Brett C. Mullins

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Contact College of Information and Computer Sciences 140 Governors Dr, Amherst, MA, 01003 Information

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**

- 6. "Economic Mobility and the Great Recession" with David Sjoquist and Sally Wallace. Social Science Quarterly, 2021.
- 5. "Gauthier, Equilibrium, and the Emergence of Morality" Dialogue, vol. 55 (4), 2016.
- 4. "Long Run Earnings Mobility among Low Income Individuals" with Mark Rider, David Sjoquist, and Sally Wallace. Journal of Economics and Public Finance. vol. 2, 154-170, 2016.
- 3. "Trends in TANF and SNAP Participation in Georgia" with Mark Rider, David Sjoquist, and Sally Wallace. Andrew Young School of Policy Studies, Fiscal Research Center Report, 2015.
- 2. "Helping Hand or Anchor: The Effect of Public Assistance on Income Mobility among the Poor" with Mark Rider, David Sjoquist, and Sally Wallace. Proceedings of the National Tax Association's Annual Conference on Taxation, 2014.
- 1. "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

"Using Linked Administrative Data to Measure Earnings Mobility of Public Assistance Recipients during the Great Recession" with Sally Wallace and David Sjoquist International Conference on Administrative Data Research, December 2019 "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,	NIST Differential Privacy Challenge, 1st Place	2021
Awards, and	Top Three Presentation Award, MU Graduate Forum	2015
Honors	Graduate Student Paper Award, Indiana Philosophical Association	n 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 & R, Python, LaTeX, Groovy, SAS, reveal.js, Elastic Stack, Keras, Tensorflow, Agile/Scrum, Languages German (*Elementary*)

Professional American Economic Association Memberships Society for Exact Philosophy