

# Dr. Michael H Dinitz

Department of Computer Science  
Johns Hopkins University  
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3400 North Charles Street  
Baltimore, MD 21218-2608

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- WORK EXPERIENCE
- ◇ **Johns Hopkins University** Baltimore, MD.  
Associate Professor (with tenure)  
Computer Science (primary) January 2021 - present  
Applied Mathematics and Statistics (secondary) January 2021 - present  
Mathematical Institute for Data Science (member) February 2024 - present
  
  - Assistant Professor  
Computer Science (primary) January 2014 - December 2020  
Applied Mathematics and Statistics (secondary) July 2018 - December 2020
  
  - Research Assistant Professor August 2013 - January 2014
  - ◇ **Google Research**, New York, NY.  
Visiting Researcher September 2022 - February 2023
  - ◇ **Weizmann Institute of Science**. Rehovot, Israel.  
Postdoctoral Fellow August 2010 - December 2013
  - ◇ **Alcatel-Lucent Bell Labs**. Murray Hill, NJ.  
Research Intern May 2009 - August 2009  
Research Intern May 2008 - August 2008
  - ◇ **Microsoft Research-Silicon Valley**. Mountain View, CA.  
Research Intern May 2007 - August 2007
- EDUCATION
- ◇ **Carnegie Mellon University**, Pittsburgh, PA August 2005 - August 2010  
Ph.D. in Computer Science  
Thesis: *Algorithms and Models for Problems in Networking*  
Advisor: Anupam Gupta
  - ◇ **Princeton University**, Princeton, NJ August 2001 - June 2005  
A.B. *summa cum laude* in Computer Science  
Certificate in Applied and Computational Mathematics
- AWARDS AND HONORS
- ◇ Best paper award: DISC 2022, ICDCS 2017.
  - ◇ NeurIPS Oral Presentation 2021 (top 1% of submissions).
  - ◇ Professor Joel Dean Excellence in Teaching Award. Johns Hopkins University Computer Science Department. 2017.
  - ◇ Invitation to Special Issue for Top Papers: WAOA 2023, DISC 2015, ESA 2015, APPROX 2014.
  - ◇ National Science Foundation Graduate Research Fellowship. September 2005 - September 2008.
  - ◇ ARCS (Achievement Rewards for College Scientists) Scholarship. 2005.
  - ◇ Shapiro Prize for Academic Excellence. 2003
- PUBLICATIONS Conference Papers (Peer Reviewed)

1. Wenkai Dai, Michael Dinitz, Klaus-Tycho Foerster, Long Luo, and Stefan Schmid. *Approximation Algorithms for Minimizing Congestion in Demand-Aware Networks*. In Proceedings of the IEEE International Conference on Computer Communications (INFOCOM 2024).
2. Michael Dinitz, Sungjin Im, Thomas Lavastida, Benjamin Moseley, and Sergei Vassilvitskii. *Controlling Tail Risk in Online Ski-Rental*. In Proceedings of the 35th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA 2024).
3. Michael Dinitz, Ama Koranteng, Guy Kortsarz, and Zeev Nutov. *Improved Approximations for Relative Survivable Network Design*. In Proceedings of the 21st Workshop on Approximation and Online Algorithms (WAOA 2023).
4. Greg Bodwin, Michael Dinitz, and Yasamin Nazari. *Epic Fail: Emulators can tolerate polynomially many edge faults for free*. In Proceedings of the 14th Innovations in Theoretical Computer Science Conference (ITCS 2023).
5. Michael Dinitz, Sungjin Im, Thomas Lavastida, Benjamin Moseley, Sergei Vassilvitskii. *Algorithms with Prediction Portfolios*. Advances in Neural Information Processing Systems (NeurIPS 2022).
6. Michael Dinitz, Jeremy Fineman, Seth Gilbert, Calvin Newport. *Smoothed Analysis of Information Spreading in Dynamic Networks*. In Proceedings of the 36th International Symposium on Distributed Computing (DISC 2022).
- Best Paper Award**
7. Michael Dinitz, Ama Koranteng, Guy Kortsarz. *Relative Survivable Network Design*. In Proceedings of the 25th International Conference on Approximation Algorithms for Combinatorial Optimization Problems (APPROX 2022).
8. Michael Dinitz, Aravind Srinivasan, Leonidas Tsepenekas, Anil Vullikanti. *Fair Disaster Containment via Graph-Cut Problems*. In Proceedings of the 25th International Conference on Artificial Intelligence and Statistics (AISTATS 2022).
9. Amy Babay, Michael Dinitz, Aravind Srinivasan, Leonidas Tsepenekas, Anil Vullikanti. *Controlling Epidemic Spread using Probabilistic Diffusion Models on Networks*. In Proceedings of the 25th International Conference on Artificial Intelligence and Statistics (AISTATS 2022).
10. Greg Bodwin, Michael Dinitz, and Yasamin Nazari. *Vertex Fault-Tolerant Emulators*. In Proceedings of the 13th Innovations in Theoretical Computer Science Conference (ITCS 2022).
11. Greg Bodwin, Michael Dinitz, and Caleb Robelle. *Partially Optimal Edge Fault-Tolerant Spanners*. In Proceedings of the 33rd Annual ACM-SIAM Symposium on Discrete Algorithms (SODA 2022).
12. Michael Dinitz, Sungjin Im, Thomas Lavastida, Benjamin Moseley, Sergei Vassilvitskii. *Faster Matchings via Learned Duals*. Advances in Neural Information Processing Systems (NeurIPS 2021).
- Selected for Oral Presentation (1% of all submissions)**
13. Greg Bodwin, Michael Dinitz, and Caleb Robelle. *Optimal Vertex Fault-Tolerant Spanners in Polynomial Time*. In Proceedings of the 32nd Annual ACM-SIAM Symposium on Discrete Algorithms (SODA 2021).
14. Michael Dinitz and Caleb Robelle. *Efficient and Simple Algorithms for Fault Tolerant Spanners*. In Proceedings of the 39th ACM Symposium on Principles of Distributed Computing (PODC 2020), pp. 493-500.
15. Michael Dinitz, Yasamin Nazari, and Zeyu Zhang. *Lasserre Integrality Gaps for Graph Spanners and Related Problems*. In Proceedings of the 18th Workshop on Approximation and Online Algorithms (WAOA 2020).

