hao-Tsung Yang, Jie Gao, Mayank Goswami and Rebecca Schley, Faraway Spanning Trees, *The 28th Annual Fall Workshop on Computational Geometry*, October, 2018.
8. Jiaxin Ding, Jie Gao and Steven Skiena, Time Window Frechet and Metric-Based Edit Distance for Passively Collected Trajectories, *The 28th Annual Fall Workshop on Computational Geometry*, October, 2018.
9. Kin Sum Liu, Chien-Chun Ni, Yu-Yao Lin, Jie Gao, Topology Based Scalable Graph Kernels, poster, *The 26th International Symposium on Graph Drawing and Network Visualization (GD'18)*, 2018.
10. Hao-Tsung Yang, Shih-Yu Tsai, Jie Gao, Shan Lin, Optimal Safety Patrol Scheduling Using Randomized Traveling Salesman Tour, *The 27th Annual Fall Workshop on Computational Geometry*, November, 2017.
11. Kin Sum Liu, Tyler Mayer, Hao-Tsung Yang, Esther Arkin, Jie Gao, Mayank Goswami, Matthew P Johnson, Nirman Kumar and Shan Lin, Joint Sensing Duty Cycle Scheduling for Heterogeneous Coverage Guarantee, *The 26th Annual Fall Workshop on Computational Geometry*, October, 2016.
12. Esther Arkin, Peter Brass, Rathish Das, Jie Gao, Mayank Goswami, Joseph Mitchell, Valentin Polishchuk and Csaba Toth, Optimal Cutting of a Polygon by Lasers, *The 26th Annual Fall Workshop on Computational Geometry*, October, 2016.
13. Su Jia, Jie Gao and Joseph Mitchell, Exact and Approximation Algorithms for Time-Window TSP and Prize Collecting Problem, *The 26th Annual Fall Workshop on Computational Geometry*, October, 2016.
14. Jiaxin Ding and Jie Gao, MinHash Signature Hierarchy for Trajectory Sensing and Query, *The 26th Annual Fall Workshop on Computational Geometry*, October, 2016.
15. Chien-Chun Ni, Zhengyu Su, Jie Gao, Xianfeng David Gu, Capacitated Kinetic Clustering in Mobile Networks by Optimal Transportation Theory, *The 25th Annual Fall Workshop on Computational Geometry*, October, 2015.
16. Esther Arkin, Jie Gao, Adam Hesterberg, Joseph Mitchell, and Jiemin Zeng, The Minimum Length Separating Cycle Problem, *The 25th Annual Fall Workshop on Computational Geometry*, October, 2015.

17. Esther Arkin, Jie Gao, Matthew Johnson, Joseph Mitchell, and Jiemin Zeng, The r-gather Problem in Euclidean Space, *The 25th Annual Fall Workshop on Computational Geometry*, October, 2015.
18. Pradipta Ghosh, Jie Gao, Andrea Gasparri, Bhaskar Krishnamachari, RiverSwarm: Topology-Aware Distributed Planning for Obstacle Encirclement in Connected Robotic Swarms, *Proceedings of the First Workshop on Robotic Sensor Networks (RSN'14)*, April, 2014.
19. Xiaokang Yu, Xiaomeng Ban, Rik Sarkar, Wei Zeng, Xianfeng David Gu, Jie Gao, Spherical Representation and Polyhedron Routing for Load Balancing in Wireless Sensor Networks, presented at 20th Fall Workshop on Computational Geometry, Oct 29-30, 2010.
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21. Rik Sarkar, Xiaotian Yin, Jie Gao, Feng Luo, Xianfeng David Gu, Greedy Routing with Guaranteed Delivery Using Ricci Flows, presented at the *19th Fall Workshop on Computational Geometry*, Nov 13-Nov 14, 2009.
22. Dengpan Zhou, Jie Gao, Maintaining Approximate Minimum Steiner Tree and k-center for Mobile Agents in a Sensor Network, presented at *19th Fall Workshop on Computational Geometry*, Nov 13-14, 2009.
23. Jie Gao, Rik Sarkar, Xianjin Zhu, Morse Smale Decomposition, Cut Locus, and Applications in Wireless Sensor Networks, presented at *18th Fall Workshop on Computational Geometry*, Oct 31-Nov 1, 2008.
24. Yue Wang, Sol Lederer, Jie Gao, Connectivity-based Sensor Network Localization with Incremental Delaunay Refinement Method, presented at *18th Fall Workshop on Computational Geometry*, Oct 31-Nov 1, 2008.
25. Rik Sarkar, Xianjin Zhu, Jie Gao, Spatial Distributions in Routing Table Design for Sensor Networks, presented at *18th Fall Workshop on Computational Geometry*, Oct 31-Nov 1, 2008.
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28. Jie Gao, Rakesh Gupta, Efficient Proximity Search for 3-D Cuboids, *Proc. 3rd International Workshop on Computational Geometry and Applications*, Lecture Notes in Computer Science 2669, 817 - 826, May, 2003.

