Brett C. Mullins

brettcmullins@gmail.com   **bcmullins.github.io**

CONTACT INFORMATION	College of Information and Computer Sciences 140 Governors Dr, Amherst, MA, 01003
RESEARCH INTERESTS	Differential Privacy, Explainable AI, Learning Theory, Causation, Formal Epistemology

EDUCATION

University of Massachusetts, Amherst, MA
 Ph.D, Computer Science   *Expected: 2026*
 M.S., Computer Science   2024
  Advisors: Dan Sheldon & Gerome Miklau

Miami University, Oxford, OH
 Graduate study in Mathematics   2015 to 2017
  Advisor: Paul Larson

Carnegie Mellon University, Pittsburgh, PA
 Summer School in Logic and Formal Epistemology   2015

Georgia State University, Atlanta, GA
 B.S., Economics   2014
 B.A., Philosophy   2014
  Summa Cum Laude
  Thesis: *Against Indifference: Popper's Assumption of Distribution Preference*
  Advisor: Yongsheng Xu, Department of Economics

TEACHING

Instructor of Record
 Intro to Programming (UMass Amherst)   Spring 2025
 Finite Mathematical Models (Miami University)   Spring 2016
 Precalculus (Miami University)   Fall 2015, Fall 2016
Teaching Assistant
 A Mathematical Foundation for Informatics (UMass Amherst)   Fall 2024
 Great Theorems of Mathematics (Miami University)   Spring 2016

PROFESSIONAL EXPERIENCE

Senior Data Scientist   2/2017 to 7/2020
 Data, Discovery, and Decision Science, Allstate, Chicago, IL
 Managed shared economy data science team collaborating with leading companies on joint data science projects, led efforts in auto and property underwriting to develop predictive models from ideation to deployment in production, and supported projects such as building computer vision models for Allstate's QuickFoto Claim product.

Affiliate Researcher   1/2014 to 10/2021
 Fiscal Research Center, Georgia State University, Atlanta, GA
 Member of a team investigating earnings mobility among low income individuals in Georgia by developing new methods of mobility measurement, writing software for policy analysts, and building econometric models using government administrative data from the Department of Human Services and the Department of Labor.

Research Assistant   Summer 2013
 Department of Economics, Georgia State University, Atlanta, GA
 Advisor: Jim Marton
 Estimated disenrollment likelihoods and tested for interaction effects given various demographic and health characteristics within Georgia's PeachCare for Kids program.

CONFERENCE & JOURNAL PUBLICATIONS	10. **Brett Mullins**, Miguel Fuentes, Yingtai Xiao, Daniel Kifer, Cameron Musco, Daniel Sheldon. "Efficient and Private Marginal Reconstruction with Local Non-negativity" *Advances in Neural Information Processing Systems (NeurIPS)*, 2024.

9. Miguel Fuentes, **Brett Mullins**, Ryan McKenna, Daniel Sheldon, Gerome Miklau. "Joint Selection: Adaptively Incorporating Public Information for Private Synthetic Data" *AISTATS*, 2024.

8. **Brett Mullins**. "The Shape of Explanations: A Topological Account of Rule-Based Explanations in Machine Learning" *AAAI 2023 Workshop on Representation Learning for Responsible Human-Centric AI (R2HCAI)*, 2023.

7. Ryan McKenna, **Brett Mullins**, Daniel Sheldon, Gerome Miklau. "AIM: An Adaptive and Iterative Mechanism for Differentially Private Synthetic Data" *Proceedings of the 48th International Conference on Very Large Databases (VLDB)*, 2022.

6. **Brett Mullins**, David Sjoquist, Sally Wallace. "Economic Mobility and the Great Recession" *Social Science Quarterly*, 2021.

5. **Brett Mullins**. "Gauthier, Equilibrium, and the Emergence of Morality" *Dialogue*, vol. 55 (4), 2016.

4. **Brett Mullins**, Mark Rider, David Sjoquist, Sally Wallace. "Long Run Earnings Mobility among Low Income Individuals" *Journal of Economics and Public Finance*, vol. 2, 154-170, 2016.

3. **Brett Mullins**, Mark Rider, David Sjoquist, Sally Wallace. "Trends in TANF and SNAP Participation in Georgia" *Andrew Young School of Policy Studies*, Fiscal Research Center Report, 2015.

