

## Education

**University of Massachusetts Amherst** (Manning CICS), *Ph.D. Computer Science* 2022 –  
*Supported by DOE Computational Science Graduate Fellowship, 2023 –*  
*Advised by: Mohammad Hajiesmaili and Prashant Shenoy*

**University of Massachusetts Amherst** 2019 – 2022  
*B.S. Computer Science & B.A. Political Science, summa cum laude*  
Phi Beta Kappa, 21st Century Leader. GPA: 3.99 / 4.0  
*Honors Thesis (Advisor: Cameron Musco): Edge Dynamics and Opinion Polarization in Social Networks*

## Research Interests

I work at the intersection of theory and systems, with an emphasis on problems that hold implications for energy, equity, and climate change. From a theoretical perspective, I am interested in algorithms for online optimization, particularly of the learning-augmented or provably fair varieties. On the application side, I am especially interested in novel system designs that accelerate the decarbonization of societal energy systems and computing infrastructure.

## Experience

**Ph.D. Intern** **Golden, Colo.**  
*Power Systems Engineering Center, National Renewable Energy Laboratory (NREL)*  
Summer 2024  
◦ Advised by Dr. Joshua Comden – *areas: Incentive design, Power system control*

**Visiting Researcher** **Pasadena, Calif.**  
*Computing and Mathematical Sciences, California Institute of Technology*  
Summer 2023  
◦ Advised by Prof. Adam Wierman – *areas: Online optimization, Carbon-aware computing*

**Research Assistant** **Amherst, Mass.**  
*Manning College of Information and Computer Sciences*  
Jun. 2022 – May 2023  
◦ Designed algorithms for online problems such as knapsack and online search, and worked on residential heating decarbonization in a small city  
◦ *areas: Online optimization, Algorithmic fairness, Energy analytics*

**Course Assistant** **Amherst, Mass.**  
*Intro to Machine Learning (CS 389) – College of Information and Computer Sciences*  
Spring 2022

## Publications and Academic Papers

† – indicates undergraduate I advised      ( $\alpha-\beta$ ) – indicates alphabetical author order

Julia Köhlke, Adam Lechowicz, Oluwole Fabikun<sup>†</sup>, Noman Bashir, Abel Souza, Prashant Shenoy, and Sebastian Lehnhoff  
**Examining the adoption of electromobility concepts across social contexts for energy transition**  
*ACM International Conference on Systems for Energy-Efficient Buildings, Cities, and Transportation (BuildSys), 2024.*

Adam Lechowicz and Joshua Comden  
**Distribution Grid Incentive Design with Unknown Agent Behavior**  
*Seventh Workshop on Autonomous Energy Systems, 2024.*

Adam Lechowicz, Nicolas Christianson, Bo Sun, Noman Bashir, Mohammad Hajiesmaili, Adam Wierman, and Prashant Shenoy  
**Chasing Convex Functions with Long-term Constraints**  
*International Conference on Machine Learning (ICML), 2024.*

Roozbeh Bostandoost, Walid A. Hanafy, Adam Lechowicz, Noman Bashir, Prashant Shenoy, and Mohammad Hajiesmaili  
**Data-driven Algorithm Selection for Carbon-Aware Scheduling**  
*HotCarbon Workshop on Sustainable Computer Systems, 2024.*

Adam Lechowicz, Nicolas Christianson, Bo Sun, Noman Bashir, Mohammad Hajiesmaili, Adam Wierman, and Prashant Shenoy  
**Online Conversion with Switching Costs: Robust and Learning-augmented Algorithms**  
*ACM SIGMETRICS / IFIP Performance, 2024.*

Roozbeh Bostandoost, Adam Lechowicz, Walid A. Hanafy, Noman Bashir, Prashant Shenoy, and Mohammad Hajiesmaili  
**LACS: Learning-Augmented Carbon-Aware Resource Scaling for Uncertain Demand**  
*ACM International Conference on Future Energy Systems (e-Energy), 2024.*

Adam Lechowicz, Rik Sengupta, Bo Sun, Shahin Kamali, and Mohammad Hajiesmaili

**Time Fairness in Online Knapsack Problems**

*International Conference on Learning Representations (ICLR), 2024.*

Adam Lechowicz, Nicolas Christianson, Bo Sun, Noman Bashir, Mohammad Hajiesmaili, Adam Wierman, and Prashant Shenoy

**Learning-Augmented Competitive Algorithms for Spatiotemporal Online Allocation with Deadline Constraints**

*In submission, 2024.*

Mohammadreza Daneshvaramoli, Helia Karisani, Adam Lechowicz, Bo Sun, Cameron Musco, and Mohammad Hajiesmaili

**Near-Optimal Consistency-Robustness Trade-Offs for Learning-Augmented Online Knapsack Problems**

*In submission, 2024.*

Cooper Sigrist, Adam Lechowicz, Jovan Champ, Noman Bashir, and Mohammad Hajiesmaili