Dissertation

1. Jie Gao, Hierarchical Data Structures for Mobile Networks, Ph.D Dissertation, Stanford University, August, 2004.

Patents

Network Community Detection Based on Ricci Flow, with Feng Luo, Chien-Chun Ni, Yu-Yao Lin, U.S. Provisional Application 62/911,644 filed on October 7, 2019.

Geometric Routing in Wireless Networks, with Jehoshua Bruck and Anxiao Jiang, patent application filed on April 18, 2006 with United States. Application Serial No. 11/379,196.

Environmental Reasoning using Geometric Data Structure, with R. Gupta, US patent filed, September, 2002.

Invited Talks

Differential Privacy and Discrepancy on Shortest Paths, Workshop on Massive Data Models and Computational Geometry, September 23-27, Bonn, Germany, 2024.

Enabling Asymptotic Truth Learning in a Network, Invited Paper for "Statistical Methods in Cyber Security", 2024 Joint Statistical Meetings (JSM), August 6th 2024.

Graph Ricci Flow and Applications in Network Analysis and Learning, Learning Meets Geometry, Graphs, and Networks, February 29th - March 1st at NJIT, 2024.

Graph Ricci Flow and Applications in Network Analysis and Learning, Joint Mathematics Meetings, San Francisco, CA, January 3-6, 2024.

Differentially Private Range Query on Shortest Paths, New York University Geometry Seminar, December 12th, 2023.

Multi-Robot Scheduling and Motion Planning, SIAM New York-New Jersey-Pennsylvania Annual Meeting, October 21-22, 2023.

Network Dynamics and Polarization, NSF ATD PI meeting, Washington, DC, October 10-12, 2023.

Dynamics and Learning on a Social Network, Department Colloquium at Department of Statistics, Rutgers University, September 13th, 2023.

On Cyclic Solutions to the Min-Max Latency Multi-Robot Patrolling Problem, invited talk at Highlights of Algorithms (HALG'23), June 4th 2023.

Subspace Differential Privacy, Meet Women in Computing - Spring 2023 Distinguished Lecture Series, College of Engineering, Texas A&M University-Kingsville, January 19th, 2023.

Subspace Differential Privacy, Department Colloquium at Department of Mathematics and Computer Science, The Open University of Israel, January 4th, 2023.

Invited panelist at "The past, present, and Future of SenSys", at the 20th ACM Conference on Embedded Networked Sensor Systems (SenSys 2022), November 8th, 2022.

Protecting Data Privacy in a Socially Connected World, USC-MHI Cyber-Physical Systems seminar series, February 2nd, 2022.

Graph Ricci Flow and Applications in Network Analysis and Learning, 3DGV Seminar (virtual seminar series on Geometry Processing and 3D Computer Vision), September 22nd, 2021.

Graph Ricci Flow and Applications in Network Analysis and Learning, Workshop on Machine-Learning-Aided Social Networks, affiliated with MobiHoc 2021, July 26th, 2021.

Graph Ricci Flow and Applications in Network Analysis and Learning, SIP Seminar, ECE department, Rutgers University, April 7th, 2021.

Privacy Attacks in Learning, Shanghai Jiaotong University, Oct 17th, 2020.

Range Query on Planar Graphs and Applications on Spatial Sensing with Privacy, Theory Group Seminar, CS department, Rutgers University, September 16th, 2020.

Network Analysis of Hubs and Diversities in Human Mobility for Slowing Down COVID-19 Spreading, NSF First Call to Arms Workshop, online workshop, April 13th, 2020.

Privacy Issues in Socially Correlated Sensor Data, IPSN'20 TPC Workshop, January 7th, 2020.

Protecting Data Privacy in a Socially Connected World, Computer Science Department Colloquium, Temple University, December 6th, 2019.

Community Detection on Networks with Ricci Flow, NSF Algorithms for Threat Detection (ATD) Workshop, Oct 22nd, 2019.

Network Algorithms in an Increasingly Connected World, DIMACS REU Seminar Series, June 25, 2019.

Network Alignment and Anonymity, MobiHoc'19 TPC workshop, March 15th, 2019.

New Challenges of Data Privacy in a Socially Connected World, Invited talk at the Fall Workshop on Computational Geometry, October 27th, 2018.

Geometric Algorithms for Scheduling, Coordination and Motion Planning, Invited talk at the 7th Northeast Robotics Colloquium (NERC), October 20th, 2018.

Discrete Ollivier Ricci Flow for Community Detection on Networks, NSF Algorithms for Threat Detection (ATD) Workshop, Oct 10th, 2018.

New Privacy Issues in a Socially Connected World, Workshop on Computational Geometry and Machine Learning, Eindhoven, Netherlands, July, 25th, 2018.

New Privacy Issues in a Socially Connected World, Shanghai Jiao Tong University, June 27th, 2018.

Geometric Approaches for Protecting IoT Data Privacy, MobiHoc'18 TPC workshop, March 2nd, 2018.

Discrete Ricci Curvature and Ricci Flow for Graph Mining, NSF Algorithms for Threat Detection (ATD) Workshop, September 15th, 2017.

