

Keerti Choudhary

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EMPLOYMENT

Assistant Professor Department of Computer Science & Engineering, IIT Delhi	<i>Sep 2020 - Present</i>
Post-doctoral researcher in Computer Science Tel Aviv University, Israel Host: Prof. Shiri Chechik	<i>Oct 2019 - June 2020</i>
Post-doctoral researcher in Computer Science Weizmann Institute of Science, Israel Host: Prof. David Peleg	<i>Oct 2017 - Sep 2019</i>

EDUCATION

Ph.D. in Computer Science & Engineering Department of Computer Science and Engineering, IIT Kanpur Advisor: Prof. Surender Baswana	<i>July 2013 - August 2017</i>
Integrated M.Sc. in Mathematics Department of Mathematics and Statistics, IIT Kanpur	<i>July 2008 - May 2013</i>

RESEARCH INTERESTS

Algorithms, particularly dynamic and fault-tolerant graph algorithms, Combinatorics, and Graph theory

AWARDS

Google India Faculty Research Fellowship in Algorithms, 2021
ACM India Doctoral Dissertation Award, 2019
IBM Outstanding Ph.D. Thesis Award, IIT Kanpur, 2016-17
Best Student Paper Award, ICALP 2016
Google India Ph.D. Fellowship in Algorithms, 2014-2017

PUBLICATIONS

Conference Publications

1. Improved Distance (Sensitivity) Oracles with Subquadratic Space
with *Davide Bilò, Shiri Chechik, Sarel Cohen, Tobias Friedrich, Martin Schirneck*
FOCS 2024 - IEEE Symposium on Foundations of Computer Science
2. Fault-Tolerant Bounded Flow Preservers
with *Shivam Bansal, Harkirat Dhanoa, Harsh Wardhan*
ISAAC 2024 - International Symposium on Algorithms and Computation

3. Reactive Dataflow for Inflight Error Handling in ML Workflows
with *Abhilash Jindal, Kaustubh Beedkar, Vishal Singh, J. Nausheen Mohammed, Tushar Singla, Aman Gupta*
DEEM@SIGMOD 2024 - Workshop on Data Management for End-to-End Machine Learning
4. Fault-Tolerant ST-Diameter Oracles
with *Davide Bilò, Sarel Cohen, Tobias Friedrich, Simon Krogmann, Martin Schirneck*
ICALP 2023 - International Colloquium on Automata, Languages, and Programming
5. Compact Distance Oracles with Large Sensitivity and Low Stretch
with *Davide Bilò, Sarel Cohen, Tobias Friedrich, Simon Krogmann, Martin Schirneck*
WADS 2023 - Algorithms and Data Structures Symposium
6. Approximate Distance Sensitivity Oracles in Subquadratic Space
with *Davide Bilò, Shiri Chechik, Sarel Cohen, Tobias Friedrich, Simon Krogmann, Martin Schirneck*
STOC 2023 - ACM Symposium on Theory of Computing
7. Fixed-Parameter Sensitivity Oracles
with *Davide Bilò, Katrin Casel, Sarel Cohen, Tobias Friedrich, J. A. Gregor Lagodzinski, Martin Schirneck, Simon Wietheger*
ITCS 2022 - Innovations in Theoretical Computer Science
8. Deterministic Sensitivity Oracles for Diameter, Eccentricities and All Pairs Distances
with *Davide Bilò, Sarel Cohen, Tobias Friedrich, Martin Schirneck*
ICALP 2022 - International Colloquium on Automata, Languages, and Programming
9. Pairwise Reachability Oracles and Preservers Under Failures
with *Diptarka Chakraborty, Kushagra Chatterjee*
ICALP 2022 - International Colloquium on Automata, Languages, and Programming
10. Budgeted Dominating Sets in Uncertain Graphs
with *Avi Cohen, N. S. Narayanaswamy, David Peleg, R. Vijayaragunathan*
MFCS 2021 - Mathematical Foundations of Computer Science
11. Minimum Neighboring Degree Realization in Graphs and Trees
with *Amotz Bar-Noy, Avi Cohen, David Peleg, Dror Rawitz*
ESA 2020 - European Symposium on Algorithms
12. Distributed Graph Realizations
with *John Augustine, Avi Cohen, David Peleg, Sumathi Sivasubramaniam, Suman Sourav*
IPDPS 2020 - IEEE International Parallel & Distributed Processing Symposium
13. Graph Realizations: Maximum Degree in Vertex Neighborhoods
with *Amotz Bar-Noy, David Peleg, Dror Rawitz*
SWAT 2020 - Scandinavian Symposium and Workshops on Algorithm Theory
14. New Fault Tolerant Subset Preservers
with *Greg Bodwin, Merav Parter, Noa Shahar*
ICALP 2020 - International Colloquium on Automata, Languages, and Programming
15. New Extremal Bounds for Reachability and Strong-Connectivity Preservers Under Failures
with *Diptarka Chakraborty*
ICALP 2020 - International Colloquium on Automata, Languages, and Programming