16. Michael Dinitz and Benjamin Moseley. *Scheduling for Weighted Flow and Completion Times in Reconfigurable Networks*. In Proceedings of the 39th IEEE Conference on Computer Communications (INFOCOM 2020), pp. 1043-1052.
17. Michael Dinitz and Yasamin Nazari. *Massively Parallel Approximate Distance Sketches*. In Proceedings of the 23rd International Conference on Principles of Distributed Systems (OPODIS 2019), pp. 35:1–35:17.
- Best Student Paper Award**
18. Michael Dinitz and Naomi Ephraim. *Reception Capacity: Definitions, Game Theory and Hardness*. In Proceedings of the 15th International Symposium on Algorithms and Experiments for Wireless Sensor Networks (ALGOSENSORS 2019), pp. 96–115
19. Michael Dinitz, Magnús Halldórsson, Calvin Newport, and Alex Weaver. *The Capacity of Smartphone Peer-to-Peer Networks*. In Proceedings of the 33rd International Symposium on Distributed Computing (DISC 2019), pp. 14:1–14:17
20. Eden Chlamtáč, Michael Dinitz, and Thomas Robinson. *Approximating the Norms of Graph Spanners*. In Proceedings of the 22nd International Conference on Approximation Algorithms for Combinatorial Optimization Problems (APPROX 2019), pp. 11:1–11:22
21. Michael Dinitz, Magnús Halldórsson, Taisuke Izumi, and Calvin Newport. *Distributed Minimum Degree Spanning Trees*. In Proceedings of the 38th ACM Symposium on Principles of Distributed Computing (PODC 2019), pp. 511–520.
22. Eden Chlamtáč, Michael Dinitz, and Thomas Robinson. *The Norms of Graph Spanners*. In Proceedings of the 46th International Colloquium on Automata, Languages and Programming (ICALP 2019), pp. 40:1–40:15.
23. Raman Arora, Michael Dinitz, Teodor V. Marinov, and Mehryar Mohri. *Policy Regret in Repeated Games*. In Advances in Neural Information Processing Systems (NeurIPS 2018), pp. 6733–6742.
24. Michael Dinitz, Michael Schapira, and Gal Shahaf. *Large Low-Diameter Graphs are Good Expanders*. In Proceedings of the 26th Annual European Symposium on Algorithms (ESA 2018), pp. 71:1–71:15.
25. Greg Bodwin, Michael Dinitz, Merav Parter, and Virginia Vassilevska Williams. *Optimal Vertex Fault Tolerant Spanners (for fixed stretch)*. In Proceedings of the 29th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA 2018), pp. 1884–1900.
26. Amy Babay, Michael Dinitz, and Zeyu Zhang. *Characterizing Demand Graphs for (Fixed-Parameter) Shallow-Light Steiner Network*. In Proceedings of the 38th IARCS Annual Conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS 2018), pp. 33:1–33:22.
27. Michael Dinitz and Yasamin Nazari. *Distributed Distance-Bounded Network Design Through Distributed Convex Programming*. In Proceedings of the The 21st International Conference on Principles of Distributed Systems (OPODIS 2017), pp. 5:1–5:19.
28. Amy Babay, Emily Wagner, Michael Dinitz, and Yair Amir. *Timely, Reliable, and Cost-Effective Internet Transport Service using Dissemination Graphs*. In Proceedings of the 37th IEEE International Conference on Distributed Computing Systems (ICDCS 2017), pp.1–12.
- Best Paper Award.**
29. Michael Dinitz, Jeremy Fineman, Seth Gilbert, and Calvin Newport. *Load Balancing with Bounded Convergence in Dynamic Networks*. In Proceedings of the 36th IEEE Conference on Computer Communications (INFOCOM 2017), pp. 1–9.
30. Michael Dinitz and Zeyu Zhang. *Approximating Approximate Distance Oracles*. In Proceedings of the 8th Innovations in Theoretical Computer Science Conference (ITCS 2017), pp. 52:1–52:14.

31. Eden Chlamtáč, Michael Dinitz, and Yury Makarychev. *Minimizing the Union: Tight Approximations for Small Set Bipartite Vertex Expansion*. In Proceedings of the 28th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA 2017), pp. 881–899.
32. Eden Chlamtáč, Michael Dinitz, Guy Kortsarz, and Bundit Laekhanukit. *Approximating Spanners and Directed Steiner Forest: Upper and Lower Bounds*. In Proceedings of the 28th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA 2017), pp. 534–553.
33. Asaf Valadarsky, Gal Shahaf, Michael Dinitz, and Michael Schapira. *Xpander: Towards Optimal-Performance Next-Generation Datacenters*. In Proceedings of the 12th International Conference on Emerging Networking Experiments and Technologies (CoNEXT 2016), pp. 205–219.
34. Eden Chlamtáč, Michael Dinitz, Christian Konrad, Guy Kortsarz, and George Rabcana. *The Densest  $k$ -Subhypergraph Problem*. In Proceedings of the 19th International Workshop on Approximation Algorithms for Combinatorial Optimization Problems (APPROX 2016), pp. 6:1–6:19.
35. Amitabh Basu, Michael Dinitz, and Xin Li. *Computing Approximate PSD Factorizations*. In Proceedings of the 19th International Workshop on Approximation Algorithms for Combinatorial Optimization Problems (APPROX 2016), pp. 2:1–2:12.
36. Michael Dinitz and Zeyu Zhang. *Approximating Low-Stretch Spanners*. In Proceedings of the 27th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA 2016), pp. 821–840.
37. Michael Dinitz, Jeremy Fineman, Seth Gilbert, and Calvin Newport. *Smoothed Analysis of Dynamic Networks*. In Proceedings of the 29th International Symposium on Distributed Computing (DISC 2015), pp. 513–527.
38. Michael Dinitz, Michael Schapira, and Asaf Valadarsky. *Explicit Expanding Expanders*. In Proceedings of the 23rd European Symposium on Algorithms (ESA 2015), pp. 399–410.
39. Michael Dinitz, Robert Krauthgamer, and Tal Wagner. *Towards Resistance Sparsifiers*. In Proceedings of the 19th International Workshop on Randomization and Computation (RANDOM 2015), pp. 738–755.
40. Eden Chlamtáč and Michael Dinitz. *Lowest Degree  $k$ -Spanner: Approximation and Hardness*. In Proceedings of the 17th International Workshop on Approximation Algorithms for Combinatorial Optimization Problems (APPROX 2014), pp. 80–95.
41. Michael Dinitz, Guy Kortsarz, and Zeev Nutov. *Improved Approximation Algorithm for Steiner  $k$ -Forest with Nearly Uniform Weights*. In Proceedings of the 17 International Workshop on Approximation Algorithms for Combinatorial Optimization Problems (APPROX 2014), pp. 115–127.
42. Michael Dinitz and Merav Parter. *Braess’s Paradox in Wireless Networks: The Danger of Improved Technology*. In Proceedings of the 27th International Symposium on Distributed Computing (DISC 2013), pp. 477–491.
43. Michael Dinitz and Anupam Gupta. *Packing Interdiction and Partial Covering Problems*. In Proceedings of the 16th Conference on Integer Programming and Combinatorial Optimization (IPCO 2013), pp. 157–168.
44. Michael Dinitz and Guy Kortsarz. *Matroid Secretary for Regular and Decomposable Matroids*. In Proceedings of the 24th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA 2013), pp. 108–117.
45. Eden Chlamtáč, Michael Dinitz, and Robert Krauthgamer. *Everywhere-Sparse Spanners via Dense Subgraphs*. In Proceedings of the 53rd Annual Symposium on Foundations of Computer Science (FOCS 2012), pp. 758–767.

