# Ari Smith

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### **Professional Summary**

I recently completed my Ph.D. in Industrial and Systems Engineering at the University of Wisconsin, Madison, working in Prof. Justin Boutilier's <u>Analytics for Human Development</u> lab, and am currently seeking a faculty position in Data Science and related areas. My teaching and research experience encompass the overlap of applied machine learning and data analytics, optimization modeling (particularly inverse optimization), and applications focused on fairness and positive societal impact.

### **Education**

Ph.D, Industrial and Systems Engineering		2025
University of Wisconsin, Madison		
Doctoral Minor in Science and Technology Studies		
Dissertation Title: Critical Approaches to Inverse Optimization and Other Algorith	hmic Techn	ologies for
Modeling Values and Preferences		
B.A., Mathematics		2019
Oberlin College		
Minor in Computer Science		
B.Mus., Jazz Studies (Bass Performance)		2019
Oberlin Conservatory		
Secondary Study in Contemporary Classical Composition		
Teaching Experience		
University of Wisconsin Madison, Interdisciplinary Professional Programs:		
Course Development		
Machine Learning in Action, online course for Masters in Engineering Da	ata Analytics	S
	Summ	er-Fall 2024
Principal Instructor		
Machine Learning in Action for Industrial Engineers (online)		Spring 2025
University of Wisconsin Madison, Department of Industrial and Systems Engine	ering (ISyE,	):
Principal Instructor		
<ul> <li>ISyE 521, Machine Learning in Action for Industrial Engineers</li> </ul>	Fall	2023, 2024
Class of 50-60 students, mixed undergraduate and graduate stud	dents	
Selected student evaluation scores	<u>2023</u>	<u>2024</u>
The instructor related the course material to real problems:	3.52/4	3.71/4

The instructor aroused my interest in the subject matter:	3.18/4	3.76/4
It was obvious that the instructor was interested in the stu	dents: 3.56/4	3.76/4
I would recommend this course to other students:	3.26/4	3.33/4
Teaching Assistant		
<ul> <li>ISyE 417, Health Systems Engineering</li> </ul>		Spring 2023
Class of 56 students, mixed undergraduate and graduate	students	
ISyE 521, Machine Learning in Action for Industrial Engineers	Fall 202	2, 2021, 2020
ISyE 210, Introduction to Industrial Statistics		Fall 2022
ISyE 323, Operations Research Deterministic Models		Spring 2022
Class of 65 undergraduate students, directed three discus materials developed by myself	ssion sections wit	th teaching
Selected student evaluation scores for discussion section	<u>s</u>	
TA's class environment for guestions and expressing opin		
TA's ability to answer student questions:	4.06/5	
TA's interest in student learning:	4.25/5	
TA's willingness to help students:	4.56/5	
Oberlin Conservatory: One-on-One Teaching		
Music lessons for undergraduate non-majors, upright bass and base and	ass guitar	2018-2019
Professional Experience		
Research Assistant	August 2	019 - Present
Analytics for Human Development (A4HD) Lab	C C	
UW Madison, Department of Industrial and Systems Engineering		
See Academic Papers for an overview of research topics		
Honorary Appointon Emorgonov Modicino	August 2	020 Present
UW Madison School of Medicine and Public Health	August 2	.020 - 1 163611
Data Science Intern	February 2022 -	Januarv 2024
UW Health Enterprise Analytics	, , , , , , , , , , , , , , , , , , ,	,
Contractor	August 2020 - F	- ebruarv 2022
UW Health Enterprise Analytics		
Research Assistant		Summer 2018
Oberlin College, Department of Mathematics With Professor Robert Bosch		

# Academic Papers

Published

 Ari Smith, Brian Patterson, Michael Pulia, John Mayer, Rebecca Schwei, Radha Nagarajan, Frank Liao, Manish Shah, and Justin Boutilier. "<u>Multisite Evaluation of Prediction Models for</u> <u>Emergency Department Crowding Before and During the COVID-19 Pandemic</u>". Journal of the American Medical Informatics Association (JAMIA), Volume 30, Issue 2, February 2023, Pages 292–300.

#### **Under Revision**

• Ari Smith and Justin Boutilier. "<u>Gap-gradient methods for solving generalized mixed integer</u> <u>inverse optimization: an application to political gerrymandering</u>," 2024. Under 1st round revision at *Operations Research*.

#### Manuscripts in Progress

- Ari Smith and Justin Boutilier. "Using Inverse Optimization to Detect Biased Training Sets in Machine Learning Predictors."
- Justin Boutilier, Ari Smith, Yonatan Mintz, Christian Elliot, Matthew Zuraw, and Nicole Werner. "A recommender system for caregivers of individuals with Alzheimer's and related dementias."
- Ari Smith. "Preference across power: Algorithmic (Infra)structurings of the Preferring Subject."

#### **Conference Presentations**

- Ari Smith (presenting author), Justin Boutilier. "Inverse Mixed Integer Optimization as a Diagnostic for Political Gerrymandering". 2022 INFORMS annual meeting. October 18, 2022.
- 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.

#### <u>Awards</u>

Sonny Rollins Scholarship Ensemble, Inaugural Member	2018 -	2019
Elected to Pi Kappa Lambda (National Music Honor Society)		2019
John F. Oberlin Scholarship	2015 -	2019
Oberlin Conservatory Dean's Award	2015 -	2019

#### <u>Service</u>

Volunteer and Panelist, TA TrainingFall 2024UW Madison Collaboratory for Engineering Education and Teaching ExcellenceFall 2024

#### Selected Published Music Recordings

The Luke Leavitt Trio, Cruel Optimism, published by Eternal Curl Records	2024
<u>Feestet</u> (Self-Titled), self-published Over 150,000 streams on Spotify	2023
Ari Smith and Tim Russell, <u>Junct</u> , published by Avoidance Policy <i>Tone Madison's</i> 20 best albums of 2020	2020

## <u>Skills</u>

Python | Julia | Gurobi | scikit-Learn | GAMS | QGIS | LaTeX | French reading comprehension