

## 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 designing algorithms for online optimization, particularly of the learning-augmented or provably fair types. On the application side, I am especially interested in novel system designs which promote the decarbonization of energy systems and computing infrastructure.

## Experience

**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*

**Undergraduate Honors Thesis Research** **Amherst, Mass.**  
Mar. 2021 – Aug. 2022  
◦ Explored mechanics behind opinion polarization in social networks, using simulation and spectral graph theory. Using local edge dynamics and an opinion dynamics model, answered questions about the topologies which correspond with the emergence of polarization.

**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

Adam Lechowicz, Nicolas Christianson, Bo Sun, Noman Bashir, Mohammad Hajiesmaili, Adam Wierman, and Prashant Shenoy  
**Chasing Convex Functions with Long-term Constraints**  
*In submission, 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**  
*In submission, 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, 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.*

Julia Köhlke, Adam Lechowicz, Oluwole Fabikun†, Noman Bashir, Abel Souza, Prashant Shenoy, and Sebastian Lehnhoff  
**Riding towards sustainability: Examining the adoption of electromobility concepts across social contexts for energy transition**  
*In submission, 2024.*

Mohammadreza Daneshvaramoli, Helia Karisani, Adam Lechowicz, Bo Sun, Cameron Musco, and Mohammad Hajiesmaili  
**Online Fractional Knapsack with Predictions**  
*In submission, 2024.*

Lily Davoren<sup>†</sup>, Adam Lechowicz, Noman Bashir, Mohammad Hajiesmaili, and Prashant Shenoy  
**Shining a Light on Solar Equity: Photovoltaic Potential Across Socio-economic Diversity**  
*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**  
*ACM SIGMETRICS, 2024. Also in Proceedings of the ACM on Measurement and Analysis of Computing Systems, Dec. 2023.*

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 Chhagiani, Camellia Zakaria, Adam Lechowicz, Jeremy Gummesson, 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.*

## Honors and Awards

<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	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

## Presentations

<b>Fresh Challenges for Online Problems: new directions motivated by practice</b> <i>RSRG / FALCON Lunch Seminar @ Caltech (Slides)</i>	Jun. 2023
<b>On the Necessary “Unfairness” of Competitive Online Algorithms</b> <i>UMass CS Theory Seminar (Slides)</i>	Nov. 2022
<b>Edge Dynamics and Opinion Polarization in Social Networks</b> <i>Honors Thesis Defense (Slides)</i>	Apr. 2022
<b>Machine Learning for Absolute Beginners – Mathematical Foundations of ML</b> <i>Workshop @ HackUMass IX (Slides)</i>	Nov. 2021

## Research Advising and Mentorship

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

---

## Other Professional Experience

### **Student Trustee** – *Board of Trustees, University of Massachusetts*

- Served as student representative of the Amherst campus on system-wide Board of Trustees.

**Boston, Mass.**  
Jul. 2022 – Jul. 2023

### **Peer Advisor** – *Manning College of Information and Computer Sciences*

- Advised students on course selection and offered guidance for struggling students.

**Amherst, Mass.**  
Jan. 2021 – Jan. 2022

### **Web Developer** – *Public Higher Education Network of Massachusetts (PHENOM)*

- Created new web UI & recruitment tools for a nonprofit in the higher education sector.

**Worcester, Mass.**  
Dec. 2020 – Nov. 2021

### **Summer Engineering Intern** – *Bin1 ATE*

- Intern at firm building automated test equipment for semiconductor manufacturing

**Ashland, Mass.**  
May. 2019 – Aug. 2019

---

## Side Projects

### **Venti** – *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

### **Backtrack** – *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

### **Béton3 Macro Pad** – *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

### – **Program Committees** –

*Workshop on Learning-augmented Algorithms: Theory and Applications, SIGMETRICS '23*

Jun. 2023

### – **Department & University Service** –

*Grad Student Social Committee – Manning CICS*

Sep. 2023 – ongoing

*New PhD Student Committee – Manning CICS*

Sep. 2023 – ongoing

*New Building Committee – Manning CICS*

Jun. 2022 – ongoing

*Committee Against Racism and for Equity – Structural Barriers to Academic Success*

Sep. 2021 – ongoing

*Flexible Learning Task Force & Implementation Committee – UMass Amherst*

Jan. 2021 – May 2022

### – **Outreach & Volunteering** –

*Judge – HackUMass XI (hackathon)*

Nov. 2023

*Mentor – Undergraduate Research Volunteers (URV) Program*

Summer 2023

*Mentor & Instructor – UMass Turing Summer Program*

Summer 2022 & 2023

*Founder & Editor-in-Chief – UMass Index Yearbook*

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.

*Organizing Co-director – UMass CEPA Food Justice Campaign*

Sep. 2019 – May 2021

- Leadership role in a campaign focused on advocacy around food insecurity and sustainability

*Senator, Secretary of Technology – UMass Student Government Association*

Sep. 2019 – May 2022

---

## Skills

Python; C/C++; Swift; Java; Kotlin; JavaScript; MATLAB; SQL; HTML/CSS

NumPy; SciPy; NetworkX; pandas; scikit-learn; PyTorch; Anaconda; Xcode; Arduino; SolidWorks