46. Michael Dinitz and Gordon Wilfong. *Constrained Connectivity and iBGP*. In Proceedings of the 15th International Workshop on Approximation Algorithms for Combinatorial Optimization Problems (APPROX 2012), pp. 122–133.
47. Michael Dinitz, Guy Kortsarz, and Ran Raz. *Label Cover Instances with Large Girth and the Hardness of Approximating Basic  $k$ -Spanner*. In Proceedings of the 39th International Colloquium on Automata, Languages and Programming (ICALP 2012), pp. 290–301.
48. Atish Das Sarma, Michael Dinitz, and Gopal Pandurangan. *Efficient Computation of Distance Sketches in Distributed Networks*. In Proceedings of the 24th ACM Symposium on Parallelism in Algorithms and Architectures (SPAA 2012), pp. 318–326.
49. Michael Dinitz and Robert Krauthgamer. *Fault-Tolerant Spanners: Better and Simpler*. In Proceedings of the 30th Annual ACM Symposium on Principles of Distributed Computing (PODC 2011), pp. 169–178.
50. Michael Dinitz and Robert Krauthgamer. *Directed Spanners via Flow-Based Linear Programs*. In Proceedings of the 43rd Annual ACM Symposium on Theory of Computing (STOC 2011), pp. 323–332.
51. Michael Dinitz. *Distributed Algorithms for Approximating Wireless Network Capacity*. In Proceedings of the 29th IEEE Conference on Computer Communications (INFOCOM 2010), pp. 1397–1405.
52. Matthew Andrews and Michael Dinitz. *Maximizing Capacity in Arbitrary Wireless Networks in the SINR Model: Complexity and Game Theory*. In Proceedings of the 28th IEEE Conference on Computer Communications (INFOCOM 2009), pp. 1332–1340.
53. Moshe Babaioff, Michael Dinitz, Anupam Gupta, Nicole Immorlica, and Kunal Talwar. *Secretary Problems: Weights and Discounts*. In Proceedings of the Twentieth Annual ACM-SIAM Symposium on Discrete Algorithms (SODA 2009), pp. 1245–1254.
54. Michael Dinitz. *Online, Dynamic, and Distributed Embeddings of Approximate Ultrametrics*. In Proceedings of the 22nd International Symposium on Distributed Computing (DISC 2008), pp. 152–166.
55. Michael Dinitz. *Compact Routing with Slack*. In Proceedings of the Twenty-Sixth Annual ACM Symposium on Principles of Distributed Computing (PODC 2007), pp. 81–88.
56. T.H.-Hubert Chan, Michael Dinitz, and Anupam Gupta. *Spanners With Slack*. In Proceedings of the 14th Annual European Symposium on Algorithms (ESA 2006), pp. 196–207.

#### **Journal Papers (Peer Reviewed)**

1. Eden Chlamtáč, Michael Dinitz, Guy Kortsarz, and Bundit Laekhanukit. *Approximating Spanners and Directed Steiner Forest: Upper and Lower Bounds*. ACM Transactions on Algorithms 16(3): 33:1–33:31 (2020).
2. Michael Dinitz, Michael Schapira, and Gal Shahaf. *Approximate Moore Graphs are Good Expanders*. Journal of Combinatorial Theory, Series B 141: 240–263 (2020). doi: 10.1016/j.jctb.2019.08.003
3. Michael Dinitz, Jeremy Fineman, Seth Gilbert, and Calvin Newport. *Smoothed Analysis of Dynamic Networks*. Distributed Computing 31(4): 273–287 (2018).
4. Eden Chlamtáč, Michael Dinitz, Christian Konrad, Guy Kortsarz, and George Raibanca. *The Densest  $k$ -Subhypergraph Problem*. SIAM Journal on Discrete Mathematics. 32(2): 1458–1477 (2018)

5. Michael Dinitz, Guy Kortsarz, and Zeev Nutov. *Improved Approximation Algorithm for Steiner  $k$ -Forest with Nearly Uniform Weights*. ACM Transactions on Algorithms. 13(3): 40:1–40:16 (2017).
6. Michael Dinitz, Michael Schapira, and Asaf Valadarsky. *Explicit Expanding Expanders*. Algorithmica 78(4)1225–1245 (2017).
7. Eden Chlamtáč and Michael Dinitz. *Lowest Degree  $k$ -Spanner: Approximation and Hardness*. Theory of Computing. 12(1) 1–29 (2016).
8. Michael Dinitz, Guy Kortsarz, and Ran Raz. *Label Cover Instances with Large Girth and the Hardness of Approximating Basic  $k$ -Spanner*. ACM Transactions on Algorithms. 12(2): 25:1–25:16 (2016).
9. Atish Das Sarma, Michael Dinitz, and Gopal Pandurangan. *Efficient Computation of Distance Sketches in Distributed Networks*. Distributed Computing. 28(5) 309-320 (2015).
10. Michael Dinitz and Guy Kortsarz. *Matroid Secretary for Regular and Decomposable Matroids*. SIAM Journal on Computing. 43(5) 1807-1830 (2014).
11. Michael Dinitz, Jonah Gold, Thomas Sharkey, and Lorenzo Traldi. *Graphical Representations of Clutters*. Ars Combinatoria. 94 (2010), pp 303-320.
12. Michael Dinitz. *Full Rank Tilings of Finite Abelian Groups*. SIAM J. Discrete Math. 20, 1 (Jan. 2006), 160-170.
13. Michael Dinitz and Jeffrey Dinitz. *Enumeration of Balanced Tournament Designs on 10 Points*. Journal of Combinatorial Mathematics and Combinatorial Computing, **52** (2005), 51-63.

