

Tianyi Zhang

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RESEARCH INTERESTS Graph Algorithms ([link](#) to Google scholar)

EDUCATION Tsinghua University, Beijing, China
PhD, Computer Science, July 2021
Advisor: Prof. Ran Duan
Tsinghua University, Beijing, China
BEng, Computer Science, July 2016

EMPLOYMENT

- Tenure-track Ass. Prof. at Nanjing University
- Post-doctoral fellow at ETH Zürich, supervised by Prof. Rasmus Kyng
September 2024 September 2025
- Post-doctoral fellow at Tel Aviv University, supervised by Prof. Shay Solomon
October 2023 to September 2024
- Post-doctoral fellow at Tel Aviv University, supervised by Prof. Shiri Chechik
October 2021 to September 2023

PAPERS

1. Vizing's Theorem in Near-Linear Time. **STOC 2025**
Sepehr Assadi, Soheil Behnezhad, Sayan Bhattacharya, Martín Costa, Shay Solomon, Tianyi Zhang
2. Even Faster $(\Delta + 1)$ -Edge Coloring via Shorter Multi-Step Vizing Chains. **SODA 2025**
Sayan Bhattacharya, Martín Costa, Shay Solomon, Tianyi Zhang
3. Nearly Optimal Dynamic Set Cover: Breaking the Quadratic-in-f Time Barrier. **SODA 2025**
Anton Bukov, Shay Solomon, Tianyi Zhang
4. Towards Instance-Optimal Euclidean Spanners. **FOCS 2024**
Hung Le, Shay Solomon, Cuong Than, Csaba Toth, Tianyi Zhang
5. A Lossless Deamortization for Dynamic Greedy Set Cover. **FOCS 2024**
Shay Solomon, Amitai Uzzrad, Tianyi Zhang
6. Faster $(\Delta + 1)$ -Edge Coloring: Breaking the $m\sqrt{n}$ Time Barrier. **FOCS 2024**
Sayan Bhattacharya, Din Carmon, Martín Costa, Shay Solomon, Tianyi Zhang
7. Path-Reporting Distance Oracles with Logarithmic Stretch and Linear Size. **ICALP 2024**
Shiri Chechik, Tianyi Zhang

8. Faster Algorithms for Dual-Failure Replacement Paths. **ICALP 2024**
Shiri Chechik, Tianyi Zhang
9. Streaming Edge Coloring with Subquadratic Palette Size. **ICALP 2024**
Shiri Chechik, Doron Mukhtar, Tianyi Zhang
10. Nearly Optimal Approximate Dual-Failure Replacement Paths. **SODA 2024**
Shiri Chechik, Tianyi Zhang
11. Almost-Optimal Sublinear Additive Spanners. **STOC 2023**
Zihan Tan, Tianyi Zhang
12. Faster Deterministic Worst-Case Dynamic All-Pairs Shortest Paths via Decremental Hop-Restricted Shortest Paths. **SODA 2023**
Shiri Chechik, Tianyi Zhang
13. Constant Approximation of Min-Distances in Near-Linear Time. **FOCS 2022**
Shiri Chechik, Tianyi Zhang
14. Constant-Round Near-Optimal Spanners in Congested Clique. **PODC 2022**
Shiri Chechik, Tianyi Zhang
15. Faster Cut-Equivalent Trees in Simple Graphs. **ICALP 2022**
Tianyi Zhang
16. Faster min-plus product for monotone instances. **STOC 2022**
Shucheng Chi, Ran Duan, Tianle Xie, Tianyi Zhang
17. Nearly 2-Approximate Distance Oracles in Subquadratic Time. **SODA 2022**
Shiri Chechik, Tianyi Zhang
18. Deterministic Maximum Flows in Simple Graphs. **ICALP 2021**
Tianyi Zhang
19. Incremental Single Source Shortest Paths in Sparse Digraphs. **SODA 2021**
Shiri Chechik, Tianyi Zhang
20. A Scaling Algorithm for Weighted f-Factors in General Graphs. **ICALP 2020**,
arxiv.org:2003.07589
Ran Duan, Haoqing He, Tianyi Zhang
21. Near-Linear Time Algorithms for Approximate Minimum Degree Spanning Trees.
LATIN 2020, arXiv:1712.09166
Ran Duan, Haoqing He, Tianyi Zhang
22. Dynamic Low-Stretch Spanning Trees in Subpolynomial Time. **SODA 2020**
Shiri Chechik, Tianyi Zhang
23. Fully Dynamic Maximal Independent Set in Expected Poly-Log Time. **FOCS 2019**
Shiri Chechik, Tianyi Zhang
24. Dynamic Edge Coloring with Improved Approximation. **SODA 2019**
Ran Duan, Haoqing He, Tianyi Zhang