Scheduling and Motion Planning for Wireless Sensors and Mobile Networks, Department of Civil Engineering, Stony Brook University, September 11th, 2017.

New Challenges in Distributed Sensing, Processing and Query of Spatial Data, keynote talk at ALGO 2017, September 8th, 2017.

Geometric Approaches for Protecting Location and Trajectory Privacy, University of Science and Technology of China, July 12th, 2017.

Geometric Approaches for Protecting Location and Trajectory Privacy, Tsinghua University, July 11th, 2017.

Don't Collect Too Much: Geometric Approaches for Protecting Location and Trajectory Privacy, Dagstuhl Seminar on Computational Geometry, Germany, April 26th, 2017.

Networking Applications of Curvature and Ricci Flow, Spring School on Discrete and Computational Geometry, April 20th, 2017.

Discrete Ricci Curvature and Network Applications, Dagstuhl Seminar, Germany, Jan 10th, 2017.

Geometric Approaches for Protecting Data Privacy, Department Colloquium, Department of Computer Science, University of Buffalo, October 20th, 2016.

Applications of Discrete Ricci Flow, Tutorial on Ricci Flow and Optimal Transportation, The 32th International Symposium on Computational Geometry, June 16th, 2016.

Art Gallery Problem, Indoor Localization and Sensor Scheduling, Geometry Seminar at the Courant Institute at New York University, March 22nd, 2016.

When Do Complex Contagions Spread and Spread Fast? ACM MobiHoc'15 TPC Meeting Workshop, March 20, 2016.

Social Influence and Contagions, Department of Computer Science, Stanford University, January 13th, 2016.

Ricci Curvature of the Internet Topology, Microsoft Research, Redmond, WA, November 3rd, 2015.

Ricci Curvature of the Internet Topology, IOT Tech Center, Tsinghua National Laboratory for Information Science and Technology, Tsinghua University, Wuxi, July 23rd, 2015.

When do Complex Contagions Spread and Spread Fast? Shanghai Jiao Tong University, July 21st, 2015.

When do Complex Contagions Spread and Spread Fast? Microsoft Research Asia, June 24th, 2015.

When do Complex Contagions Spread and Spread Fast? Invited colloquium talk, The Graduate Center, City University of New York, April 17th, 2015.

Ricci Curvature of the Internet Topology, ACM MobiHoc'15 Pre-TPC Meeting Workshop, February 27, 2015.

Angle Preserving and Area Preserving Maps for Sensor Networks, Invited colloquium talk, Computer Science Department, University of Arizona, October 28th, 2014.

Load Balanced Routing Using Area-Preserving Maps, Delft University of Technology, Netherlands, June 27, 2014.

Load Balanced Routing Using Area-Preserving Maps, Dagstuhl Seminar on Algorithms for Wireless Networks, Schloss Dagstuhl, Wadern, Germany, January 27-31, 2014.

Complex Contagion and The Weakness of Long Ties in Social Networks: Revisited, Department of Computer and Information Science, Max-Planck-Institut für Informatik, Saarbrücken, Germany, January 29, 2014.

Complex Contagion and The Weakness of Long Ties in Social Networks: Revisited, Department of Computer and Information Science, University of Michigan, Dearborn, December 6th, 2013.

Complex Contagion and The Weakness of Long Ties in Social Networks: Revisited, Department of Computer Science and Engineering, Michigan State University, December 5th, 2013.

Harmonic Measure, Conformal Geometry and Random Walks for Source Location Privacy, Workshop on Modern Applications of Homology and Cohomology, Institute for Mathematics and its Applications, University of Minnesota, Oct 28th - Nov 1st, 2013.

Geometric Greedy Routing in Wireless Sensor Networks, keynote speech, Workshop on Wireless Intelligent Sensor Networks (WISeNet), Duke University, June 4-5, 2013.

Complex Contagion and The Weakness of Long Ties in Social Networks: Revisited, Department of Computer and Information Sciences, Temple University, April 3rd, 2013.

Complex Contagion and The Weakness of Long Ties in Social Networks: Revisited, Computer Science Department, University of Arizona, November 8th, 2012.

The Weakness of Long Ties in Social Networks: Revisited, Courant Geometry Seminar, Courant Institute, New York University, Oct 16th, 2012.

Local Curvature, Ricci Flow and Greedy Routing in Wireless Networks, Mathematics Colloquium, Bell Labs, Murray Hill, Oct 11th, 2012.

Local Curvature, Ricci Flow and Greedy Routing in Wireless Networks, Network Science Workshop, August 17th, 2012, Institute of Interdisciplinary Information Sciences, Tsinghua University.

Geometry in Wireless Sensor Networks, Algorithms In The Field, collocated with the Symposium on Computational Geometry 2012 in Chapel Hill, NC on June 17-20, 2012.

Greedy Routing on Curved Networks, 2nd NIST - Bell Labs Workshop on Large-Scale Complex Networks, June 8th, 2012, NIST, Gaithersburg, Maryland.