### **Workshop Papers**

1. Asaf Valadarsky, Michael Dinitz, and Michael Schapira. *Xpander: Unveiling the Secrets of High-Performance Datacenters*. In Proceedings of the Fourteenth ACM Workshop on Hot Topics in Networks (HotNets 2015), pp. 16:1–16:7.

### **Short Papers and Brief Announcements**

1. Wenkai Dai, Michael Dinitz, Klaus-Tycho Foerster, and Stefan Schmid. *Brief Announcement: Minimizing Congestion in Hybrid Demand-Aware Network Topologies*. In Proceedings of the 36th International Symposium on Distributed Computing (DISC 2022).
2. Michael Dinitz and Yasamin Nazari. *Brief Announcement: Massively Parallel Approximate Distance Sketches*. In Proceedings of the 33rd International Symposium on Distributed Computing (DISC 2019).
3. Amy Babay, Michael Dinitz, and Zeyu Zhang. *Brief Announcement: Characterizing Demand Graphs for (Fixed-Parameter) Shallow-Light Steiner Network*. In Proceedings of the 45th International Colloquium on Automata, Languages, and Programming (ICALP 2018).
4. Michael Dinitz. *Brief announcement: distributed algorithms for approximating wireless network capacity*. In Proceedings of the 28th ACM Symposium on Principles of Distributed Computing (PODC 2009)
5. Michael Dinitz. *Online and dynamic embeddings of approximate ultrametrics*. In Proceedings of the 27th ACM Symposium on Principles of Distributed Computing (PODC 2008)

### **Surveys**

1. Michael Dinitz. Recent advances on the matroid secretary problem. *SIGACT News* 44, 2 (June 2013), 126-142

FUNDING

### **Current**

- ◇ PI, NSF award 2228995. *AF: Small: New Directions in Network Design*. November 2022 - October 2025. \$567,981
- ◇ PI, JHU Catalyst Award. *New Lenses on Differential Privacy: Predictions and Graphs*. July 2023 - June 2024. \$75,000
- ◇ Co-PI, JHU Discovery Award. *Uncovering a neurobiological algorithm for constructing combinatorial designs*. July 2023 - June 2025. \$150,000. PI: Shreesh Mysore (JHU Psychological & Brain Sciences). Co-PI: Ernst Niebur (JHU Neuroscience).
- ◇ PI, NSF award 1909111. *AF: Small: Relative Fault Tolerance in Network Design*. October 2019 - September 2023. \$300,000

### Completed

- ◇ PI, NSF award 1535887. *AitF: EXPL: Wide-area Dissemination under Strict Timeliness, Reliability, and Cost Constraints*. September 2015 - August 2019. \$400,000. Co-PI: Yair Amir (JHU Computer Science).
- ◇ PI, NSF award 1464239. *CRII: AF: New Approaches to Graph Spanners*. February 2015 - May 2018. \$185,000
- ◇ National Science Foundation Graduate Research Fellowship (September 2005 - September 2008)
- ◇ ARCS (Achievement Rewards for College Scientists) Scholarship: \$15000

## RESEARCH ADVISING

### Ph.D. Thesis Advisor:

Current:

1. Ama Koranteng. Ph.D. candidate in Computer Science, JHU. 2020-present.
2. Qiming Cui. Ph.D. candidate in Applied Mathematics and Statistics, JHU. 2023-present.
3. Shruthi Prusty. Ph.D. candidate in Computer Science, JHU. 2023-present.

Graduated:

1. Yasamin Nazari. Ph.D. in Computer Science, JHU.  
Thesis Title: *Distributed, Parallel, and Dynamic Distance Structures*.  
Graduation Date: June 2021.
2. Zeyu Zhang. Ph.D. in Computer Science, JHU.  
Thesis Title: *Algorithms and Hardness Results for Compressing Graphs with Distance Constraints*.  
Graduation Date: May 2019.

### Visiting Ph.D. Mentor:

1. Yuchao Li. Ph.D. candidate in Mathematics, Xi'an Jiaotong University, China.  
Visit period: August 2017 - August 2018.  
Project Title: *Complexity and algorithms for the minimum weight connected vertex cover problem*.

### Postdoc Host:

1. Chenglin Fan: September 2023 - August 2024.

### Ph.D. Thesis Committee Member (non-advisees):

1. Enayat Ullah, Ph.D. in Computer Science, JHU.  
Thesis Title: *Statistical Learning via Stochastic Optimization under Data Privacy Considerations*.  
Graduation Date: January 2024.
2. Jingfeng Wu, Ph.D. in Computer Science, JHU.  
Thesis Title: *Risk Convergence and Algorithmic Regularization of Discrete-Stepsize (Stochastic) Gradient Descent*.  
Graduation Date: June 2023.