2. **Brett Mullins**, Mark Rider, David Sjoquist, Sally Wallace. "Helping Hand or Anchor: The Effect of Public Assistance on Income Mobility among the Poor" *Proceedings of the National Tax Association's Annual Conference on Taxation*, 2014.

1. **Brett Mullins**. "Recollection and Second Order Skepticism" *Marist Undergraduate Philosophy Journal*, 2013.

MISC PUBLICATIONS	"Parsing Nested JSON Records in Python" featured in *PyCoder's Weekly*, iss. 374, 2019.

SOFTWARE	"mobilityIndexR: Calculate Transition Matrices and Mobility Indices" with Trevor Harkreader. R package version 0.2.1. Available on CRAN.

COMPETITIONS, AWARDS, AND HONORS	**NIST Differential Privacy Challenge, 1st Place**	2021
	Top Three Presentation Award, MU Graduate Forum	2015
	Graduate Student Paper Award, Indiana Philosophical Association	2014
	Phi Sigma Tau Scholar Travel Stipend	3/2014, 9/2014
	George W. Beiswanger Award: Outstanding Student in Philosophy, Department of Philosophy, Georgia State University	2014
	Socrates Award: Outstanding Student in Philosophy, Department of History & Philosophy, University of North Georgia	2012

TOOLS & LANGUAGES	R, Python, LaTeX, Groovy, SAS, reveal.js, Elastic Stack, Keras, Tensorflow, Agile/Scrum, German (*Elementary*)

PROFESSIONAL MEMBERSHIPS	American Economic Association Society for Exact Philosophy

TALKS &
PRESENTATIONS

NeurIPS (Poster), Dec 2024
Efficient and Private Marginal Reconstruction with Local Non-negativity

Miami University Mathematics Colloquium (Invited), Nov 2024
Efficient Marginal Reconstruction under Differential Privacy

TPDP (Poster), Aug 2024
Efficient and Private Marginal Reconstruction with Local Non-negativity

UMass CICS Theory Seminar, Oct 2023
Efficient Error Bounds for Private Linear Query Release

UMass Learning Learning Seminar (Invited), Oct 2023
Introduction to Differential Privacy and Synthetic Data

TPDP (Poster), Sept 2023
Quantifying Uncertainty of Unsupported Linear Queries for Private Query Release

R2HCAI: The AAAI 2023 Workshop on Representation Learning for Responsible
Human-Centric AI (Poster), Feb 2023
*The Shape of Explanations: A Topological Account of Rule-Based Explanations in
Machine Learning*

UMass CICS Theory Seminar, Nov 2021
*The Shape of Explanations: A Topological Account of Rule-Based Explanations in
Machine Learning*

Society for Exact Philosophy Annual Meeting, May 2019
Infinite Cycles and the Graphical Approach to Epistemic Justification

Next Generation of Public Finance Conference, May 2016
Measuring the Impact of Social Programs on Income Mobility Using Big Data

Indiana Philosophical Association Fall Meeting, Nov 2015
Non-Arbitrary Inference: An Objection to Strong Bayesianism

Miami University Graduate Research Forum, October 2015
Mathematics Preparation & Intermediate Economics
Top Presentation Award

Missouri Valley Economic Association Annual Meeting, October 2015
Total Earnings Mobility among Public Assistance Recipients in Georgia

Formal Ethics 2015, July 2015
On Probability Assessment in the Original Position

Missouri Valley Economic Association Annual Meeting, October 2014
*The Effect of Mathematics Courses on Outcomes in Undergraduate Intermediate
Economics: New Evidence*

Indiana Philosophical Association Fall Meeting, October 2014
The Inconsistency of Gauthier's Market Contractarianism
Graduate Student Paper Award

The Pittsburgh Area Philosophy Colloquium, September 2014
On Probability Assessment in the Original Position

The Prindle Institute's Undergraduate Ethics Symposium, April 2014
The Moral Ambiguity of Externalities in Market Contractarianism

Classic City Undergraduate Philosophy Conference, April 2014
Against Indifference: Popper's Assumption of Distribution Preference

Georgia Philosophical Society's Fall Meeting, November 2013
Against Indifference: Popper's Assumption of Distribution Preference

Appalachian Regional Student Philosophy Colloquium, April 2013
An Analysis of Infinitism as Justification