

# D Ellis Hershkowitz

CMU PH.D. STUDENT IN THEORETICAL COMPUTER SCIENCE

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## Education and Research Experience

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### Carnegie Mellon University

PH.D. IN COMPUTER SCIENCE

*Pittsburgh, PA*

*Fall 2016 - Spring 2022*

- Research in: approximation algorithms; online algorithms; metric embeddings; distributed graph algorithms.
- Advised by Bernhard Haeupler and R. Ravi.
- Thesis: Compact Representations of Graphs and Their Metrics.
- Thesis Committee: Bernhard Haeupler, R. Ravi, Anupam Gupta (CMU); Michel Goemans (MIT); Ola Svensson (EPFL).
- Completing the Future Faculty Program which teaches effective pedagogy via seminars and teaching feedback.

### ETH Zürich

VISITING RESEARCHER

*Zürich, Switzerland*

*Summer, Fall 2021*

- Visiting the Institute of Theoretical Computer Science.

### Brown University

M.S. IN COMPUTER SCIENCE

*Providence, RI*

*Fall 2015 - Spring 2016*

- GPA: 4.0/4.0
- Advised by Professor Michael L. Littman.
- Research in: abstraction in reinforcement learning.

B.A. IN COMPUTER SCIENCE AND PHILOSOPHY

*Fall 2012 - Spring 2015*

- GPA: 4.0/4.0
- Advised by Professor Stefanie Tellex.
- Research in: Humans to Robots Lab in reinforcement learning as applied to robotics.

## Conference and Journal Publications

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### Fast Algorithms for Hop-Constrained Flows and Moving Cuts

BERNHARD HAEUPLER, DEH, THATCHAPHOL SARANURAK (ALPHABETICAL)

*Preprint*

### $O(1)$ Steiner Point Removal in Series-Parallel Graphs

DEH, JASON LI (ALPHABETICAL)

*In Submission*

### Deterministic Tree Embeddings with Copies for Algorithms Against Adaptive Adversaries

BERNHARD HAEUPLER, DEH, GORAN ZUZIC (ALPHABETICAL)

*In Submission*

### Near-Optimal Schedules for Simultaneous Multicasts

BERNHARD HAEUPLER, DEH, DAVID WAJC (ALPHABETICAL)

(International Colloquium on Automata, Languages and Programming 2021)

*ICALP 2021*

### Tree Embeddings for Hop-Constrained Network Design

BERNHARD HAEUPLER, DEH, GORAN ZUZIC (ALPHABETICAL)

(ACM Symposium on Theory of Computing 2021)

*STOC 2021*

### District-Fair Participatory Budgeting

DEH, ANSON KAHNG, DOMINIK PETERS, ARIEL D. PROCACCIA (ALPHABETICAL)

(AAAI Conference on Artificial Intelligence 2021)

*AAAI 2021*

### An Optimal Rounding for Half-Integral Weighted MSCSS

DEH, GREGORY KEHNE, R. RAVI (ALPHABETICAL)

(Information Processing Letters 2020)

*IPL 2020*

- Reverse Greedy is Bad for  $k$ -Center** *IPL 2020*  
 DEH, GREGORY KEHNE (ALPHABETICAL)  
 (Information Processing Letters 2020)
- Computation-Aware Data Aggregation** *ITCS 2020*  
 BERNHARD HAEUPLER, DEH, ANSON KAHNG, ARIEL PROCACCIA (ALPHABETICAL)  
 (Innovations in Theoretical Computer Science 2020)
- Erasure Correction for Noisy Radio Networks** *DISC 2019*  
 KREN CENSOR-HILLEL, DEH, BERNHARD HAEUPLER, GORAN ZUZIC (ALPHABETICAL)  
 (International Symposium on Distributed Computing 2019)
- Prepare for the Expected Worst: Algorithms for Reconfigurable Resources Under Uncert.** *APPROX 2019*  
 DEH, R. RAVI, SAHIL SINGLA (ALPHABETICAL)  
 (International Workshop on Approximation Algorithms for Combinatorial Optimization Problems)
- Finding Options that Minimize Planning Time** *ICML 2019*  
 YUU JINNAI, DAVID ABEL, DEH, MICHAEL LITTMAN, GEORGE KONIDARIS  
 (International Conference on Machine Learning 2019)
- Round- and Message-Optimal Distributed Graph Algorithms** *PODC 2018*  
 BERNHARD HAEUPLER, DEH, DAVID WAJC (ALPHABETICAL)  
 (Symposium on Principles of Distributed Computing 2018)
- Broadcasting in Noisy Radio Networks** *PODC 2017*  
 KREN CENSOR-HILLEL, DEH, BERNHARD HAEUPLER, GORAN ZUZIC (ALPHABETICAL)  
 (Symposium on Principles of Distributed Computing 2017)
- Near Optimal Behavior via Approximate State Abstraction** *ICML 2016*  
 DAVID ABEL (CO-FIRST AUTHOR), DEH (CO-FIRST AUTHOR), MICHAEL LITTMAN  
 (International Conference on Machine Learning 2016)
- Goal-based Action Priors** *ICAPS 2015*  
 DAVID ABEL, DEH, GABRIEL BARTH-MARON, STEPHEN BRAWNER, KEVIN O'FARRELL, JAMES MACGLASHAN, STEFANIE TELLEX  
 (International Conference on Automated Planning and Scheduling 2015)