Differential Forms for Target Tracking and Queries in Wireless Sensor Networks, Computer Science Department, Northwestern University, January 13th, 2012.

Local Curvature, Ricci Flow and Greedy Routing in Wireless Networks, Workshop on Geometry of Large Networks, American Institute of Mathematics (AIM), Palo Alto, CA, Nov 4th, 2011.

Geometric Algorithms for Wireless Sensor Networks, University of Science and Technology of China, Hefei, Anhui, China, August 12, 2011.

Differential Forms for Target Tracking and Aggregate Queries in Distributed Networks, Microsoft Research Asia, Beijing, China, August 3rd, 2011.

Range Queries in Distributed Networks, Dagstuhl Seminar on Computational Geometry, Schloss Dagstuhl, Wadern, Germany, March 13-18, 2011.

Geometric Routing in Wireless Sensor Networks, Research in Science and Technology Fields, The Center for Teaching and Scholarly Excellence, Hofstra University, November 3rd, 2010.

Greedy Routing with Guaranteed Delivery Using Ricci Flows, Emerging Trends in Mobile, Sensor, and Social Networks (MSS 2010), the CReWMaN 10th Anniversary Celebration/Workshop, Arlington, TX, October 7-8, 2010.

Sensor Network Geometry, GuibasFest, Stanford University, July 31st-August 1st, 2010.

Greedy Routing with Guaranteed Delivery Using Ricci Flows, WINLAB, Rutgers University, April 7th, 2010.

Greedy Routing with Guaranteed Delivery Using Ricci Flows, Joint Math & CS Colloquium, Temple University, March 26, 2010.

Greedy Routing with Guaranteed Delivery Using Ricci Flows, IEEE seminar, Department of Electrical and Computer Engineering, New Jersey Institute of Technology, March 25, 2010.

Sensor Network Localization, Barbados Workshop 2010: Rigidity Theory and Applications, Bellairs Research Institute, Jan 2-7, 2010.

Greedy Routing with Guaranteed Delivery Using Ricci Flows, Department of Computer Science, University of Southern California, Nov 9th, 2009.

Greedy Routing with Guaranteed Delivery Using Ricci Flows, Center for the Mathematics of Information, California Institute of Technology, Nov 9-10, 2009.

Geometric Algorithms for Wireless Sensor Networks, keynote speech, The Third China Conference on Wireless Sensor Networks, October 21-23, 2009.

Network Metric Approximation and Mobile Agent Coordination in Sensor Networks, Dagstuhl Seminar on Algorithmic Methods for Distributed Cooperative Systems, Schloss Dagstuhl, Wadern, Germany, September 6-11, 2009.

Greedy Routing with Guaranteed Delivery Using Ricci Flows, Bertinoro International Center for Informatics, Bologna, Italy, July 20-24, 2009.

Fractional Cascading in Wireless Sensor Networks, CS Colloquium, Department of Computer Science, Hofstra University, May 6, 2009.

Discovery of Sensor Network Geometry, Banff International Research Station, Workshop on Rigidity, Flexibility, and Motion: Theory, Computation and Applications to Biomolecules, Banff, Calgary, Canada, July 6-11, 2008.

Contour Tracking in Wireless Sensor Networks, US-France Young Engineering Scientists Workshop, Washington, DC, October 22, 2007.

Landmark-based Routing and Localization of Wireless Sensor Networks, CS Colloquium, Department of Computer Science, Rensselaer Polytechnic Institute, September 14, 2007.

Discovery of Sensor Network Geometry, Dagstuhl Seminar on Geometry in Sensor Networks, Schloss Dagstuhl, Wadern, Germany, April 10, 2007.

Discovery of Sensor Network Geometry, Max-Planck-Institut für Informatik, Saarbrücken, Germany, April 5, 2007.

Geometric Algorithms for Wireless Sensor Networks, CSE600 Ongoing Research Seminar, Computer Science Department, Stony Brook University, September 22, 2006.

Road Systems for Sensor Networks, NSF Workshop on Geometric Approaches to Ad Hoc and Sensor Networks, Santa Barbara, CA, June 11, 2006.

Distributed Localization by Noisy Distance and Angle Information, Distributed Information Systems Group, California Institute of Technology, May 18, 2006.

Landmark-based Routing and Information Brokerage in Sensor Networks, Department of Computer Science and Department of Electrical and Computer Engineering, Texas A&M University, October, 2005.

Geometric Routing in Wireless Sensor Networks, CSE600 Ongoing Research Seminar, Computer Science Department, Stony Brook University, September, 2005.

Kinetic Data Structures I & II, Center for the Mathematics of Information (CMI) Seminar, California Institute of Technology, Jan, 2005.

Simple Smooth Stable Mobile Structures, Computer Science Department, Rice University, March, 2004.

Simple Smooth Stable Structures for Mobile Networks, Computer Science Department, State University of New York, Stony Brook, March, 2004.

Simple Smooth Stable Mobile Structures, Division of Information Science and Technology, California Institute of Technology, March, 2004.

