Jie Xue

Personal Data

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Employment

Aug 2021 - Current	*Assistant Professor of Computer Science* **New York University Shanghai**, China
Sept 2019 - Aug 2021	*Postdoctoral Scholar* **University of California, Santa Barbara**, USA Hosts: Prof. Subhash Suri and Prof. Daniel Lokshtanov
Jan 2015 - May 2018	*Teaching Assistant* (part time) **University of Minnesota, Twin Cities**, USA

Education

Sept 2014 - July 2019	*Doctoral Degree* **University of Minnesota, Twin Cities**, USA Major: Computer Science Minor: Mathematics Research Interests: Computational Geometry Advisor: Prof. Ravi Janardan GPA: 4.0/4.0
Sept 2011 - Apr 2014	*Master's Degree* **Nanjing University of Aeronautics & Astronautics**, China Major: Computer Technology Research Interests: Data Mining, Pattern Recognition Advisor: Prof. Songcan Chen GPA: 2.2/4.0
Sept 2008 - June 2011	*Bachelor's Degree* **Nanjing University of Aeronautics & Astronautics**, China Major: Computer Science & Technology GPA: 1.9/4.0

Research interests

- Theoretical Computer Science
  - Computational Geometry
  - Algorithms & Data Structures
  - Graph Theory
  - Parameterized Complexity

Publications

(Authors with * are sorted by α-β order. Others are sorted by contribution.)

Journal publications

1. Sayan Bandyapadhyay*, William Lochet*, Daniel Lokshtanov*, Saket Saurabh*, **Jie Xue***, True contraction decomposition and almost ETH-tight bipartization for unit-disk graphs. In *ACM Transactions on Algorithms*, 2024.
2. Akanksha Agrawal*, Tanmay Inamdar*, Saket Saurabh*, **Jie Xue***, Clustering what matters: optimal approximation for clustering with outliers. In *Journal of Artificial Intelligence Research*, 2023.
3. Pankaj K. Agarwal*, Hsien-Chih Chang*, Subhash Suri*, Allen Xiao*, **Jie Xue***, Dynamic geometric set cover and hitting set. In *ACM Transactions on Algorithms*, 2022.
4. **Jie Xue**, Yuan Li, Rahul Saladi, Ravi Janardan, New bounds for range closest-pair problems. In *Discrete & Computational Geometry*, 2022.
5. Haitao Wang*, **Jie Xue***, Improved algorithms for the bichromatic 2-center problem for pairs of points. In *Computational Geometry: Theory and Applications*, 2021.
6. **Jie Xue**, Yuan Li, Rahul Saladi, Ravi Janardan, Searching for the closest-pair in a query translate. In *Journal of Computational Geometry* (SoCG'19 special issue), 2020.
7. Haitao Wang*, **Jie Xue***, Near-optimal algorithms for shortest paths in weighted unit disk graphs. In *Discrete & Computational Geometry* (SoCG'19 special issue), 2020.
8. Timothy Chan*, Rahul Saladi*, **Jie Xue***, Range closest-pair search in higher dimensions. In *Computational Geometry: Theory and Applications* (WADS'19 special issue), 2020.
9. **Jie Xue**, Yuan Li, Ravi Janardan, Approximate range closest-pair queries. In *Computational Geometry: Theory and Applications* (CCCG'18 special issue), 2020.
10. Yuan Li, Ahmed Eldawy, **Jie Xue**, Nadezda Weber, Mohamed F. Mokbel, Ravi Janardan, Scalable computational geometry in MapReduce. In *VLDB Journal*, 2019.
11. **Jie Xue**, Yuan Li, Ravi Janardan, On the expected diameter, width, and complexity of a stochastic convex-hull. In *Computational Geometry: Theory and Applications*, 2019.
12. Akash Agrawal, Yuan Li, **Jie Xue**, Ravi Janardan, The most-likely skyline problem for stochastic points. In *Computational Geometry: Theory and Applications* (CCCG'17 special issue), 2019.
13. **Jie Xue**, Yuan Li, Ravi Janardan, On the separability of stochastic geometric objects, with applications. In *Computational Geometry: Theory and Applications*, 2018.
14. Yuan Li, **Jie Xue**, Akash Agrawal, Ravi Janardan, On the arrangement of stochastic lines in $\mathbb{R}^2$. In *Journal of Discrete Algorithms*, 2017.

