Adam Lechowicz

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Education

University of Massachusetts Amherst — **Amherst, Mass.**
Ph.D. Computer Science,   Manning College of Information and Computer Sciences — 2022 –
ELEVATE Graduate Research Fellow, GPA: 4.0 / 4

University of Massachusetts Amherst — **Amherst, Mass.**
B.S. Computer Science, B.A. Political Science, Summa Cum Laude — 2019 – 2022
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 efforts which promote the decarbonization of energy systems and computing infrastructure.

Experience

Research Assistant — **Amherst, Mass.**
Manning College of Information and Computer Sciences — Jun. 2022 –
- Designing fair algorithms for classic online problems such as knapsack and bin packing
- Optimizing natural gas decarbonization in a small city with low-carbon electricity
- *Area: Online Optimization, Online Fairness, Energy Analytics*

REU Intern — **Amherst, Mass.**
Laboratory for Advanced System Software, College of Information and Computer Sciences — Jun. 2021 – Mar. 2022
- Assisted with research projects that examine the design and deployment of smart sensing systems for HVAC optimization, with an emphasis on health and energy efficiency.
- *FlowSense* is an applied ML sensing system that filters and feeds smartphone microphone signals through supervised learning models to sense the presence and magnitude of airflow.

Undergraduate Honors Thesis Research — **Amherst, Mass.**
Advisor: Cameron Musco – Manning College of Information and Computer Sciences — Mar. 2021 – Aug. 2022
- Explored the mechanics behind opinion polarization in social networks, using simulation and spectral graph theory. With an opinion dynamics model, we focused on how local edge dynamics can drive polarization, and answered several open questions about the topological conditions that correspond with the emergence of polarization.

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

Publications & Academic Papers

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.

Nikita Bhalla, Adam Lechowicz, and Cameron Musco
Local Edge Dynamics and Opinion Polarization ([arXiv](#))

Honors and Awards

Energy Transition Institute: ELEVATE Graduate Research Fellowship — Fall 2022
UMass Amherst: Class of 2022 – 21st Century Leader Award — Spring 2022
Manning CICS: Class of 2022 – Senior Leadership Award — Spring 2022
Manning CICS: 2022 Outstanding Undergraduate Achievement Award — Spring 2022

UMass Amherst: 2021-2022 UMass Amherst Rising Researcher	Spring 2022
Manning CICS: Outstanding UCA Award	Spring 2022
UMass Amherst: Inducted into Phi Beta Kappa & Phi Kappa Phi Honor Societies	Spring 2021
Massachusetts Department of Higher Education: John and Abigail Adams Scholarship	Fall 2018

Presentations

Edge Dynamics and Opinion Polarization in Social Networks	Apr. 2022
Honors Thesis Defense (Slides)	
Machine Learning for Absolute Beginners – Mathematical Foundations of ML	Nov. 2021
Workshop @ HackUMass IX (Slides)	

Other Professional Experience

Student Trustee – *UMass Board of Trustees*	**Boston, Mass.**
○ Serving as student representative of the Amherst campus on system-wide Board of Trustees.	Jul. 2022 –
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
Summer Engineering Intern – *Bin1 ATE*	**Ashland, Mass.**
○ Intern at small firm building automated test equipment for semiconductor manufacturing	May. 2019 – Aug. 2019

Personal Projects

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 design hosted on GitHub. Custom firmware, hardware, CAD chassis, and concrete cast volume knob.	
UMass Campus Architecture & Campus Tour – *iOS, watchOS application, SwiftUI*	Summer 2020
Created an interactive guide to highlight the architecture of the UMass campus. Also explored the feasibility of a tour app for prospective students, in collaboration with University Relations.	

Service, Extracurriculars, and Memberships

Committee Against Racism and for Equity – Structural Barriers to Academic Success	Sep. 2021 – ongoing
Manning College of Information and Computer Sciences	
Flexible Learning Task Force & Implementation Committee – *UMass Amherst*	Jan. 2021 – ongoing
Student Member – *Association for Computing Machinery*	Jan. 2021 – ongoing
UGRAD Research Program – *Manning College of Information and Computer Sciences*	Dec. 2020 – Jan. 2021
○ Joined a small team mentored by PhD student Bhawana Chhaglani to create an adaptive sampling algorithm for optimally mapping a 2D scalar field using a Gaussian Process.	
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.	
Peer Mentor – *Manning College of Information and Computer Sciences*	Sep. 2020 – Dec. 2020
Member – *UMass Racial Justice Coalition*	Jun. 2020 – May 2022
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