**Lost in Siting: The Hidden Carbon Cost of Inequitable Residential Solar Installations**

*In submission, 2024.*

Adam Lechowicz, Joshua Comden, and Andrey Bernstein

**Optimizing Individualized Incentives from Grid Measurements and Limited Knowledge of Agent Behavior**

*In submission, 2024.*

Anupama Sitaraman, Adam Lechowicz, Noman Bashir, Xutong Liu, Prashant Shenoy, and Mohammad Hajiesmaili

**Dynamic Incentive Allocation for City-scale Deep Decarbonization**

*In submission, 2024.*

Adam Lechowicz, Nicolas Christianson, Jinhang Zuo, Noman Bashir, Mohammad Hajiesmaili, Adam Wierman, and Prashant Shenoy

**The Online Pause and Resume Problem: Optimal Algorithms and An Application to Carbon-Aware Load Shifting**

*Proc. of the ACM on Measurement and Analysis of Computing Systems, Dec. 2023. Also in SIGMETRICS / Performance '24.*

Adam Lechowicz, Noman Bashir, John Wamburu, Mohammad Hajiesmaili, and Prashant Shenoy

**Equitable Network-Aware Decarbonization of Residential Heating at City Scale**

*ACM International Conference on Future Energy Systems (e-Energy), 2023.*

Nikita Bhalla, Adam Lechowicz, and Cameron Musco ( $\alpha-\beta$ )

**Local Edge Dynamics and Opinion Polarization**

*ACM International Conference on Web Search and Data Mining (WSDM), 2023.*

Bhawana Chhaglani, Camellia Zakaria, Adam Lechowicz, Jeremy Gummeson, and Prashant Shenoy

**FlowSense: Monitoring Airflow in Building Ventilation Systems Using Audio Sensing**

*Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT), March 2022.*

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## Honors and Awards

<b>National Science Foundation:</b> Student Travel Grant (for ACM SIGMETRICS 2024)	Spring 2024
<b>U. of Michigan, Georgia Tech, UC San Diego:</b> 2023 NextProf Pathfinder Workshop (invited)	Fall 2023
<b>Manning CICS:</b> Dr. C. Mohan Graduate Scholarship	Fall 2023
<b>U.S. Department of Energy:</b> Computational Science Graduate Fellowship	2023-2027
<b>ACM SIGIR:</b> Student Travel Grant (for ACM WSDM 2023)	Spring 2023
<b>National Science Foundation:</b> Student Travel Award (for ACM WSDM 2023)	Spring 2023
<b>Energy Transition Institute:</b> NSF ELEVATE Fellowship	2022-2024
<b>UMass Amherst:</b> Class of 2022 – 21st Century Leader Award (highest undergraduate honor)	Spring 2022
<b>Manning CICS:</b> Outstanding Undergraduate Achievement Award	Spring 2022
<b>UMass Amherst:</b> 2021-2022 UMass Amherst Rising Researcher	Spring 2022
<b>Manning CICS:</b> Senior Leadership Award	Spring 2022
<b>Manning CICS:</b> Outstanding Undergraduate Course Assistant Award	Spring 2022
<b>UMass Amherst:</b> Inducted into Phi Beta Kappa & Phi Kappa Phi Honor Societies	Spring 2021
<b>UMass Amherst:</b> David C. Knapp Scholarship	Spring 2020
<b>Massachusetts Department of Higher Education:</b> John and Abigail Adams Scholarship	Fall 2018

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## Presentations

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<b>Online Optimization with Switching Costs and Long-term Constraints</b>	Aug. 2024
* SODALab Group Meeting @ University of Alberta ( <a href="#">Slides</a> )	

<b>Equitable Network-Aware Decarbonization of Residential Heating at City Scale</b> ★ PIT × UMass: Developing Tech for the Public Interest ( <i>poster in library exhibit</i> )	Apr – May, 2024
<b>Theoretical Foundations for Carbon-aware Load Shifting</b> ELEVATE Retreat, Energy Transition Institute @ UMass	Feb. 2024
<b>Fresh Challenges for Online Problems: new directions motivated by practice</b> ★ RSRG / FALCON Lunch Seminar @ Caltech ( <a href="#">Slides</a> )	Jun. 2023
<b>On the Necessary “Unfairness” of Competitive Online Algorithms</b> UMass CS Theory Seminar ( <a href="#">Slides</a> )	Nov. 2022
<b>Edge Dynamics and Opinion Polarization in Social Networks</b> Honors Thesis Defense ( <a href="#">Slides</a> )	Apr. 2022
<b>Machine Learning for Absolute Beginners – Mathematical Foundations of ML</b> Workshop @ HackUMass IX ( <a href="#">Slides</a> )	Nov. 2021

