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

Topological Learning Theory, Differential Privacy, Explainable AI, Formal Epistemology, Causation, Public Finance and Income Mobility

Education

University of Massachusetts, Amherst, MA
Ph.D, Computer Science — *Expected: 2024*
Advisor: 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 (Miami University)
Finite Mathematical Models — Spring 2016
Precalculus — Fall 2015, Fall 2016
Teaching Assistant (Miami University)
Great Theorems of Mathematics — 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 Present
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

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.

Selected Presentations

"A Topological Account of Rule-Based Explanations in Machine Learning"
UMass CS Theory Seminar, November 2021

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

Working Papers

"Identifying the Most Explainable Classifier"
"Infinite Cycles and the Graphical Approach to Epistemic Justification"

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
Research Excellence in Economics Program (Re^2P) 2013 & 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