

Ari Smith

150 Dunning St., Madison, WI, 53704

Phone: (216) 319 - 0501

Email: ajsmith44@wisc.edu

Education

University of Wisconsin, Madison Fall 2019 - Present

Ph.D. in Industrial and Systems Engineering, minor in Science and Technology Studies

Advised by Prof. Justin J. Boutilier

Primary research interests: role of OR and ML modeling in constructing valuations of fairness, agency, and preference in sociotechnical systems; contemporary feminist philosophies of science; intersections of OR, STS, and democratic theory; public policy applications; analytics of political gerrymandering; ML applications in healthcare systems

3.757/4.00 GPA

Oberlin College and Conservatory Fall 2015 - Spring 2019

Bachelor of Arts in Mathematics, minor in Computer Science,

Advised by Prof. Robert Bosch

Bachelor of Music in Jazz Bass Performance, secondary studies in Classical Composition

Private study in the studios of Dr. Peter Dominguez and Dr. Stephen Hartke

3.93/4.33 GPA

Publications

(In progress) Ari Smith. "Preference Across Power: Algorithmic (Infra)structuring of the Preferring Subject"

(In progress) Ari Smith and Justin Boutilier. "Generalized Inverse Mixed-Integer Optimization as a Diagnostic of Congressional Gerrymandering"

(In progress) Ari Smith, Frank Liao, John Mayer, Brian Patterson, Manish Shah, Michael Pulia, Radha Nagarajan, and Justin Boutilier. "Preserved and Lost Utilities of Emergency Department Surge Prediction Models Across Site Transfers and Sudden Drifts from COVID-19"

Robert Bosch, Abagael Cheng, and Ari Smith (2019). "Exploring Szpakowski's Linear Ideas."

Proceedings of Bridges 2019: Mathematics, Art, Music, Architecture, Education, Culture. 21-28.

<http://archive.bridgesmathart.org/2019/bridges2019-21.html>

Research Experience

Data Science Intern at UW Health Enterprise Analytics February 2022 - Present

Honorary Appointee at UW Madison School of Medicine and Public Health, Department of Emergency Medicine August 2020 - Present

Contractor at UW Health Enterprise Analytics/Applied Data Science August 2020 - February 2022
Developing predictive analytic models to anticipate local Emergency Department demand surges on short time-scales

Research Assistantship at UW Madison Fall 2019 - Present

Current research focuses on: novel inverse optimization techniques for mixed-integer program models, and applications of said techniques to analyzing fairness in political districting; critical theory perspectives on preference elicitation, especially from feminist technoscience standpoints

Research Assistant to Dr. Robert Bosch at Oberlin College May - July 2018

Developed processes for creating visual art that incorporate optimization models and other OR techniques, implemented in python, C, Concorde TSP Solver, postscript, processing, and OpenSCAD. Implemented greedy and 1-OPT refinement heuristic algorithms for creating what prof. Bosch denotes “figurative trees”.

Teaching Experience

Teaching Assistantships at UW Madison:

ISyE 323: Operations Research - Deterministic Modelling Spring 2022

ISyE 521: Machine Learning in Action for Industrial Engineers: Fall 2021

ISyE 601: Machine Learning in Action: Fall 2020

Teaching music lessons for course credit to Oberlin College and Conservatory students

August 2018 - May 2019

Presentations

Ari Smith (presenting author), Justin Boutilier, Frank Liao, Brain Patterson, Michael Pulia, and Manish Shah. “Predicting Emergency Department Surges for Last-Minute Actionability”. 2021 INFORMS annual meeting. October 26, 2021.

Robert Bosch (presenting author) and Ari Smith. “Hamiltonian Cycles on Möbius Strips and Other Surfaces.” Presented at the 2019 Joint Mathematics Meeting. January 16, 2019.

Abstract: http://jointmathematicsmeetings.org/amsmtgs/2217_abstracts/1145-d1-1682.pdf

Technological Proficiencies

Python/Scikit learn

Optimization modeling in GAMS and Gurobi

QGIS/Esri ArcGIS

LaTeX, Postscript

Other Proficiencies

French reading comprehension

Awards and Honors

Elected to National Music Honor Society (Pi Kappa Lambda) - Theta Chapter, 2019

Oberlin Conservatory Dean’s Award

John F. Oberlin Scholarship

National Merit Scholarship recipient 2015-2019

Non-Career Interests

Active as freelance jazz and avant-garde bassist and contemporary classical composer