Adam Lechowicz

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⌂ adamlechowicz.github.io

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 between theory and systems, encompassing the design of learning-augmented or provably fair algorithms for decision-making under uncertainty, and system designs that increase the flexibility, efficiency, and sustainability of energy systems or 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*

Publications

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

Cooper Sigrist, Archimedes Li, Pichsinee Lertsaroj, Ryan Boldi, Adam Lechowicz, Noman Bashir, and Mohammad Hajiesmaili
Learning to Site: A Multi-objective Optimization of Rooftop Solar Installations using Evolutionary Neural Networks
ACM International Conference on Systems for Energy-Efficient Buildings, Cities, and Transportation (BuildSys), 2025.

Adam Lechowicz, Rohan Shenoy[†], Noman Bashir, Mohammad Hajiesmaili, Adam Wierman, and Christina Delimitrou
Carbon- and Precedence-Aware Scheduling for Data Processing Clusters *(SIGCOMM short)*
ACM SIGCOMM, 2025.

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
International Conference on Machine Learning (ICML), 2025.

Anupama Sitaraman, Adam Lechowicz, Noman Bashir, Xutong Liu, Prashant Shenoy, and Mohammad Hajiesmaili
Dynamic Incentive Allocation for City-scale Deep Decarbonization
ACM Journal on Computing and Sustainable Societies, June 2025.

Adam Lechowicz, Joshua Comden, and Andrey Bernstein
Optimizing Individualized Incentives from Grid Measurements under Limited Knowledge of Agent Behavior
ACM International Conference on Future Energy Systems (e-Energy), 2025.

Cooper Sigrist, Adam Lechowicz, Jovan Champ, Noman Bashir, and Mohammad Hajiesmaili
Lost in Siting: The Hidden Carbon Cost of Inequitable Residential Solar Installations
ACM International Conference on Future Energy Systems (e-Energy), 2025.

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
Proc. of the ACM on Measurement and Analysis of Computing Systems 9(1), Mar. 2025. Also in SIGMETRICS '25.

Adam Lechowicz, Rohan Shenoy[†], Noman Bashir, Mohammad Hajiesmaili, Adam Wierman, and Christina Delimitrou
♠ **SPADE: Signal-Aware DAG Scheduling and Dynamic Provisioning for Data Processing Clusters**
In submission, 2026.

Ezra Johnson[†], Adam Lechowicz, and Mohammad Hajiesmaili
Signal-Aware Workload Shifting Algorithms with Uncertainty-Quantified Predictors
In submission, 2026.

Roozbeh Bostandoost, Adam Lechowicz, Walid A. Hanafy, Prashant Shenoy, and Mohammad Hajiesmaili
Quantifying the Carbon Reduction of DAG Workloads: A Job Shop Scheduling Perspective
In submission, 2026.

Cooper Sigrist, Anupama Sitaraman, Alice Zhang, Adam Lechowicz, Yuvraj Agarwal, and Mohammad Hajiesmaili
The Price to Site: A Cost-effective Incentivization Strategy for Multi-objective Optimized Rooftop Solar Installations
In submission, 2026.

Fabian Francis Mkocheko, Walid A. Hanafy, Adam Lechowicz, David Irwin, and Prashant Shenoy
City-Scale Decarbonization of Residential Heating Under Transformer Constraints
In submission, 2026.

Roozbeh Bostandoost, Walid A. Hanafy, Adam Lechowicz, Noman Bashir, Prashant Shenoy, and Mohammad Hajiesmaili
Data-driven Algorithm Selection for Carbon-Aware Scheduling
ACM SIGEnergy Energy Informatics Review 4(5), Dec. 2024. Also in HotCarbon '24.

Julia Köhlke, Adam Lechowicz, Oluwole Fabikun[†], 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.

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, 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 7(3), 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.

Honors and Awards

Manning CICS: Ph.D. Portfolio with Distinction	Fall 2024
U. of Michigan, Georgia Tech, UC San Diego: 2023 NextProf Pathfinder Workshop (invited)	Fall 2023
Manning CICS: Dr. C. Mohan Graduate Scholarship	Fall 2023
U.S. Department of Energy: Computational Science Graduate Fellowship	2023-2027

Energy Transition Institute: NSF ELEVATE Fellowship	2022-2024
UMass Amherst: Class of 2022 – 21st Century Leader Award (*highest undergraduate honor*)	Spring 2022
Manning CICS: Outstanding Undergraduate Achievement Award	Spring 2022
UMass Amherst: 2021-2022 UMass Amherst Rising Researcher	Spring 2022
Manning CICS: Senior Leadership Award	Spring 2022
Manning CICS: Outstanding Undergraduate Course Assistant Award	Spring 2022
UMass Amherst: Phi Beta Kappa (*junior year inductee*)	Spring 2021
UMass Amherst: David C. Knapp Scholarship in Political Science	Spring 2020
Massachusetts Department of Higher Education: John and Abigail Adams Scholarship	Fall 2018