## Research Advising and Mentorship

<b>Rohan Shenoy</b> (UG, UC Berkeley) – Undergraduate Research	2024 –
<b>Anisha Prathi</b> (UG, UMass) – Undergraduate Honors Thesis	2023 –
<b>Kaosisochukwu Nwosu</b> (UG, UMass) – Undergraduate Research Assistant	2023 –
<b>Lily Davoren</b> (UG, Bryn Mawr) – Computing for an Equitable Energy Transition REU	Summer 2023
<b>Coo Katsuno, Saif Masoud, Riley Kim Connell</b> (UG, UMass) – URV Program @ MCICS	Summer 2023
<b>Oluwole Fabikun</b> (UG, UMass) – LSAMP Scholar – ( <i>featured in graduating “Senior Series”</i> )	2023 – 2024

## Other Professional Experience

<b>Student Trustee</b> – Board of Trustees, University of Massachusetts ○ Served as student representative of the Amherst campus on system-wide Board of Trustees.	<b>Boston, Mass.</b> Jul. 2022 – Jul. 2023
<b>Peer Advisor</b> – Manning College of Information and Computer Sciences ○ Advised students on course selection and offered guidance for struggling students.	<b>Amherst, Mass.</b> Jan. 2021 – Jan. 2022
<b>Web Developer</b> – Public Higher Education Network of Massachusetts (PHENOM) ○ Created new web UI & recruitment tools for a nonprofit in the higher education sector.	<b>Worcester, Mass.</b> Dec. 2020 – Nov. 2021
<b>Summer Engineering Intern</b> – Bin1 ATE ○ Intern at firm building automated test equipment for semiconductor manufacturing	<b>Ashland, Mass.</b> May. 2019 – Aug. 2019

## Side Projects

<b>Venti</b> – macOS application, JavaScript & shell A carbon-aware battery management tool for Apple silicon MacBooks. Used to prolong battery health and defer charging to periods of time when grid electricity is sufficiently clean.	Winter 2023
<b>Backtrack</b> – iOS application, Swift & SwiftUI A privacy-centric, open-source location logging solution that provides a history of location data for a personal device with minimal battery impact, leveraging deep API integration.	Summer 2021
<b>Béton3 Macro Pad</b> – Hardware and firmware design, C, CAD, Arduino Created an Arduino-based open-source input device design hosted on GitHub. Custom firmware, hardware, CAD chassis, and concrete cast volume knob.	Summer 2020

## Service

– <b>Program Committees</b> – <a href="#">Workshop on Learning-augmented Algorithms: Theory and Applications, SIGMETRICS '23</a>	Jun. 2023
– <b>Conference and Workshop Reviewing</b> – International Conference on Learning Representations (ICLR) ACM SIGMETRICS ( <i>subreviewer</i> )	2025 2024, 2025
– <b>Seminars</b> – Grad Student Organizer – CS Systems & Sustainability Lunches, UMass Amherst Grad Student Organizer – CS Theory Seminar, UMass Amherst	Fall 2024 – ongoing Spring 2024 – ongoing

<i>Grad Student Organizer – Algorithms with Predictions Seminar, UMass Amherst</i>	Fall 2022
<b>– Department &amp; University Service –</b>	
<i>New Building Committee – Manning CICS</i>	Jun. 2022 – ongoing
<i>Headmaster (Organizer) – OlympCICS – Manning CICS</i>	Jan. 2024
○ Organized the 2nd iteration of an annual competition and celebration for CS PhD students.	
<i>Grad Student Social Committee – Manning CICS</i>	Sep. 2023 – Aug. 2024
<i>New PhD Student Committee – Manning CICS</i>	Sep. 2023 – Aug. 2024
<i>Committee Against Racism and for Equity – Structural Barriers to Academic Success</i>	Sep. 2021 – Aug. 2022
<i>Flexible Learning Task Force &amp; Implementation Committee – UMass Amherst</i>	Jan. 2021 – May 2022
<b>– Outreach &amp; Volunteering –</b>	
<i>Workshop Co-lead and Presenter – Holyoke Energy Justice Leaders Workshop #3</i>	May 2024
<i>Judge – HackUMass XI (hackathon)</i>	Nov. 2023
<i>Mentor – Undergraduate Research Volunteers (URV) Program</i>	Summer 2023
<i>Mentor &amp; Instructor – UMass Turing Summer Program</i>	Summer 2022 & 2023
<i>Founder &amp; Editor-in-Chief – UMass Index Yearbook</i>	Aug. 2020 – Jul. 2022
○ Led a successful effort to revive the university's yearbook – took project from conceptual stage to raising funds from scratch through preorders and delivering several hundred books.	
<i>Organizing Co-director – UMass CEPA Food Justice Campaign</i>	Sep. 2019 – May 2021
○ Leadership role in a campaign focused on advocacy around food insecurity and sustainability	
<i>Senator, Secretary of Technology – UMass Student Government Association</i>	Sep. 2019 – May 2022