Simple Smooth Stable Mobile Structures, Computer Science Department, Dartmouth College, February, 2004.

Efficient Geometric Structures for Mobile Networks, IBM T. J. Watson Research Lab, Hawthorne, NY, September, 2003.

Kinetic Medians and *kd*-trees, DIMACS (Center for Discrete Mathematics and Theoretical Computer Science) Workshop on Algorithmic Issues in Modeling Motion, Rutgers University, Piscataway, NJ, November, 2002.

Teaching Experience

	Department of Computer Science, **Rutgers University**, Piscataway, NJ
2024	Advanced Geometric Algorithms (graduate)
2023	Design and Analysis of Data Structures and Algorithms (undergraduate)
2020-2022	Design and Analysis of Data Structures and Algorithms (graduate)
2020-2023	Introduction to Discrete Structures (undergraduate)
	Department of Computer Science, **Stony Brook University**, Stony Brook, NY
2014-2017	Special Topics: Social Networks (graduate)
2017	Special Topics: Social Networks (undergraduate)
2006-2016	Wireless and Mobile Networks (undergraduate)
2005-2014	Algorithm Seminar (graduate)
2007-2019	Analysis of Algorithms (graduate)
2012/2014/2018	Computational Geometry (both undergraduate and graduate)
2010-2011	Data Communication and Networks (undergraduate)
2009, 2017	Wireless and Mobile Networks (graduate)
2009	Ethics in Computer Science (undergraduate)
2006	Wireless Security Seminar (graduate)
2005-2011	Special Topics: Sensor Networks (graduate)
2008	Seminar: Topological Methods for Wireless Networking (graduate)

Departmental Services

Reappointment evaluation committee of DIMACS director, Fall 2024.

Faculty Hiring Area Chair, Computer Science Department, Rutgers University, 2024.

DIMACS Executive Committee, Rutgers University, 10/2023 - now.

Graduate Program Director, Computer Science Department, Rutgers University, 07/2023-06/2026.

Advisory Committee for Appointments and Promotions, School of Arts and Sciences, Rutgers University, 2022-2024.

WAC Committee, Computer Science Department, Rutgers University, 2021.

Faculty Hiring Area Chair, Computer Science Department, Rutgers University, 2022.

Executive Committee, Computer Science Department, Rutgers University, 2021-2023.

CS Colloquium Committee, Computer Science Department, Rutgers University, 2020-2023.

Teaching Effectiveness Committee, Computer Science Department, Rutgers University, 2020-now.

Rutgers Connection Network (RCN) Mentoring Program, Mentor, Rutgers University, 2020-2021.

Faculty Coordinator for Distinguished Lecture Series, Stony Brook University, 2015 till 2019.

Graduate Student Committee, Spring 2016 till 2019, Stony Brook University.

Faculty Recruiting Committee for the Computational Social Science cluster, Stony Brook University, 2013-2014.

Faculty Recruiting Committee. Spring 2012, Stony Brook University.

Graduate Admission Committee, 2005-2019, Stony Brook University.

Faculty Coordinator for Algorithm Seminar, Stony Brook University, 2005-2012.

Ph.D. Qualifying Exam Committee, Stony Brook University, 2005-2007.

Professional Activities

Sensys Steering Committee, since 2022.

IPSN Steering Committee, since 2018.

DCOSS Steering Committee, since 2019.

ALGOSENSORS Steering Committee, since 2023.

CGWeek'2021 Workshop Committee Chair.

Editorial board/Associate editor for
ACM Transactions on Sensor Networks (since Jan 2009),
International Journal of Computational Geometry & Applications (since Jan 2021)
IEEE Transactions on Network Science and Engineering (TNSE) (since Nov 2021),
IEEE Transactions on Automation Science and Engineering (March 2010-Dec 2014),
Journal of Discrete Algorithms (2015-2019).

Hong Kong Research Grants Council Engineering Panel, since 2022.

Panelist or reviewers for National Science Foundation (NSF), Research Grant Council of Hong Kong, Natural Sciences and Engineering Research Council of Canada, U.S.-Israel Binational Science Foundation, Israel Science Foundation, National Science Center of Poland.

General chair or TPC chair/co-chair for
Conference on Web and Internet Economics (WINE), area chair, 2024.
SIAM Symposium on Algorithmic Principles of Computer Systems (APOCS), 2023.
The ACM Conference on Embedded Networked Sensor Systems (SenSys), 2022.
The International Conference on Distributed Computing Systems (ICDCS), distributed algorithms and theory track, 2022.
The 17th ACM/IEEE International Conference on Information Processing in Sensor Networks

(IPSN), 2018.
the International Symposium on Algorithms and Experiments for Sensor Systems, Wireless Networks and Distributed Robotics, ALGOSENSOR 2014, 2013,
IEEE International Conference on Distributed Computing in Sensor Systems (DCOSS), 2015, 2012, 2020.
Fall workshop on Computational Geometry, 2017.
the First Workshop on Data Acquisition To Analysis, DATA@SenSys 2018, Shenzhen, China, November 4, 2018.