Presentations

$\star$ – *indicates invited*

Learning-Augmented Algorithms for Spatiotemporal Online Allocation with Deadline Constraints $\star$ *INFORMS Annual Meeting 2025*	Oct. 2025
Learning-Augmented Online Optimization with Switching Costs and Long-term Constraints $\star$ *INFORMS Applied Probability Society Conference 2025* (Slides)	Jul. 2025
Optimizing Individualized Incentives from Grid Measurements under Limited Knowledge of Agent Behavior $\star$ *RSRG / FALCON Group Meeting @ Caltech* (Slides) *ELEVATE Retreat, Energy Transition Institute @ UMass* $\star$ *ACM SIGEnergy Graduate Seminar* (Slides)	May 2025 Jan. 2025 Nov. 2024
Online Optimization with Switching Costs and Long-term Constraints $\star$ *SODALab Group Meeting @ University of Alberta* (Slides)	Aug. 2024
Equitable Network-Aware Decarbonization of Residential Heating at City Scale $\star$ *PIT $\times$ UMass: Developing Tech for the Public Interest* (**poster in library exhibit**)	Apr – May. 2024
Theoretical Foundations for Carbon-aware Load Shifting *ELEVATE Retreat, Energy Transition Institute @ UMass*	Feb. 2024
Fresh Challenges for Online Problems: new directions motivated by practice $\star$ *RSRG / FALCON Lunch Seminar @ Caltech* (Slides)	Jun. 2023
On the Necessary "Unfairness" of Competitive Online Algorithms *UMass CS Theory Seminar* (Slides)	Nov. 2022
Edge Dynamics and Opinion Polarization in Social Networks *Honors Thesis Defense* (Slides)	Apr. 2022
Machine Learning for Absolute Beginners – Mathematical Foundations of ML *Workshop @ HackUMass IX* (Slides)	Nov. 2021

Research Advising and Mentorship

Urvi Gupta, Pihul Nyati, Samuel Nkemnkia, Rakshita Saroha – ERSP @ CICS	2025 – 2026
Ezra Johnson (*UG, Caltech*) – Computing for an Equitable Energy Transition REU	Summer 2025
Tri Than (*UG, UMass*) – Undergraduate Research Assistant	2024 –
Rohan Shenoy (*UG, UC Berkeley*) – Undergraduate Research Assistant	2024 –
Anisha Prathi (*UG, UMass*) – Undergraduate Honors Thesis *Next: Capital One*	2023 – 2024
Kaosisochukwu Nwosu (*UG, UMass*) – (*received Outstanding Achievement Award*) *Next: Schneider Electric*	2023 – 2024
Lily Davoren (*UG, Bryn Mawr*) – Computing for an Equitable Energy Transition REU	Summer 2023
Coo Katsuno, Saif Masoud, Riley Kim Connell – URV Program @ CICS	Summer 2023
Oluwole Fabikun (*UG, UMass*) – LSAMP Scholar – (*featured in graduating "Senior Series"*) *Next: Fidelity Investments*	2023 – 2024

Teaching

Lecturer & Mentor   **Amherst, Mass.**
UMass Turing Summer Program – College of Information and Computer Sciences   Summers 2022, 2023, 2025

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

Other Professional Experience

Student Trustee – *Board of Trustees, University of Massachusetts*   **Boston, Mass.**
○ Served as student representative of the Amherst campus on system-wide Board of Trustees.   Jul. 2022 – Jul. 2023

Peer Advisor – *Manning College of Information and Computer Sciences*   **Amherst, Mass.**
○ Advised students on course selection and offered guidance for struggling students.   Jan. 2021 – Jan. 2022

Web Developer – *Public Higher Education Network of Massachusetts (PHENOM)*   **Worcester, Mass.**
○ Created new web UI & recruitment tools for a nonprofit in the higher education sector.   Dec. 2020 – Nov. 2021

Engineering Intern – *Bin1 ATE*   **Ashland, Mass.**
○ Interned at firm building automated test equipment for semiconductor manufacturing.   May. 2019 – Aug. 2019

Service

– Workshop Organization –

Co-Chair – Workshop on Learning-augmented Algorithms: Theory and Applications (LATA)   SIGMETRICS '25

Workshop on Measurements, Modeling, & Metrics for Carbon-Aware Computing (CarbonMetrics)   SIGMETRICS '25

– Journal Reviewing –

IEEE Transactions on Network Science and Engineering   2025

– Conference and Workshop Reviewing –

Conference on Neural Information Processing Systems (NeurIPS)   2025

International Conference on Learning Representations (ICLR)   2025

ACM SIGMETRICS (subreviewer)   2024, 2025

– Seminars –

Grad Student Organizer – CS Systems & Sustainability Lunches, UMass Amherst   Fall 2024 – ongoing

Grad Student Organizer – CS Theory Seminar, UMass Amherst   Spring 2024 – ongoing

Grad Student Organizer – Algorithms with Predictions Seminar, UMass Amherst   Fall 2022

– Department & University Service –

New Building Committee – Manning CICS   Jun. 2022 – ongoing

Headmaster (Organizer) – OlympCICS – Manning CICS   Jan. 2024
○ Organized the 2nd iteration of an annual competition and celebration for CS PhD students.

Grad Student Social Committee – Manning CICS   Sep. 2023 – Aug. 2024

New PhD Student Committee – Manning CICS   Sep. 2023 – Aug. 2024

Committee Against Racism and for Equity – Structural Barriers to Academic Success   Sep. 2021 – Aug. 2022

Flexible Learning Task Force & Implementation Committee – UMass Amherst   Jan. 2021 – May 2022

– Outreach & Volunteering –

Workshop Co-lead and Presenter – Holyoke Energy Justice Leaders Workshop #3   May 2024

Judge – HackUMass XI (hackathon)   Nov. 2023

Mentor – Undergraduate Research Volunteers (URV) Program   Summer 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

Side Projects

Venti – *macOS application, JavaScript & shell*   Winter 2023, Spring 2025
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.

Backtrack – *iOS application, Swift & SwiftUI*   Summer 2021
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.

Béton3 Macro Pad – *Hardware and firmware design, C, CAD, Arduino*   Summer 2020
Created an Arduino-based open-source input device. Custom firmware, CAD chassis, and concrete cast volume knob.

UMass Campus Architecture – *iOS, watchOS application, SwiftUI*   Summer 2020 & 2025
Created an interactive guide to highlight the architecture of the UMass campus.

Languages

English (U.S.) [native]; Polish [native]; American Sign Language [beginner]