Conference publications

1. Daniel Lokshtanov*, Fahad Panolan*, Saket Saurabh*, Roohani Sharma*, **Jie Xue***, Meirav Zehavi*, Crossing number in slightly superexponential time. Accepted to the *36th ACM-SIAM Symposium on Discrete Algorithms* (SODA), 2025.
2. Sayan Bandyapadhyay*, Katie Clinch*, William Lochet*, Daniel Lokshtanov*, Saket Saurabh*, **Jie Xue***, PTASes for Euclidean TSP with unit disk and unit square neighborhoods. Accepted to the *36th ACM-SIAM Symposium on Discrete Algorithms* (SODA), 2025.
3. Daniel Lokshtanov*, Abhishek Sahu*, Saket Saurabh*, Vaishali Surianarayanan*, **Jie Xue***, Parameterized approximation for capacitated d-hitting set with hard capacities. Accepted to the *36th ACM-SIAM Symposium on Discrete Algorithms* (SODA), 2025.
4. Vika Korchemna*, Daniel Lokshtanov*, Saket Saurabh*, Vaishali Surianarayanan*, **Jie Xue***, Efficient approximation of hypertree width. In the *65th IEEE Symposium on Foundations of Computer Science* (FOCS), 2024.

5. Daniel Lokshtanov*, Fahad Panolan*, Saket Saurabh*, **Jie Xue***, Meirav Zehavi*, Bipartizing (pseudo-)disk graphs: approximation with a ratio better than 3. In the *27th International Conference on Approximation Algorithms for Combinatorial Optimization Problems* (APPROX), 2024.
6. Shinwoo An*, Eunjin Oh*, **Jie Xue***, Sparse outerstring graphs have logarithmic treewidth. Accepted to the *32th Annual European Symposium on Algorithms* (ESA), 2024.
7. Sayan Bandyapadhyay*, **Jie Xue***, An $O(n \log n)$-time approximation scheme for Euclidean many-to-many matching. In the *40th International Symposium on Computational Geometry* (SoCG), 2024. Winner of the Best Paper Award.
8. Haitao Wang*, **Jie Xue***, Algorithms for halfplane coverage and related problems. In the *40th International Symposium on Computational Geometry* (SoCG), 2024.
9. Kyungjin Cho*, Eunjin Oh*, Haitao Wang*, **Jie Xue***, Optimal algorithm for the planar two-center problem. In the *40th International Symposium on Computational Geometry* (SoCG), 2024.
10. Daniel Lokshtanov*, Fahad Panolan*, Saket Saurabh*, **Jie Xue***, Meirav Zehavi*, A 1.9999-approximation algorithm for vertex cover in string graphs. In the *40th International Symposium on Computational Geometry* (SoCG), 2024.
11. Timothy M. Chan*, Qizheng He*, **Jie Xue***, Enclosing points with geometric objects. In the *40th International Symposium on Computational Geometry* (SoCG), 2024.
12. Sayan Bandyapadhyay*, William Lochet*, Daniel Lokshtanov*, Saket Saurabh*, **Jie Xue***, Euclidean bottleneck Steiner tree is fixed-parameter tractable. In the *35th ACM-SIAM Symposium on Discrete Algorithms* (SODA), 2024.
13. Chinmay Sonar*, Subhash Suri*, **Jie Xue***, Fault tolerance in Euclidean committee selection. In the *31th Annual European Symposium on Algorithms* (ESA), 2023.
14. Sayan Bandyapadhyay*, William Lochet*, Saket Saurabh*, **Jie Xue***, Minimum-membership geometric set cover, revisited. In the *39th International Symposium on Computational Geometry* (SoCG), 2023.
15. Akanksha Agrawal*, Tanmay Inamdar*, Saket Saurabh*, **Jie Xue***, Clustering what matters: optimal approximation for clustering with outliers. In the *37th AAAI conference on Artificial Intelligence* (AAAI), 2023. Selected as AAAI Distinguished Paper.
16. Daniel Lokshtanov*, Fahad Panolan*, Saket Saurabh*, **Jie Xue***, Meirav Zehavi*, A framework for approximation schemes on disk graphs. In the *34th ACM-SIAM Symposium on Discrete Algorithms* (SODA), 2023.
17. Rong Gu, Han Li, Haipeng Dai, Wenjie Huang, **Jie Xue**, Meng Li, Jiaqi Zheng, Haoran Cai, Yihua Huang, Guihai Chen, ShadowAQP: efficient approximate group-by and join query via attribute-oriented sample size allocation and data generation. In the 49th International Conference on Very Large Data Bases (VLDB), 2023.
18. Chinmay Sonar*, Subhash Suri*, **Jie Xue***, Multiwinner elections under minimax Chamberlin-Courant rule in Euclidean space. In the *31th International Joint Conference on Artificial Intelligence* (IJCAI), 2022.
19. Sayan Bandyapadhyay*, William Lochet*, Daniel Lokshtanov*, Saket Saurabh*, **Jie Xue***, True contraction decomposition and almost ETH-tight bipartization for unit-disk graphs. In the *38th International Symposium on Computational Geometry* (SoCG), 2022.
20. Neeraj Kummar*, Daniel Lokshtanov*, Saket Saurabh*, Subhash Suri*, **Jie Xue***, Point separation and obstacle removal by finding and hitting odd cycles. In the *38th International Symposium on Computational Geometry* (SoCG), 2022. Invited to SoCG special issue.
21. Sayan Bandyapadhyay*, William Lochet*, Daniel Lokshtanov*, Saket Saurabh*, **Jie Xue***, Subexponential parameterized algorithms for cut and cycle hitting problems on H-minor-free graphs. In the *33th ACM-SIAM Symposium on Discrete Algorithms* (SODA), 2022.

