RESEARCH STATEMENT

I solve problems of social importance using techniques from market design, data science, and combinatorial optimization. I am also interested in the interplay between data science and combinatorial optimization; I use data science to collect and satisfy preferences in large markets, and apply combinatorial optimization for inference over structured data.

EDUCATION

University of Massachusetts Amherst
PhD Computer Science
(advised by Yair Zick)

University of Georgia
M.S. Artificial Intelligence, B.S. Mathematics, A.B. Cognitive Science
(advised by Frederick Maier)

PUBLICATIONS

(α − β) indicates alphabetical order; asterisks indicate equal contribution.

1. InstructExcel: A Benchmark for Natural Language Instruction in Excel
   Justin Payan, Swaroop Mishra, Mukul Singh, Carina Negreanu, Christian Poelitz, Chitta Baral, Subhro Roy, Rasika Chakravarthy, Benjamin Van Durme, and Elnaz Nouri
   EMNLP 2023 (Findings)

2. Graphical House Allocation
   Hadi Hosseini, Justin Payan, Rik Sengupta, Rohit Vaish, and Vignesh Viswanathan (α − β)
   AAMAS 2023

3. Relaxations of Envy-Freeness over Graphs
   Justin Payan, Rik Sengupta, and Vignesh Viswanathan (α − β)
   AAMAS 2023 (Extended Abstract)

4. Into the Unknown: Assigning Reviewers to Papers with Uncertain Affinities
   Cyrus Cousins, Justin Payan, and Yair Zick (α − β)
   SAGT 2023

5. I Will Have Order! Optimizing Orders for Fair Reviewer Assignment
   Justin Payan and Yair Zick
   IJCAI 2022

   Justin Payan, Yuval Merhav, He Xie, Satyapriya Krishna, Anil Ramakrishna, Mukund Sridhar, and Rahul Gupta
   EMNLP 2021 (Findings)
7. Online Post-Processing in Rankings for Fair Utility Maximization
   Ananya Gupta*, Eric Johnson*, Justin Payan, Aditya Roy, Ari Kobren, Swetasudha Panda, Michael Wick, Jean-Baptiste Tristan
   WSDM 2021

8. Document Representations using Fine-Grained Topics
   Justin Payan, Nicholas Monath, Andrew McCallum
   Sets & Partitions Workshop at NeurIPS 2019

Working Papers:

9. Predicting Bids to Improve Reviewer Assignment
   Cyrus Cousins, Justin Payan, and Yair Zick ($\alpha - \beta$)

10. Group Fair Resource Allocation under Uncertainty
    Cyrus Cousins, Elita Lobo, Justin Payan, and Yair Zick ($\alpha - \beta$)

11. Online Reviewer Assignment
    Cyrus Cousins, Amirmahdi Marfakhar, Justin Payan, and Yair Zick ($\alpha - \beta$)

12. Predicting Review Quality in Large Computer Science Conferences
    Cyrus Cousins, Sheshera Mysore, Neha Nayak Kennard, Justin Payan, and Yair Zick ($\alpha - \beta$)

13. Combinatorial Optimization Based Document Structure Recognition
    Justin Payan, Chris Tensmeyer, and Vlad Morariu

CODE CONTRIBUTIONS

OpenReview Reviewer-Paper Matching 2022
FairSequence matching algorithm

INTERNSHIPS & PROFESSIONAL EXPERIENCE

Adobe Research
Research Intern under Chris Tensmeyer
May - August ’23
College Park, MD

Microsoft
Data Science Intern under Kartik Sridhar
June - September ’22
Redmond, WA

Amazon Alexa
Research Intern under Yuval Merhav
June - September ’21
Cambridge, MA (remote)

Amazon Alexa
Research Intern under Yuval Merhav
May - August ’20
Cambridge, MA (remote)

Vertica
Software Engineer under Vincent Xu
June ’17 - June ’18
Cambridge, MA

AWARDS & SCHOLARSHIPS

• University of Georgia Foundation Fellowship (2013-2017)
  $128,260 in tuition and stipend for housing, research, and travel
INVITED TALKS

• Brown University, March 2023
  Harvard EconCS Seminar, January 2023
  Carnegie Mellon University, November 2022
  *(Into the Unknown: Assigning Reviewers to Papers with Uncertain Affinities)*

• UMass Data Analytics and Computational Social Science Brownbag Series, April 2021
  *(Envy-Freeness in Paper Reviewer Assignment)*

• UMass Amherst Theory Seminar, April 2021
  *(Fair Reviewer Assignment)*

ACADEMIC SERVICE

• **Workflow Chair** for IJCAI 2023
• **Workshop Co-organizer** for Computational Fair Division at IJCAI 2023
• **Program Committee / Reviewer** for ACL 2023
• **Subreviewer** for AAMAS 2022, GAIW at AAMAS 2022
• **Student Volunteer** at AAMAS ’23, IJCAI ’22

TEACHING / MENTORING / OTHER SERVICE

• **Instructor of Record** at UMass Amherst for *Intro to Numerical Computing with Python* (Fall 2020 & 2021)
• **Graduate Teaching Assistant** at UMass Amherst for *Intro to AI* (Fall 2018), *Intro to Problem Solving with Computers* (Fall 2020), and *Advanced Algorithms* (Spring 2021)
• **Graduate Mentor** for UMass Undergraduate Sloan Scholar (2023-2024)
• **Co-mentored** MS student on Searching for Fair Allocations (2021-2022)
• **Graduate Mentor** for UMass Undergraduate Research Volunteer Program (January 2021, June - July 2021)