## Workshop Publications

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- Bad-Policy Density: A Measure of Reinforcement Learning Hardness** *ICML 2021*  
 DAVID ABEL, CAMERON ALLEN, DILIP ARUMUGAM, DEH, MICHAEL L. LITTMAN, LAWSON L.S. WONG  
*(selected for spotlight talk)*  
 (Workshop on Reinforcement Learning Theory)
- Skill Discovery with Well-Defined Objectives** *ICLR 2019*  
 YUU JINNAI, DAVID ABEL, JEE WON PARK, DEH, MICHAEL L. LITTMAN, GEORGE KONIDARIS  
 (Workshop on Structure and Priors in Reinforcement Learning)
- Learning Propositional Functions for Planning and Reinforcement Learning** *AAAI 2015*  
 DEH, JAMES MACGLASHAN, STEFANIE TELLEX  
 (Fall Symposium on Sequential Decision Making)

## Teaching and Mentoring Experience

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Ongoing	<b>Masters Thesis Mentor</b> , Mentoring Yiting Wang's masters thesis: <i>Compact Name-independent Congestion-Competitive Oblivious Routing</i>	<i>ETH Zürich</i>
Spring 2019	<b>Algorithmic Superpower Randomization (15-859)</b> , 3 Hour Lecture on Lovász Local Lemma	<i>Carnegie Mellon</i>
Fall 2017	<b>Graduate Complexity Theory (15-855)</b> , Graduate Teaching Assistant	<i>Carnegie Mellon</i>
Spring 2017	<b>Undergraduate Complexity Theory (15-455)</b> , Graduate Teaching Assistant	<i>Carnegie Mellon</i>
Spring 2016	<b>Introduction for Non-Majors (CS8)</b> , Teaching Assistant	<i>Brown</i>
Fall 2014	<b>Artificial Intelligence (CS141)</b> , Teaching Assistant	<i>Brown</i>
Spring 2014	<b>An Integrated Introduction to Computer Science (CS18)</b> , Teaching Assistant	<i>Brown</i>
Fall 2013	<b>An Integrated Introduction to Computer Science (CS17)</b> , Teaching Assistant	<i>Brown</i>

## Awards

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2019	<b>Best Review</b> , given "Best Review" award for my peer review of submitted papers	<i>DISC 2019</i>
2018-2019	<b>Pradeep Sindhu and Marie-Francoise Bertrand Fellowship</b> , School of Computer Science	<i>Carnegie Mellon</i>
2016	<b>NSF Graduate Research Fellowships Program</b> , honorable mention	<i>NSF</i>
2015	<b>Magna Cum Laude</b> , highest university honors	<i>Brown</i>
2015	<b>Computer Science Honors Degree</b> , department-level honors	<i>Brown</i>
2015	<b>Sigma Xi Honors Society</b> , member	
2014	<b>Great TA Award</b> , elected "Great Teaching Assistant" for my work in artificial intelligence course	<i>Brown</i>

## Professional Service

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Ongoing	<b>Program Committees</b> , AAAI 2021.	
Ongoing	<b>Reviewer</b> , FOCS 2021; DIST 2020; ICALP 2020; ITCS 2020; DIST 2019; DISC 2019; ESA 2019; FOCS 2019; STOC 2019; SODA 2019; DISC 2018; STACS 2018.	
2019-Present	<b>Graduate Application Support Program (GASP) Mentor</b> , provided guidance to individuals from historically underrepresented groups interested in applying to computer science grad school as well as feedback on grad school applications	<i>Carnegie Mellon</i>
2019-Present	<b>Graduate Student Mentor</b> , mentored incoming PhD students on life as a grad student	<i>Carnegie Mellon</i>
2018-Present	<b>Open House Coordinator</b> , helped organize department open house for admitted students including organizing research talks, giving talks on life in Pittsburgh and hosting student panels	<i>Carnegie Mellon</i>
2017-Present	<b>Speakers Club Member</b> , Provide feedback to speaking skills talks (for qualifying exams)	<i>Carnegie Mellon</i>
2017-Present	<b>Introductory Course Coordinator</b> , helped organize department orientation for new students including organizing social events, giving talks on navigating grad school and hosting panels	<i>Carnegie Mellon</i>
2017-2018	<b>Theory Lunch Organizer</b> , organized Carnegie Mellon University Theory Lunch	<i>Carnegie Mellon</i>
2014-2016	<b>Lab Organizer</b> , managed weekly Humans to Robots lab meetings	<i>Brown</i>

## Additional Research and Work Experience

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<b>Google</b>	<i>Mountain View, CA</i>
SOFTWARE ENGINEERING INTERN IN APPS DISCOVERY TEAM	<i>Summer 2015</i>
<b>Chai Energy</b>	<i>Los Angeles, CA</i>
BACKEND DATA ANALYST (PART TIME)	<i>Spring 2014-Fall 2014</i>
<b>National Institutes of Health</b>	<i>Bethesda, MD</i>
SUMMER RESEARCH INTERN IN SECTION ON INTEGRATIVE NEUROIMAGING AND MOLECULAR GENETICS UNIT	<i>Summers 2010, 2012, 2013</i>