3. Aditya Krishnan, Ph.D. in Computer Science, JHU.  
Thesis Title: Fast and Memory Efficient Algorithms for Structured Matrix Spectrum Approximation.  
Graduation Date: September 2022.
4. Mehraneh Liaee, Ph.D. in Computer Science, Northeastern University.  
Thesis Title: *Algorithms for Network Resource Allocation under Adversarial Dynamics and Assignment Constraints*.  
Graduation Date: June 2022.
5. Yu Zheng, Ph.D. in Computer Science, JHU.  
Thesis Title: *String Measures: Computational Complexity and Related Problems in Communication*.  
Graduation Date: May 2022.
6. Xuan Wu, Ph.D. in Computer Science, JHU.  
Thesis Title: *Coresets for Clustering: Foundations and Challenges*.  
Graduation Date: December 2021.
7. Hongyi Jiang, Ph.D. in Applied Mathematics and Statistics, JHU.  
Thesis Title: *On the Complexity of Mixed Integer Programming*.  
Graduation Date: June 2021.
8. Teodor Marinov, Ph.D. in Computer Science, JHU.  
Thesis Title: *Competing Against Adaptive Agents by Minimizing Counterfactual Notions of Regret*.  
Graduation Date: June 2021.
9. Kuan Cheng, Ph.D. in Computer Science, JHU.  
Thesis Title: *Pseudorandom Constructions: Computing in Parallel and Applications to Edit Distance Codes*.  
Graduation Date: May 2019.
10. Amy Babay, Ph.D. in Computer Science, JHU.  
Thesis Title: *Timely, Reliable, and Cost-Effective Internet Transport Service using Structured Overlay Networks*.  
Graduation Date: September 2018.
11. Dominic Scalise, Ph.D. in Chemical and Biomolecular Engineering, JHU.  
Thesis Title: *Towards Programming Matter with Chemical Computers*.  
Graduation Date: September 2018.
12. Joseph Paat, Ph.D. in Applied Mathematics and Statistics, JHU.  
Thesis Title: *On the Development of Cut-Generating Functions*.  
Graduation Date: December 2016.

**Ph.D. Qualifying Project Supervisor:**

1. Ama Koranteng. *Relative Survivable Network Design*. 2022.
2. Teodor Marinov. *Policy Regret in Repeated Games*. 2018.
3. Yasamin Nazari. *Distributed Distance-Bounded Network Design Through Distributed Convex Programming*. 2018.
4. Amy Babay. *Approximation Algorithms in Random Graphs for Dissemination Graph Construction and Stochastic Vaccination Problems*. 2017.
5. Zeyu Zhang. *Approximating Low-Stretch Spanners*. 2017.

**Masters Research Supervisor:**

1. Yang Xiao. *Improved Approximation for Fault-Tolerant 2-Spanner*. 2022.
2. Scarlett Xiang. *Lightness for Fault Tolerant Spanners*. 2022.

**Undergraduate Research Supervisor:**



1. Caleb Robelle (UMBC). *Efficient and Simple Algorithms for Fault Tolerant Spanners*. 2020.
2. Marino Echavarría (CCNY). *A Low Memory MPC Algorithm for the Minimum Cut*. 2019.
3. Aidan Reilly. *Reception Capacity in Realistic Graphical Models*. 2018.
4. Naomi Ephraim. *Reception Capacity: Definitions, Game Theory, and Hardness*. 2016.
5. David Gong. *Approximating Thorup-Zwick Distance Oracles*. 2015.
6. Adam Poliak. *Encouraging Unselfish Behavior to Decrease Power Consumption in Non-Uniform Networks*. 2014.

**High School Research Supervisor:**

1. Saria Malik (Western High School, Baltimore, MD). *Implementations of Algorithms for Graph Spanners*. 2023.

TEACHING    ◊ **601.433/633, 600.363/463: Introduction to Algorithms / Algorithms I**

Course Evaluation:

Fall 2021:

Enrollment: 123, Overall course quality: 3.98/5, Instructor's teaching effectiveness: 3.94/5

Fall 2020:

Enrollment: 119, Overall course quality: 3.91/5, Instructor's teaching effectiveness: 3.98/5

Fall 2019:

Enrollment: 122, Overall course quality: 4.22/5, Instructor's teaching effectiveness: 4.22/5

Fall 2018:

Enrollment: 120, Overall course quality: 4.30/5, Instructor's teaching effectiveness: 4.37/5

Fall 2017:

Enrollment: 98, Overall course quality: 4.02/5, Instructor's teaching effectiveness: 4.09/5

Fall 2016:

Enrollment: 68, Overall course quality: 4.57/5, Instructor's teaching effectiveness: 4.48/5

Fall 2015:

Enrollment: 43, Overall course quality: 4.09/5, Instructor's teaching effectiveness: 4.21/5

Fall 2014:

Enrollment: 47, Overall course quality: 4.05/5, Instructor's teaching effectiveness: 3.92/5

◊ **601.435/635, 600.469/669: Approximation Algorithms**

Course Evaluation:

Spring 2021:

Enrollment: 26, Overall course quality: 4.76/5, Instructor's teaching effectiveness: 4.80/5

Spring 2019:

Enrollment: 28, Overall course quality: 4.62/5, Instructor's teaching effectiveness: 4.72/5

Spring 2017:

Enrollment: 21, Overall course quality: 4.15/5, Instructor's teaching effectiveness: 4.21/5

Spring 2015:

Enrollment: 10, Overall course quality: 4.43/5, Instructor's teaching effectiveness: 4.14/5

◊ **601.436/636, 600.473/673: Algorithmic Game Theory**

Course Evaluation:

Spring 2022:

Enrollment: 29, Overall course quality: 4.64/5, Instructor's teaching effectiveness: 4.71/5

Spring 2020:  
Enrollment: 31, Overall course quality: 4.61/5, Instructor's teaching effectiveness: 4.74/5  
Spring 2018:  
Enrollment: 35, Overall course quality: 4.23/5, Instructor's teaching effectiveness: 4.50/5  
Spring 2016:  
Enrollment: 18, Overall course quality: 4.70/5, Instructor's teaching effectiveness: 4.80/5

◇ **600.770: Selected Topics in Algorithms for Metric Spaces**

Course Evaluation:

Spring 2014: Enrollment: 3

PROFESSIONAL  
SERVICE

**Journal Editing:**

- ◇ Associate Editor, ACM Transactions on Algorithms (2018 - present)
- ◇ Guest Editor, ACM Transactions on Parallel Computing, Special Issue on Selected Papers from SPAA 2013.