22. Timothy M. Chan*, Qizheng He*, Subhash Suri*, **Jie Xue***, Dynamic geometric set cover, revisited. In the *33th ACM-SIAM Symposium on Discrete Algorithms* (SODA), 2022.
23. Daniel Lokshtanov*, Fahad Panolan*, Saket Saurabh*, **Jie Xue***, Meirav Zehavi*, Subexponential parameterized algorithms on disk graphs. In the *33th ACM-SIAM Symposium on Discrete Algorithms* (SODA), 2022.
24. Daniel Lokshtanov*, Saket Saurabh*, Subhash Suri*, **Jie Xue***, An ETH-tight algorithm for multi-team formation. In the *41st Conference on Foundations of Software Technology and Theoretical Computer Science* (FSTTCS), 2021.
25. Daniel Lokshtanov*, Subhash Suri*, **Jie Xue***, Efficient algorithms for least square piecewise polynomial regression. In the *29th Annual European Symposium on Algorithms* (ESA), 2021.
26. Zhenyu Pan, **Jie Xue**, Tingjian Ge, Intuitive searching: an approach to search the decision policy of a Blackjack agent. In the *6th International Congress on Information and Communication Technology* (ICICT), 2021.
27. Daniel Lokshtanov*, Chinmay Sonar*, Subhash Suri*, **Jie Xue***, Fair covering of points by balls. In the *32th Canadian Conference on Computational Geometry* (CCCG), 2020.
28. Pankaj K. Agarwal*, Hsien-Chih Chang*, Subhash Suri*, Allen Xiao*, **Jie Xue***, Dynamic geometric set cover and hitting set. In the *36th International Symposium on Computational Geometry* (SoCG), 2020. Invited to SoCG special issue.
29. Haitao Wang*, **Jie Xue***, Improved algorithms for the bichromatic 2-center problem for pairs of points. In the *16th Algorithms and Data Structures Symposium* (WADS), 2019.
30. Timothy Chan*, Rahul Saladi*, **Jie Xue***, Range closest-pair search in higher dimensions. In the *16th Algorithms and Data Structures Symposium* (WADS), 2019. Invited to WADS special issue.
31. **Jie Xue**, Yuan Li, Rahul Saladi, Ravi Janardan, Searching for the closest-pair in a query translate. In the *35th International Symposium on Computational Geometry* (SoCG), 2019. Invited to SoCG special issue.
32. Haitao Wang*, **Jie Xue***, Near-optimal algorithms for shortest paths in weighted unit disk graphs. In the *35th International Symposium on Computational Geometry* (SoCG), 2019. Invited to SoCG special issue.
33. **Jie Xue**, Colored range closest-pair problem under general distance functions. In the *30th ACM-SIAM Symposium on Discrete Algorithms* (SODA), 2019.
34. **Jie Xue**, Yuan Li, Ravi Janardan, Approximate range closest-pair queries. In the *30th Canadian Conference on Computational Geometry* (CCCG), 2018. Invited to CCCG special issue.
35. **Jie Xue**, Yuan Li, Rahul Saladi, Ravi Janardan, New bounds for range closest-pair problems. In the *34th International Symposium on Computational Geometry* (SoCG), 2018.
36. Zhenyu Pan, **Jie Xue**, Yang Gao, Honghao Wang, Guanling Chen, Revealing the relations between learning behaviors and examination scores via a prediction system. In the *2nd International Conference on Computer Science and Artificial Intelligence* (CSAI), 2018.
37. **Jie Xue**, Yuan Li, Ravi Janardan, On the expected diameter, width, and complexity of a stochastic convex-hull. In the *15th Algorithms and Data Structures Symposium* (WADS), 2017.
38. **Jie Xue**, Yuan Li, Stochastic closest-pair problem and most-likely nearest-neighbor search in tree spaces. In the *15th Algorithms and Data Structures Symposium* (WADS), 2017.
39. Akash Agrawal, Yuan Li, **Jie Xue**, Ravi Janardan, The most-likely skyline problem for stochastic points. In the *29th Canadian Conference on Computational Geometry* (CCCG), 2017. Invited to CCCG special issue.
40. **Jie Xue**, Yuan Li, Ravi Janardan, On the separability of stochastic geometric objects, with applications. In the *32nd International Symposium on Computational Geometry* (SoCG), 2016.