Workshop chair for the Annual/International Symposium on Computational Geometry, 2021.

Co-organizer for the 2nd Workshop on Geometric Problems on Sensor Networks and Robots, Stony Brook, NY, June 5-June 10, 2016.

Local organizer of The Annual ACM Symposium on Computational Geometry (SoCG), 2026.

Technical program committee member for:
Annual Conference on Neural Information Processing Systems (NeurIPS) 2023, 2024.
International Conference on Machine Learning (ICML), 2024.
Annual AAAI Conference on Artificial Intelligence (AAAI), 2021-2025.
The Web Conference (WWW), 2023.
The Annual ACM Symposium on Computational Geometry (SoCG), 2007, 2013, 2018, 2025;
Young Researcher Forum (YRF) committee at SoCG, 2019.
ACM Conference on Economics and Computation Conference (EC), 2018,
Workshop on the Algorithmic Foundations of Robotics (WAFR), 2020, 2022
Symposium on Algorithmic Principles of Computer Systems (APOCS), 2022,
the ACM Annual International Conference on Mobile Computing and Networking (MobiCom) (2019. 2022),
The International Symposium on Information Processing in Sensor Networks (IPSN), 2007, 2008, 2012-2017, 2019-2023;
The ACM Conference on Embedded Networked Sensor Systems (SenSys), 2011-2013, 2018-2019, 2021-2022, 2024;
The ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc), 2008, 2009, 2014, 2016-2019, 2022, 2024;
The IEEE International Conference on Computer Communications (INFOCOM), 2013-2022;
The International Conference on Distributed Computing Systems (ICDCS), 2011, 2019,
The European Conference on Wireless Sensor Networks (EWSN), 2010, 2011, 2013-2015, 2018-2019, 2022;
The International Joint Conference on Artificial Intelligence and the 23rd European Conference on Artificial Intelligence, (IJCAI-ECAI), 2018-2019,
ICLR workshop From Shallow to Deep: Overcoming Limited and Adverse Data 2021,
Workshop on Deep Learning Practice and Theory for High-Dimensional Sparse and Imbalanced Data, track DLPKDD2022, and many others.

International Symposium on Information Processing in Sensor Networks (IPSN): web chair (2008, 2009), publication chair (2009, 2012), poster co-chair (2015).

Invited Speaker at the CRA-W Early Career and Middle Career Mentoring Workshop, November, 2018.

Invited Panelist on "How to Excel in Your Research Career", at N^2Women Panel at Embedded Networked Sensor Systems, 2022.

Student Advising

Postdoc:

1. Dr. Haiwen Wang, since June 2024.
2. Dr. Cheng Xin, since Oct. 2023.
3. Dr. Bo Li, 2016-2017, co-advised with Prof. Grant Schoenebeck, Tenure Track Assistant Professor at University of Illinois Urbana-Champaign.

Graduated Ph.D students:

1. Xianjin Zhu, 2008, co-advised with Prof. Himanshu Gupta. Dissertation: Collaborative Information Processing and Query Evaluation in Wireless Sensor Networks. first job at Microsoft.
2. Yue Wang, 2008, co-advised with Prof. Joseph Mitchell. Dissertation: Geometry Discovery With Connectivity Information And Applications In Sensor Networks. first job at Microsoft.
3. Sol Lederer, 2009, Dissertation: Localization and Location Certification in Sensor Networks. first job at Morgan Stanley.
4. Rik Sarkar, 2010, Dissertation: Geometric Abstractions for Information Processing in Sensor Networks. Assistant Professor at University of Edinburgh, UK.
5. Rupa Krishnan, 2010, Dissertation: Improving Network Performance through Measurement Based Analysis.first job at Google.
6. Dengpan Zhou, 2012, Dissertation: Distributed Algorithms for Online Coordination in Wireless Sensor Networks, first job at Nine Chapters Capital Management, LLC.
7. Xiaomeng Ban, 2012, Dissertation: Exploring Advanced Communication Primitives Using Greedy Routing in Sensor Networks, first job at Google.
8. Akshay Patil, 2013, Dissertation: Analyzing Dynamics in Online Social Networks. First job at Quantcast. Received the Outstanding Dissertation Progress Award by the American Sociological Association for contributions in computational sociology analysis.
9. Mayank Goswami, 2013, co-advised with Prof. Xianfeng David Gu, Joseph Mitchell. Dissertation: Computing Teichmüller Maps and Applications of Conformal Geometry to Sensor Networks, Postdoc at MPI Germany. First job Assistant Professor at Queens College, City Univeristy of New York.
10. Jiemin Zeng, 2016, Dissertation: Integrating Mobile Agents and Distributed Sensors in Wireless Sensor Networks, first Job at Google.
11. Siming Li, 2017, Dissertation: Mobility and Traffic-Adaptive Routing Algorithms for Wireless and Optical Networks, first job at Ebay.
12. Golnaz Ghasemiesfeh, 2017, Dissertation: Contagions in Social Networks, Finalist of Facebook Graduate Student Fellowship 2013, first job at Accenture Research.
13. Chien-Chun Ni, 2017, Dissertation: Network Algorithms for Routing and Sensing using Area-preserving Maps, Homology, and Curvature. 2016 Catacosinos Computer Science Award, First job at Yahoo Research Labs.
14. Jiaxin Ding, 2018, Dissertation: Geometric Algorithms for Spatio-Temporal Data Sensing, Mining and Privacy Protection. Tenure track Assistant Professor at Shanghai Jiao Tong University.
15. Kin Sum Liu, 2019, Dissertation: Graph Analysis: Representation, Learning and Optimization. Co-advised with Prof. Shan Lin. First job at Twitter.

