KATHERINE MAYO

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RESEARCH INTERESTS

I leverage AI and data to generate actionable insights and inform strategic decision-making.

[Areas:] applications of machine learning, computational economics, multi-agent systems, empirical game theory **[Applications:]** real-time payments, financial risk mitigation, healthcare

EDUCATION

University of Michigan Ann Arbor *Ann Arbor, MI*
PH.D IN COMPUTER SCIENCE & ENGINEERING *Sept 2019 – May 2024*

- *Advisor*: Michael P. Wellman
- *Committee Members*: Peter Adriaens, Atul Prakash, Jeffery Zhang
- *Dissertation*: A Strategic Agent-Based Analysis of Economic and Technological Changes in Financial Networks

University of Michigan Ann Arbor *Ann Arbor, MI*
M.S. IN COMPUTER SCIENCE & ENGINEERING *Sept 2019 – April 2021*

- *Selected Coursework*: Electronic Commerce (now Incentives and Strategic Behavior in Computational Systems); Advanced Data Mining; Advanced Artificial Intelligence

University of Massachusetts Amherst *Amherst, MA*
B.S. COMPUTER SCIENCE, B.A. ECONOMICS, MINOR IN CHINESE *Sept 2015 – Feb 2019*

- *Honors*: cum laude, Honors College multidisciplinary honors with great distinction, Phi Kappa Phi
- *Selected Coursework*: Neural Networks: A Modern Introduction (graduate level)
- *Honors Thesis*: Predicting Unemployment Rates Using Google Trends Data (advised by Brendan O'Connor)

PROFESSIONAL EXPERIENCE

Freelance
RESEARCH CONSULTANT *Aug 2025 – Present*

- Consulting with Michigan Medicine to develop ontology-based data and AI tools to facilitate cancer research and support enhanced clinical care decision-making
- Grant proposal under review, potential to transition to a formal Postdoctoral Researcher position upon funding

University of Michigan, Computer Science & Engineering Department *Ann Arbor, MI*
GRADUATE STUDENT RESEARCH ASSISTANT – STRATEGIC REASONING GROUP *Sept 2019 – May 2024*

- Developed computational methods using agent-based simulation and empirical game-theoretic analysis to analyze strategic risk mitigation decisions and their consequences in financial networks
  - With a focus on real-time payments and fraud risk mitigation

Michigan Medicine, Department of Radiation Oncology *Ann Arbor, MI/Remote*
Research Assistant *Feb 2019 – Aug 2019*

- Conducted exploratory data analysis and implemented predictive models (logistic regression, random forest, SVM, Naive Bayes) using scikit-learn to predict ER visits among cancer patients to inform proactive care strategies

Systems & Technology Research *Woburn, MA*
Intelligence Tools and Analytics Intern *Jun 2018 – Aug 2018*

- Applied binary classification methods and Hidden Markov Models in Python for event detection of La Liga soccer matches from social media data

University of Massachusetts, Department of Economics *Amherst, MA*
Research Assistant *Oct 2016 – Dec 2017*

- Built a dataset for analyzing researcher career trajectories by processing metadata from arXiv CS submissions (2005-2014) and matching them to major conference publications

Michigan Medicine, Department of Radiation Oncology *Ann Arbor, MI*
Research Assistant *May 2016 – Aug 2016*

- Migrated cancer treatment planning data into an SQL database and generated dose-volume histograms to support radiation oncology research by visualizing exposure relative to target sites

TEACHING EXPERIENCE

University of Michigan, Computer Science & Engineering Department *Ann Arbor, MI*
Primary Instructor – EECS 110: Discover Computer Science *Aug 2022 – Dec 2022*

- Delivered weekly 1-hour lectures and labs to 62 undergraduates, refined course content and engaged students in hands-on learning
- Managed course logistics including grading, office hours, scheduling guest speakers, and supervising a teaching assistant

PROFESSIONAL SERVICE & VOLUNTEERING

2024	Prospective PhD Student Visit Day volunteer
2023	Student Application Support Program volunteer
2022	Mentor for EECS 110 Discover CS
2022	CS Kickstart presenter
2019	AI Symposium volunteer

MENTORING & ADVISING

2023 – 2024	Nicholas Grabill *(undergraduate)*
2020 – 2022	Shaily Fozdar *(undergraduate)*

INVITED TALKS

1. "Flagging Payments for Fraud Detection: A Strategic Agent-Based Model".
   Young Scholars Conference on Machine Learning in Economics and Finance at the Philadelphia Federal Reserve, December 2023

CONFERENCE PUBLICATIONS

1. **K. Mayo**, N. Grabill, and M.P. Wellman. **"Fraud Risk Mitigation in Real-Time Payments: A Strategic Agent-Based Analysis"**. In *33rd International Joint Conference on Artificial Intelligence, August 2024*.
2. **K. Mayo** and M.P. Wellman. **"A Strategic Analysis of Portfolio Compression"**. In *2nd ACM International Conference on AI in Finance, November 2021*.
3. **K. Mayo**, S. Fozdar, and M.P. Wellman. **"An Agent-Based Model of Strategic Adoption of Real-Time Payments"**. In *2nd ACM International Conference on AI in Finance, November 2021*.

JOURNAL PUBLICATIONS

1. M.P. Wellman and **K. Mayo**. **"Navigating in a Space of Game Views**. In *Journal for Autonomous Agents and Multi-Agent Systems, July 2024*.
2. M. Mierzwa, C. Mayo, P. Yalamanchi, J. Evans, F. Worden, R. Medlin, M. Schipper, C. Schonewolf, J. Shah, M. Spector, P. Swiecicki, **K. Mayo**, K. Casper. **"Machine Learning Model of Emergency Department Use for Patients Undergoing Treatment for Head and Neck Cancer Using Comprehensive Multifactor Electronic Health Records"**. In *JCO Clinical Cancer Informatics, January 2023*.

WORKSHOPS

1. **K. Mayo**, S. Fozdar, and M.P. Wellman. **"Flagging Payments for Fraud Detection: A Strategic Agent-Based Model"**.
   AAAI Workshop on Modeling Uncertainty in the Financial World (MUFin), February 2023