Manuscripts

1. Daniel Lokshtanov*, Fahad Panolan*, Saket Saurabh*, **Jie Xue***, Meirav Zehavi*, Efficiently finding and counting patterns with distance constraints in sparse graphs. In progress.
2. Shinwoo An*, Eunjin Oh*, **Jie Xue***, Approximation algorithms for geometric multi-matching problem. In progress.
3. Sayan Bandyapadhyay*, William Lochet*, Daniel Lokshtanov*, Dániel Marx*, Pranabendu Misra*, Daniel Neuen*, Saket Saurabh*, Prafullkumar Tale*, **Jie Xue***, Robust contraction decomposition for H-minor-free graphs and its applications. In progress.
4. Zdeněk Dvořák*, Daniel Lokshtanov*, Fahad Panolan*, Saket Saurabh*, **Jie Xue***, Meirav Zehavi*, Efficient approximation for subgraph-hitting problems in sparse graphs and geometric intersection graphs. In progress.
5. Daniel Lokshtanov*, Fahad Panolan*, Saket Saurabh*, **Jie Xue***, Meirav Zehavi*, Subexponential parameterized algorithms for hitting subgraphs. In progress.
6. Thomas Schibler*, Subhash Suri*, **Jie Xue***, Embedding graphs as Euclidean kNN-graphs. In progress.
7. Shinwoo An*, Eunjin Oh*, **Jie Xue***, Single-source shortest path problem in weighted disk graphs. In progress.
8. **Jie Xue**, Yuan Li, On dominance-free samples of a (colored) stochastic dataset. In progress.

TALKS

- Talk at IJTCS-FAW 2024:
  A 1.9999-approximation algorithm for vertex cover in string graphs.
- Talk at CCF National Conference of TCS 2024:
  An $O(n \log n)$-time approximation scheme for Euclidean many-to-many matching.
- Presentation at SoCG 2024:
  1. An $O(n \log n)$-time approximation scheme for Euclidean many-to-many matching.
  2. A 1.9999-approximation algorithm for vertex cover in string graphs.
- Presentation at SoCG 2023:
  Minimum-membership geometric set cover, revisited.
- Presentation at SODA 2023:
  A framework for approximation schemes on disk graphs.
- Talks at Nanjing University (Aug. 2022) and at UCSB (Oct. 2023):
  Vertex deletion on disk graphs.
- Presentation at SoCG 2022:
  Point separation and obstacle removal by finding and hitting odd cycles.
- Presentation at SODA 2022:
  1. Subexponential parameterized algorithms for cut and cycle hitting problems on H-minor-free graphs.
  2. Subexponential parameterized algorithms on disk graphs.
- Presentation at ESA 2021:
  Efficient algorithms for least square piecewise polynomial regression.
- Talks at Nanjing University (Online, Dec. 2020), NYU Shanghai (Online, March 2021), and NYU Tandon (Online, Nov. 2021):
  Efficient algorithms and data structures for geometric computing.
- Presentation at SoCG 2020:
  Dynamic geometric set cover and hitting set.