25. An Improved Algorithm for Incremental DFS Tree in Undirected Graphs. **SWAT 2018**
Lijie Chen, Ran Duan, Ruosong Wang, Hanrui Zhang, Tianyi Zhang
26. Purely Combinatorial Algorithms for Approximate Directed Minimum Degree Spanning Trees. arXiv:1707.05123
Ran Duan, Tianyi Zhang
27. Improved Distance Sensitivity Oracles via Tree Partitioning. **WADS 2017**
Ran Duan, Tianyi Zhang

TALKS

1. Faster $(\Delta + 1)$ -Edge Coloring: Breaking the $m\sqrt{n}$ Time Barrier
Dagstuhl Seminar “Graph Algorithms: Distributed Meets Dynamic”, November 2024, Dagstuhl, Germany
2. Almost-Optimal Sublinear Additive Spanners
STOC, June 2023, Orlando, USA
Theory Seminar at University of Haifa, May 2023, Haifa, Israel
Theory Seminar at Chinese Academy of Sciences, May 2023, Online
3. Deterministic Worst-Case Dynamic All-Pairs Shortest Paths via Decremental Hop-Restricted Shortest Paths
SODA, Jan 2023, Florence, Italy
4. Constant Approximation of Min-Distances in Near-Linear Time
FOCS, November 2022, Denver, USA
5. Constant-Round Near-Optimal Spanners in Congested Clique
PODC, July 2022, Salerno, Italy
6. Faster Cut-Equivalent Trees in Simple Graphs
ICALP, July 2022, Online
7. Faster min-plus product for monotone instances
STOC, June 2022, Rome, Italy
8. Nearly 2-Approximate Distance Oracles in Subquadratic Time
SODA, January 2022, Online
9. Deterministic Maximum Flows in Simple Graphs
ICALP, July 2021, Online
10. Incremental Single Source Shortest Paths in Sparse Digraphs
SODA, January 2021, Online
Theory Seminar organized by CCF, November 2020, Online
11. Near-Linear Time Algorithms for Approximate Minimum Degree Spanning Trees
LATIN, January 2021, Online
12. Dynamic Low-Stretch Spanning Trees in Subpolynomial Time
SODA, January 2020, Salt Lake City, USA

13. Fully Dynamic Maximal Independent Set in Expected Poly-Log Time
FOCS, November 2019, Baltimore, USA
14. Dynamic Edge Coloring with Improved Approximation
SODA, January 2019, San Diego, USA
15. An Improved Algorithm for Incremental DFS Tree in Undirected Graphs
SWAT, June 2018, Malmo, Sweden
16. Improved Distance Sensitivity Oracles via Tree Partitioning
WADS, July 2017, St. John's, Canada

CONFERENCE
REVIEWS

- FOCS 2025, 2024, 2023, 2022, 2020
- STOC 2025, 2024, 2023, 2020
- SODA 2025, 2024, 2022, 2020
- ICALP 2024, 2023

AWARDS

- Best Paper Award at STOC 2025
- CCF Incentive Program for Outstanding Doctoral Dissertations in Theoretical Computer Science 2024
- Outstanding Doctoral Dissertation Award of Tsinghua University 2021
- Outstanding Undergraduate Thesis Award of Tsinghua University 2016

REFERENCES

- Ran Duan
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Tsinghua University
- Shiri Chechik
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