16. Extremal Distances in Directed Graphs: Tight Spanners and Near-Optimal Approximation Algorithms
with *Omer Gold*
SODA 2020 - ACM SIAM Symposium on Discrete Algorithms
17. Efficiently Realizing Interval Sequences
with *Amotz Bar-Noy, David Peleg, Dror Rawitz*
ISAAC 2019 - International Symposium on Algorithms and Computation
18. Graph Profile Realizations and Applications to Social Networks
with *Amotz Bar-Noy, David Peleg, Dror Rawitz*
WALCOM 2019 - Symposium on Theoretical Aspects of Computer Science
19. Approximate Single Source Fault Tolerant Shortest Path
with *Surender Baswana, Moazzam Hussain, Liam Roditty*
SODA 2018 - ACM SIAM Symposium on Discrete Algorithms
20. Realizability of Graph Specifications: Characterizations and Algorithms
with *Amotz Bar-Noy, David Peleg, Dror Rawitz*
SIROCCO 2018 - International Colloquium on Structural Information and Communication Complexity
21. Efficient Oracles and Routing Schemes for Replacement Paths
with *with Davide Bilò, Luciano Gualà, Stefano Leucci, Merav Parter, Guido Proietti*
STACS 2018 - Symposium on Theoretical Aspects of Computer Science
22. An Efficient Strongly Connected Components Algorithm in the Fault Tolerant Model
with *Surender Baswana, Liam Roditty*
ICALP 2017 - International Colloquium on Automata, Languages, and Programming
23. An Optimal Dual Fault Tolerant Reachability Oracle
ICALP 2016 - International Colloquium on Automata, Languages, and Programming
24. Dynamic DFS in Undirected Graphs: breaking the $O(m)$ barrier
with *Surender Baswana, Shreejit Ray Chaudhury, Shahbaz Khan*
SODA 2016 - ACM SIAM Symposium on Discrete Algorithms
25. Fault tolerant subgraph for single source reachability: generic and optimal
with *Surender Baswana, Liam Roditty*
STOC 2016 - ACM Symposium on Theory of Computing
26. On Dynamic DFS Tree in Directed Graphs
with *Surender Baswana*
MFCS 2015 - Mathematical Foundations of Computer Science
27. Fault Tolerant Reachability for Directed Graphs
with *Surender Baswana, Liam Roditty*
DISC 2015 - International Symposium on Distributed Computing

Journal Publications

1. Approximate Distance Sensitivity Oracles in Subquadratic Space
with *Davide Bilò, Shiri Chechik, Sarel Cohen, Tobias Friedrich, Simon Krogmann, Martin Schirneck*
TheoretCS 2024

2. Graph realizations: Maximum degree in vertex neighborhoods
with *Amotz Bar-Noy, David Peleg, Dror Rawitz*
Discrete Mathematics 2023
3. Distributed Graph Realizations
with *John Augustine, Avi Cohen, David Peleg, Sumathi Sivasubramaniam, Suman Sourav*
IEEE Transactions on Parallel and Distributed Systems 2022
4. Efficiently Realizing Interval Sequences
with *Amotz Bar-Noy, David Peleg, Dror Rawitz*
SIAM Journal on Discrete Mathematics 2020
5. Approximate Single-Source Fault Tolerant Shortest Path
with *Surender Baswana, Moazzam Hussain, Liam Roditty*
ACM Transactions on Algorithms 2020
6. An Efficient Strongly Connected Components Algorithm in the Fault Tolerant Model
with *Surender Baswana, Liam Roditty*
Algorithmica 2019
7. Dynamic DFS in Undirected Graphs: Breaking the $O(m)$ Barrier
with *Surender Baswana, Shreejit Ray Chaudhury, Shahbaz Khan*
SIAM Journal on Computing 2019
8. Fault-Tolerant Subgraph for Single-Source Reachability: General and Optimal
with *Surender Baswana, Liam Roditty*
SIAM Journal on Computing 2018
9. Integer Domination of Cartesian Product Graphs
with *Susan Margulies, Illya V. Hicks*
Discrete Mathematics 2015
10. A Note on Total and Paired Domination of Cartesian Product Graphs
with *Susan Margulies, Illya V. Hicks*
Electronic Journal of Combinatorics 2013

INVITED SEMINARS AND WORKSHOPS

Dagstuhl Seminar 24471: “Graph Algorithms: Distributed Meets Dynamic”, Nov 2024

Early Career Talk, ACM India ARCS 2023

Dagstuhl Seminar 22461: “Dynamic Graph Algorithms”, Nov 2022

PROFESSIONAL SERVICE

Program Committee Member for FSTTCS 2021, MFCS 2023, CALDAM 2023, APPROX 2024, SODA 2025, CIAC 2025

Editorial Board Member, Information and Computation Journal (Jan 2024 - Present)

Member of ACM India Research Facilitation Grant Committee for the academic year 2023-2024

Co-organized CS Theory Winter School at IIT Delhi for the years 2022-2024