**Program Committees:**

- ◇ ICALP 2023: 50th International Colloquium on Automata, Languages, and Programming
- ◇ ICDCS 2023: 43rd 40th IEEE International Conference on Distributed Computing Systems.
- ◇ ALGOSENSORS 2022: International Symposium on Algorithmics of Wireless Networks
- ◇ ESA 2022: 30th Annual European Symposium on Algorithms.
- ◇ SIROCCO 2022: 29th International Colloquium on Structural Information and Communication Complexity.
- ◇ DISC 2021: 35th International Symposium on Distributed Computing.
- ◇ STOC 2021: 53rd Annual ACM Symposium on Theory of Computing.
- ◇ APoCS 2021: 2nd SIAM-ACM Symposium on Algorithmic Principles of Computer Systems.
- ◇ ICDCS 2020: 40th IEEE International Conference on Distributed Computing Systems.
- ◇ SODA 2020: 31st ACM-SIAM Symposium on Discrete Algorithms.
- ◇ APoCS 2020: 1st SIAM-ACM Symposium on Algorithmic Principles of Computer Systems
- ◇ APPROX 2019: 22nd International Workshop on Approximation Algorithms for Combinatorial Optimization Problems.
- ◇ SOSA 2019: 2nd Symposium on Simplicity in Algorithms.
- ◇ OPODIS 2018: 22nd International Conference on Principles of Distributed Systems.
- ◇ APPROX 2015: 18th International Workshop on Approximation Algorithms for Combinatorial Optimization Problems.
- ◇ SPAA 2013: 25th ACM Symposium on Parallelism in Algorithms and Architectures.
- ◇ CATS 2013: 19th Edition of Computing: the Australasian Theory Symposium.

**Conference Organization:**

- ◇ FOCS 2019: Treasurer and Local Arrangements Chair

**Workshop Organization:**

- ◇ Joint STOC-SoCG Workshop on Spanners: Graphs and Geometry (June 18, 2016)

- ◇ NSF Algorithms in the Field (AiTF) Workshop on Algorithms for Software-Defined Networking (June 2-3, 2016)
- ◇ Capital Area Theory Day 2016 (May 26, 2016)

### **Conference Reviewing**

1. ACM Symposium on Theory of Computing (STOC)
2. IEEE Symposium on Foundations of Computer Science (FOCS)
3. ACM-SIAM Symposium on Discrete Algorithms (SODA)
4. ACM Symposium on Principles of Distributed Computing (PODC)
5. International Symposium on Distributed Computing (DISC)
6. ACM Symposium on Parallelism in Algorithms and Architectures (SPAA)
7. European Symposia on Algorithms (ESA)
8. International Colloquium on Automata, Languages, and Programming (ICALP)
9. Innovations in Theoretical Computer Science (ITCS)
10. International Workshop on Approximation Algorithms for Combinatorial Optimization Problems (APPROX)
11. International Workshop on Randomization and Computation (RANDOM)
12. Symposium on Theoretical Aspects of Computer Science (STACS)
13. Algorithms and Data Structures Symposium (WADS)
14. Scandinavian Symposium and Workshops on Algorithm Theory (SWAT)
15. International Computing and Combinatorics Conference (COCOON)
16. IEEE International Conference on Computer Communications (INFOCOM)
17. IEEE International Parallel & Distributed Processing Symposium (IPDPS)
18. International Symposium on Algorithms and Experiments for Wireless Sensor Networks (ALGOSENSORS)
19. Conference on Information Systems and Sciences (CISS)

### **Journal Referee**

1. Ad Hoc Networks
2. Algorithmica
3. Computational Geometry: Theory and Applications
4. Computer Networks
5. Computer Science Reviews
6. Discrete and Computational Geometry
7. Distributed Computing
8. Journal of the ACM
9. Journal of Combinatorial Optimization
10. Journal of Computer and System Sciences
11. Journal of Discrete Algorithms
12. Information Processing Letters
13. International Journal of Algebra and Computation
14. International Journal of Foundations of Computer Science
15. Mathematics of Operations Research
16. SIAM Journal on Computing

17. SIAM Journal on Discrete Mathematics
18. Theoretical Computer Science
19. Transactions on Algorithms
20. Transactions on Mobile Computing
21. Transactions on Networking
22. Transactions on Parallel and Distributed Systems
23. Transactions on Vehicular Technologies
24. Transactions on Wireless Computing

**Grant Reviewing:**

- NSF Panelist (2022, 2021, 2016, 2015)
- European Research Council (2020)
- Israeli Science Foundation (ISF) (2020, 2019)
- FONDECYT grant competition, Chilean National Science and Technology Commission (CONICYT - Chile).
- NSERC Discovery Grants (Canada)
- US-Israel Binational Science Foundation (BSF) (2021, 2013)

**Other Professional Service:**

- Representative at JHU of the SIGACT Committee for the Advancement of Theoretical Computer Science (CATCS)

UNIVERSITY  
SERVICE

**School / University Committees:**

- ◇ Senator, WSE Faculty Senate. 10/2023 - 10/2026.
- ◇ Homewood Academic Council Board of Review Committee: 2023-2026. Responsible for reviewing appointment and promotion for research faculty.
- ◇ WSE Graduate Committee: 2023-2025. Responsible for reviewing new and modified graduate and certificate programs in the Whiting School of Engineering.

**Department Service:**

- ◇ Diversity Champion for the JHU Computer Science Department (2017-2020). Responsible for facilitating culture transformation around issues of equity and inclusion. Coordinated between the CS department and the Homewood Council on Inclusive Excellence.
- ◇ Chair, Computer Science Committee on Diversity and Inclusion (2018 - 2020).
- ◇ Committee Member: Faculty Hiring (2022, 2021, 2015-2018), Undergraduate and Graduate Awards (2014-2015).
- ◇ Co-Organizer, Johns Hopkins Theory Seminar (Fall 2014 - present).

**Other:**

- ◇ External mentor, Assistant Professor Edinah Gngang (Department of Applied Mathematics and Statistics, JHU)

**Graduate Board Oral Exam Committee Member:**

1. Ama Koranteng (Ph.D. candidate in Computer Science, JHU, 2023)
2. Sepehr Abdous (Ph.D. candidate in Computer Science, JHU, 2023)
3. Veome Kapil (Ph.D. candidate in Physics and Astronomy, JHU, 2023)
4. Phillip Kerger (Ph.D. candidate in Applied Mathematics and Statistics, JHU, 2023)
5. Aditya Krishnan (Ph.D. candidate in Computer Science, JHU, 2022)
6. Desh Raj (Ph.D. candidate in Computer Science, JHU, 2022)