16. Hao-Tsung Yang, 2020, Dissertation: Scheduling Algorithms for Mobility and Coverage in Adversarial Settings. Co-advised with Prof. Shan Lin. Tenure track Assistant Professor at National Central University, Taiwan.
17. Aria Rezaei, 2020, Dissertation: On Challenges in Privacy Protection for Social and Correlated Data. First job at Twitter.
18. Haotian Wang, 2021, Dissertation: Learning of Network Dynamics: Mobility, Diffusion and Evolution. First job at jd.com.

Current Ph.D students:

Chengyuan Deng (2021 till now)
Prathamesh Dharangutte (2021 till now)
Vikrant Ashvinkumar (2021 till now)
Kevin Lu (2022 till now), co-advised with Feng Luo.

Undergraduate students:

Matt Lu (DIMACS REU, summer 2023).
Jordan Chong (DIMACS REU, summer 2023).
Iris Horng (DIMACS REU, summer 2022), joining PhD program of Data Science Whartson, University of Pennsylvania.
Liron Karpati (DIMACS REU, summer 2022), joining PhD program of Statistics Rutgers.
Soham Palande (DIMACS REU, summer 2021).
Andrew Krapivin (Aresty Summer Research Program, summer 2021), Goldwater scholarship 2023, Churchill Scholarship 2024.
Tridib Shome (Faculty Mentor for Peer Instructor for the First-Year Interest Group Seminars (FIGS) program), Fall 2021.

High school students (through Simons Summer Research Program):

Samuel B. Panzer (summer 2007). Samuel's summer project won the 2nd place in the math/cs category, at the Annual Long Island Junior Science and Humanities Symposium, 2008.

Ph.D thesis defense committee member:

Zongxing Xie (Title: Wireless Sensing for Home-Based Health Monitoring with Robustness and Scalability), April 29th, 2024.
Zachary Blake Langley (Title: Distributed and Streaming Algorithms for All-Norm Load Balancing), March 21st, 2024.
Xiao Sun (Title: Resource Allocation and Scheduling Algorithms for Big Data Systems), February 9th, 2024.
Juntao Tan (Title: Counterfactual Explainable AI for Human and Science), November 30th, 2023.
Yingqiang Ge (Title: Towards Trustworthy Recommender Systems), October 17th, 2023.
Shih-Yu Tsai (Title: Graph Algorithms for Diversity and Fairness), May 9th, 2023.
Aditi Dudeja (Title: Matchings in Evolving Graphs), March 2nd, 2023.
Haotian Wang (Title: Learning of Network Dynamics: Mobility, Diffusion and Evolution), December 8th, 2021.
Guang Wang (Title: Cyber-Physical Systems for Socially Aware Mobility), August 20th, 2021.
Yu Yang (Title: Human Behavior-Driven Cyber-Physical Systems for On-demand Gig Delivery), July 13th, 2021.
Aria Rezaei (Title: On Challenges in Privacy Protection for Social and Correlated Data), December 17th, 2020.
Hao-Tsung Yang, (Title: Scheduling Algorithms for Mobility and Coverage in Adversarial Settings), November 30th, 2020.