- Presentation at SoCG 2019:
  1. Searching for the closest-pair in a query translate.
  2. Near-optimal algorithms for shortest paths in weighted unit disk graphs.
- Presentation at SODA 2019 and FWCG 2018:
  Colored range closest-pair problem under general distance functions.
- Presentation at CCCG 2018:
  Approximate closest-pair search.
- Talk at Nanjing University (Aug. 2018):
  Range closest-pair search.
- Presentation at SoCG 2018:
  New bounds for range closest-pair problems.
- Presentation at Young Researcher Forum in CG Week 2018:
  Searching for the closest-pair in a convex polygonal translate.
- Presentation at WADS 2017:
  1. Stochastic closest-pair problem and most-likely NN search in tree spaces.
  2. On the expected diameter, width, and complexity of a stochastic convex-hull.
- Presentation at SoCG 2016:
  On the separability of stochastic geometric objects, with applications.

Students

- **PhD students**
  - Jiumu Zhu (2024-now)
- **Undergraduate students advised**
  - Xiongxin Yang (2024-now)

Services

- **Workshop organizer**
  - "Parameterized Algorithms for Geometric Problems" at SoCG 2023.
- **Program committees**
  - SoCG 2025
  - STACS 2024
  - WADS 2023
  - FAW 2022
  - CG Week YRF 2021
- **Reviewer for conferences**
  - STOC 2023
  - FOCS 2021, 2024
  - SODA 2021, 2022, 2023, 2024, 2025
  - SoCG 2017, 2020, 2022, 2023, 2024
  - ICALP 2021, 2022, 2024
  - ESA 2022, 2023
  - APPROX 2023
  - WADS 2017
  - SWAT 2020

  - FSTTCS 2021, 2024
  - ISAAC 2020, 2021, 2023, 2024
  - MFCS 2017
  - IPEC 2023
  - FAW 2019
  - COCOON 2023
  - COCOA 2021
- **Reviewer for journals**
  - SIAM Journal on Computing
  - Discrete & Computational Geometry
  - Journal of Computational Geometry
  - Algorithmica
  - Computational Geometry: Theory and Applications
  - Theoretical Computer Science
  - Computing in Geometry and Topology
  - Journal of Combinatorial Optimization
  - International Journal of Computational Geometry and Applications
  - VLDB Journal
- **Services at NYU Shanghai**
  - PC for Capstone projects 2021, 2022, 2023
  - Mentor for DURF projects 2022, 2023

Awards

June 2024	SoCG 2024 Best Paper Award
Feb 2023	AAAI 2023 Distinguished Paper Award
June 2019	SoCG 2019 Travel Award
Nov 2018	SIAM Travel Award
June 2018	SoCG 2018 Travel Award
2018-2019	University of Minnesota, Doctoral Dissertation Fellowship
June 2016	SoCG 2016 Travel Award
June 2013	Gold Medal in ACM/ICPC China Invitational Contest (Hangzhou)

Teaching

At NYU Shanghai:

Fall 2024	CSCI-SHU 2314 - Discrete Math
Spring 2024	CSCI-SHU 220 - Algorithms
Spring 2023	CSCI-SHU 220 - Algorithms
	CSCI-SHU 210 - Data Structures
Fall 2022	CSCI-SHU 11 - Introduction to Computer Programming
Spring 2022	CSCI-SHU 220 - Algorithms
Fall 2021	CSCI-SHU 11 - Introduction to Computer Programming

At University of Minnesota:

Spring 2018	CSci 5421 - Advanced Algorithms and Data Structures (TA)
Fall 2017	CSci 5421 - Advanced Algorithms and Data Structures (TA)
Spring 2017	CSci 4011 - Formal Languages and Automata Theory (TA)
Fall 2016	CSci 4011 - Formal Languages and Automata Theory (TA)
Spring 2016	CSci 4011 - Formal Languages and Automata Theory (TA)
Fall 2015	CSci 2011 - Discrete Structures of Computer Science (TA)
Spring 2015	CSci 5421 - Advanced Algorithms and Data Structures (TA)

Languages

Chinese (traditional preferred), English (US)

Hobbies

Literature | Poetry (traditional) | Calligraphy | Table-tennis | Video games

References available upon request.