7. Enayat Ullah (Ph.D. candidate in Computer Science, JHU, 2021)
8. Jingfeng Wu (Ph.D. candidate in Computer Science, JHU, 2021)
9. Gabrielle Beck (Ph.D. candidate in Computer Science, JHU, 2021)
10. Zhihao Bai (Ph.D. candidate in Computer Science, JHU, 2021)
11. Yu Zheng (Ph.D. candidate in Computer Science, JHU, 2021)
12. Hang Zhu (Ph.D. candidate in Computer Science, JHU, 2021)
13. Xuan Wu (Ph.D. candidate in Computer Science, JHU, 2021)
14. Lingyao Meng (PH.D. candidate in Applied Mathematics and Statistics, JHU, 2020)
15. Ayush Asthana (Ph.D. candidate in Chemistry, JHU, 2019)
16. Tu Nguyen (Ph.D. candidate in Applied Mathematics and Statistics, JHU, 2019)
17. Yufan He (Ph.D. candidate in Electrical and Computer Engineering, JHU, 2019)
18. Yasamin Nazari (Ph.D. candidate in Computer Science, JHU, 2019)
19. Yuliang Li (Ph.D. candidate in Applied Mathematics and Statistics, JHU, 2019)
20. Tianyu Ding (Ph.D. candidate in Applied Mathematics and Statistics, JHU, 2019)
21. Chun-Chieh (Jonathan) Chang (Ph.D. candidate in Electrical and Computer Engineering, JHU, 2019)
22. Teodor Marinov (Ph.D. candidate in Computer Science, JHU, 2019)
23. Dominic Scalise (Ph.D. candidate in Chemical and Biomolecular Engineering, JHU, 2018)
24. Amy Babay (Ph.D. candidate in Computer Science, JHU, 2017)
25. Gaoran Yu (Ph.D. candidate in Applied Mathematics and Statistics, JHU, 2017)
26. Tim Vieira (Ph.D. candidate in Computer Science, JHU, 2017)
27. Zeyu Zhang (Ph.D. candidate in Computer Science, JHU, 2017)
28. Alexander Rozenshteyn (Ph.D. candidate in Computer Science, JHU, 2016)
29. Joseph Paat (Ph.D. candidate in Applied Mathematics and Statistics, JHU, 2015)
30. Lin (Forrest) Yang (Ph.D. candidate in Computer Science, JHU, 2015)
31. Daniel Obenshain (Ph.D. candidate in Computer Science, JHU, 2014)

INVITED  
TALKS

- ◇ October 19, 2023: “Improved Differentially Private Densest Subgraph: Local and Purely Additive”. Dagstuhl Seminar on Graph Algorithms: Flows, Cuts, and Network Design. Wadern, Germany.
- ◇ October 6, 2023: “Controlling Tail Risk in Online Ski-Rental”. Capital Area Theory Seminar, University of Maryland. College Park, MD
- ◇ September 22, 2023: “Fault Tolerant Spanners and Emulators”. University of Delaware Discrete Math / Algebra Seminar. Newark, DE.
- ◇ March 3, 2022: “Faster Matchings via Learned Duals”. Johns Hopkins Applied Mathematics and Statistics Seminar. Baltimore, MD.
- ◇ February 25, 2022: “Faster Matchings via Learned Duals”. University of Michigan Theory Seminar. Ann Arbor, MI.
- ◇ July 30, 2021: “Datacenter Topologies: Expanders and Beyond”. Workshop on Distributed Algorithms for Realistic Graph Classes (DARE ’21). Salerno, Italy.
- ◇ April 26, 2021: “Theory of Network Design Problems”. Introduction to Computing Research (ICR ’21). Johns Hopkins University. Baltimore, MD.
- ◇ April 2, 2021: “Fault-Tolerant Graph Spanners”. Northwestern University Theory Seminar. Northwestern University. Evanston, IL.

- ◇ October 12, 2020. “New Graph Spanners and the Greedy Algorithm”. 9th Workshop on Advances in Distributed Graph Algorithms. Freiburg, Germany.
- ◇ September 25, 2020: “Expanders as Datacenter Topologies”. WPI Computer Science Colloquium. Worcester Polytechnic Institute. Worcester, MA.
- ◇ June 19, 2019. “Routing via Network Design: Overlay Routing with Dissemination Graphs”. Workshop on Foundations of Routing. Cornell University. Ithaca, NY.
- ◇ November 16, 2018: “Characterizing Demand Graphs for (Fixed-Parameter) Shallow-Light Steiner Network”. Capital Area Theory Day. Georgetown University. Washington, DC.
- ◇ July 31, 2018: “Expanders as Datacenter Topologies”. TTIC Summer Workshop: Data Center Scheduling From Theory To Practice. TTIC, Chicago, Illinois.
- ◇ July 9, 2018: “Characterizing Demand Graphs for (Fixed-Parameter) Shallow-Light Steiner Network”. Parameterized Approximation Algorithms Workshop. Charles University, Prague, Czech Republic.
- ◇ May 22, 2018: “Optimal Vertex Fault Tolerant Spanners (For Fixed Stretch)”. 9th Workshop on Flexible Network Design. University of Maryland, College Park, MD.
- ◇ March 6, 2018: “Fast and Reliable Internet Transport using Dissemination Graphs (The Shallow-Light Steiner Network Problem)”. Dagstuhl Seminar on Scheduling. Wadern, Germany.
- ◇ November 15, 2017: “Approximating Spanners and Distance Oracles”. Banff International Research Station Workshop on Approximation Algorithms and the Hardness of Approximation. Banff, Canada.
- ◇ June 5, 2017: “Explicit Expanding Expanders as Datacenter Topologies”. DIMACS Workshop on Algorithms for Data Center Networks. Piscataway, NJ.
- ◇ March 30, 2017: “Wide-area Dissemination under Strict Timeliness, Reliability, and Cost Constraints”. NSF Algorithms in the Field PI Meeting. Arlington, VA.
- ◇ July 6, 2016: “Approximating Low-Stretch Spanners and Distance Oracles”. 8th Workshop on Flexible Network Design. Amsterdam, The Netherlands.
- ◇ June 18, 2016: “Approximating Spanners”. Joint STOC-SoCG Workshop on Spanners: Graphs and Geometry. Cambridge, MA.
- ◇ January 8, 2016: “Towards Resistance Sparsifiers.” Sublinear Algorithms Workshop. Johns Hopkins University, Baltimore, MD.
- ◇ July 13, 2015: “Packing Interdiction and Partial Covering Problems.” 22nd International Symposium on Mathematical Programming (ISMP 2015). Pittsburgh, PA.
- ◇ June 24, 2015: “Approximating Graph Spanners.” Theory Seminar. Hebrew University. Jerusalem, Israel.
- ◇ June 22, 2015: “Smoothed Analysis of Dynamic Networks.” Foundations of Computer Science Seminar. Weizmann Institute of Science. Rehovot, Israel.
- ◇ June 16, 2015: “Smoothed Analysis of Dynamic Networks.” 2nd Networking Summer Workshop. Hebrew University. Jerusalem, Israel.
- ◇ October 10, 2014: “Explicit Expanding Expanders.” Maryland Theory Day. University of Maryland. College Park, MD.
- ◇ July 31, 2014: “Approximating Graph Spanners.” Seventh Workshop on Flexible Network Design. Lugano, Switzerland.
- ◇ May 18, 2014: “Label Cover Instances with Large Girth and the Hardness of Approximating Spanners”. Capital Area Theory Seminar, University of Maryland. College Park, MD.
- ◇ March 8, 2014: “Matroid Secretary for Regular and Decomposable Matroids”. University of Pennsylvania Theory Seminar. Philadelphia, PA.