Fan Yang (Title: Algorithms for Chance-constrained Multi-robot Task Allocation), July 21st 2020.
Hua Huang (Title: Magnetic Sensing for Recognizing Human Activities: From Toothbrushing to Driving), May 18th 2020
Liam Schramm (Title: Stability of Transferred Learned Models for Planning and Reinforcement Learning), April 24 2020
Zhihan Fang (Title: Human Mobility Modeling Based on Heterogeneous Urban Sensing Systems), March 27 2020.
Gaurish Telang (Title: Package Delivery Problems with Coordinating Agents), December 16th, 2019.
Joshua Comden (Title: Algorithms for Online and Distributed Optimization and their Applications), December 16th, 2019.
Kin Sum Liu (Title: Graph Analysis: Representation, Learning and Optimization), December 4th, 2019.
Qian Li (Title: Vision-based Sensor Coverage in Uncertain Geometric Domains), August 2019.
Bo Li (Title: Mechanism Design with Unstructured Information), July, 2019.
Hao Peng (Title: Computational Conformal Geometry and its Applications in Medical Imaging), December, 2018.
Jiaxin Ding (Title: Geometric Algorithms for Spatio-Temporal Data Sensing, Mining and Privacy Protection), November, 2018.
Shikha Singh (Title: The Mechanism Design Approach to Interactive Proofs), June, 2018.
Tyler Mayer (Title: Addressing Robustness in Some Optimization Problems Including Uncertainty), May, 2018.
Ming Ma (Title:Computational Conformal Geometry and Its Applications), December, 2017.
Golnaz Ghasemiesfeh (Title: Contagions in Social Networks), August 2017.
Yupeng Li (Title: Coflow Scheduling and Resource Sharing in Congested Networks), September, 2017.
Chien-Chun Ni (Title: Network Algorithms for Routing and Sensing using Area-preserving Maps, Homology, and Curvature), August 2017.
Siming Li (Title: Mobility and Traffic-Adaptive Routing Algorithms for Wireless and Optical Networks), March, 2017.
Jefferson Huang (Title: Complexity Estimates and Reductions to Discounting for Total and Average-Reward Markov Decision Processes and Stochastic Games), August, 2016.
Jiemin Zeng (Title: Integrating Mobile Agents and Distributed Sensors in Wireless Sensor Networks), June, 2016.
Gui Citovsky (Title: Geometric Optimization Problems in Sensor Networks), May, 2016.
Bryan Perozzi (Title: Local Modeling of Attributed Graphs: Algorithms and Applications), May, 2016.
Fatima Zarinni (Title: Understanding and Improving Performance in Next-Generation Wireless Networks), December, 2015.
Zhengyu Su (Title: Optimal Mass Transport and Its Applications), November, 2015.
Roozbeh Ebrahimi (Title: Cache-Adaptive Algorithms), July, 2015.
Hau Chan (Title: Game-Theoretic Models for Interdependent Security: Modeling, Computing, and Learning), June, 2015.
Kan Huang (Title: Local Greedy Routing, Touring Polygons and Geometric Hitting Problems), May, 2015.
Andreas Loukas (Title: Distributed Graph Filters), TU Delft, Netherlands, March, 2015.
Rui Shi (Title: Computational Conformal Geometry and Its Applications), November, 2014.
James Zuber (Title: "Waiter, there's DNA in my Seat!" Selected problems in discrete optimization), August, 2014.

Pablo Montes (Title: Theoretical and Practical Aspects of Compact Data Structures for Range and Membership Queries in Sparse Sets), August, 2014.
Doog Soo Kim (Title: Graph Theory based Design of Scalable Network Systems), July, 2014.
Min Zhang (Title: Ricci Flow and Its Applications), May, 2014.
Xi Deng (Title: System Evaluation and Design of Delay Sensitive Wireless Network), September, 2013.
Irina Kostitsyna (Title: Balanced Partitioning of Polygonal Domains), August, 2013.
Jennia Hizver (Title: Run-Time Deep Virtual Machine Introspection and Its Applications), July, 2013.
Mayank Goawami (Title: Computing Teichmüller Maps and Applications of Conformal Geometry to Sensor Networks), July, 2013.
Akshay Patil (Title: Analyzing Dynamics in Online Social Networks), June, 2013.
Mohammad Tanvir Irfan (Title: Causal Strategic Inference in Social and Economic Networks), June, 2013.
Michael Biro (Title: Beacon-Based Routing and Guarding), May, 2013.
Ruirui Jiang (Title: Applications of Computational Conformal Geometry), April, 2013.
Xiaomeng Ban (Title: Exploring advanced communication primitives using greedy routing in sensor networks), December, 2012.
Jui-Hao Chiang (Title: Optimization Techniques for Memory Virtualization based Resource Management), October, 2012.
Shang Yang (Title: Some Path Planning Algorithms in Computational Geometry and Air Traffic Management), August, 2012.
Dengpan Zhou (Title: Distributed Algorithms for Online Coordination in Wireless Sensor Networks), May, 2012.
Justin Iwerk (Title: Combinatorics and Complexity in Geometric Visibility Problems), May, 2012.
Julia EunJu Nam (Title: Exploratory Visual Analytics in High Dimensional Space), June, 2011.
Wenbin Zhang (Title: News Based Forcasting and Modeling), May, 2011.
Jaewook Yu (Title: Quasi Borel Cayley Graphs for Ultrafast Information Dissemination in Large and Dense Networks), March, 2011.
Miao Zhao (Title: Design and Optimization on Mobile Data Gathering in Wireless Sensor Networks), Dec, 2010.
Xiaotian Yin (Title: Discrete Metric Designs and Discrete Tangent Bundles: from Surfaces to 3-Manifolds), August, 2010.
Maohua Lu (Title: Efficient Metadata Update Techniques for Storage Systems), August, 2010.
Rupa Krishnan (Title: Improving Network Performance through Measurement Based Analysis), August, 2010.
Joondong Kim (Title: Algorithms for Optimizing Multiple Routes Through Constrained Geometric Domains), July 27, 2010.
Jingyu Zou (Title: Geometric Algorithms for Capacity Estimation and Routing in Air Traffic Management), July 20, 2010.
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