- ◇ January 29, 2014: “Braess’s Paradox in Wireless Networks: The Danger of Improved Technology”. Dagstuhl Seminar 14051: Algorithms for Wireless Communication. Wadern, Germany.
- ◇ November 18, 2013: “Matroid Secretary for Regular and Decomposable Matroids”. Tel Aviv University Algorithms Seminar. Tel Aviv, Israel.
- ◇ June 5, 2013: “Matroid Secretary for Regular and Decomposable Matroids”. Technion CS Theory Seminar. Haifa, Israel.
- ◇ May 8, 2013: “Matroid Secretary for Regular and Decomposable Matroids”. Hebrew University CS Theory Seminar. Jerusalem, Israel.
- ◇ March 14, 2013: “Approximating Spanners via Convex Relaxations”. Oregon State University. Corvallis, OR.
- ◇ March 11, 2013: “Approximating Spanners via Convex Relaxations”. Lehman College. Bronx, NY.
- ◇ March 8, 2013: “Approximating Spanners via Convex Relaxations”. University of California Merced. Merced, CA.
- ◇ March 5, 2013: “Approximating Spanners via Convex Relaxations”. Johns Hopkins University. Baltimore, MD.
- ◇ February 28, 2013: “Approximating Spanners via Convex Relaxations”. University of Massachusetts Amherst. Amherst, MA.
- ◇ February 25, 2013: “Approximating Spanners via Convex Relaxations”. University of Waterloo. Waterloo, Ontario, Canada.
- ◇ February 2, 2013: “Approximating Spanners via Convex Relaxations”. Colorado School of Mines. Golden, CO.
- ◇ February 19, 2013: “Approximating Spanners via Convex Relaxations”. Ohio State University. Columbus, OH.
- ◇ February 8, 2013: “Approximating Spanners via Convex Relaxations”. Florida State University. Tallahassee, FL.
- ◇ November 14, 2012: “Label Cover Instances with Large Girth and the Hardness of Approximating Basic  $k$ -Spanner”. Ben Gurion University Theory Seminar. Beersheva, Israel.
- ◇ June 29, 2012: “Everywhere-Sparse Spanners via Dense Subgraphs”. Carnegie Mellon University Theory Seminar. Pittsburgh, PA.
- ◇ May 24, 2012: “Everywhere-Sparse Spanners via Dense Subgraphs”. Bar Ilan University Computer Science Seminar. Ramat Gan, Israel.
- ◇ April 4, 2012: “Approximation Algorithms for Graph Spanners”. University of Haifa Computer Science Colloquium. Haifa, Israel.
- ◇ March 26, 2012: “Network Design Problems via Convex Relaxations”. Google Research. New York, NY.
- ◇ March 21, 2012: “Network Design Problems via Convex Relaxations”. University of Connecticut. Storrs, CT.
- ◇ January 13, 2012: “Network Design Problems via Convex Relaxations”. Alcatel-Lucent Bell Labs. Murray Hill, NJ.
- ◇ September 13, 2011: “Fault-Tolerant Spanners: Better and Simpler”. Warwick-Weizmann Workshop. Coventry, England.
- ◇ June 1, 2011: “Directed Spanners via Flow-Based Linear Programs.” Technion Theory Seminar. Haifa, Israel.
- ◇ April 6, 2011: “Directed Spanners via Flow-Based Linear Programs.” Hebrew University CS Theory Seminar. Jerusalem, Israel.

- ◇ April 5, 2011: “Directed and Fault-Tolerant Spanners.” Ben Gurion University Computer Science Colloquium. Beersheva, Israel.
- ◇ March 14, 2011: “Directed Spanners via Flow-Based Linear Programs.” Tel Aviv University Algorithms Seminar. Tel Aviv, Israel.
- ◇ December 8, 2010: “Directed Spanners via Flow-Based Linear Programs.” Weizmann-Warwick Meeting 2010. Weizmann Institute of Science. Rehovot, Israel.
- ◇ February 2, 2010: “Approximating Wireless Network Capacity”. Los Alamos National Lab. Los Alamos, New Mexico.
- ◇ January 20, 2010: “Approximating Wireless Capacity in the Physical Model”. University of Vermont. Burlington, Vermont.
- ◇ January 13, 2010: “Wireless Network Capacity in the Physical Model”. West Virginia University. Morgantown, West Virginia.
- ◇ August 24, 2009: “Wireless Network Capacity in the Physical Model”. International Symposium on Mathematical Programming (ISMP) 2009. Chicago, Illinois.
- ◇ March 27, 2009: “Approximating Wireless Capacity in the Physical Model”. University of Michigan. Ann Arbor, Michigan
- ◇ June 14, 2008: “Secretary Problems: Weights and Discounts”. Alcatel-Lucent Bell Labs. Murray Hill, NJ.
- ◇ October 6, 2006: “Spanners with Slack”. Workshop on Flexible Network Design. Bertinoro, Italy.
- ◇ September 1, 2004: “Full Rank Tilings of Finite Abelian Groups”. University of Vermont. Burlington, Vermont.

CITIZENSHIP      United States of America

REFERENCES      Available upon request

DATE              February 18, 2024