MATTHEW JONES

Curriculum Vitae

17 Hillhouse Ave, New Haven, CT ⋄ (218) 851–9715

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ACADEMIC APPOINTMENTS

Yale University, New Haven, CT *July 2022-Present*

Postdoctoral Associate

Yale Institute for Network Science and the Human Nature Lab

Advisor: Nicholas Christakis

EDUCATION

Dartmouth College, Hanover, NH *September 2017 – June 2022*

Ph.D. Mathematics *Awarded June 2022*

Advisor: Feng Fu

Dissertation: Evolutionary Dynamics of Collective Action Problems

A.M. Mathematics *Awarded March 2019*

Arizona State University, Tempe, AZ *August 2013 – May 2017*

B.S. Physics, 4.0 GPA (with Minor in Mathematics) *Awarded May 2017*

Barrett, The Honors College graduate

RESEARCH PUBLICATIONS

Accepted Papers

A1: *Estimating Recycling of Fish in Catch-and-Release Fisheries* (with T. Jones, M. Treml, and T. Heinrich), Fisheries 47(12), 2022

A2: *Polarization, abstention, and the median voter theorem* (with A. Sirianni and F. Fu), Humanities and Social Science Communications 9(43), 2022

A3: *The dual problems of coordination and anti-coordination on random bipartite graphs* (with S. Pauls and F. Fu), New Journal of Physics 23(113018), 2021

A4: *Random Choices can Facilitate the Solving of Collective Network Coloring Problems by Artificial Agents* (with S. Pauls and F. Fu), iScience 24(4), 2021

Preprints

P1: *It Is Easy For Multi-Issue Bundles To Advance Anti-Democratic Agendas* (with M. Chervenak and N. Christakis), arXiv: 2307.11873, 2023

P2: *Spatial Games of Fake News* (with S. Pauls and F. Fu), arXiv: 2206.04118, 2022

TEACHING EXPERIENCE

Dartmouth College Hanover, NH

Instructor *Fall 2019 - Fall 2021*

· Designed course syllabi. Wrote daily lectures. Wrote and graded homework, quizzes, and exams. Fully responsible for course content and material.

Math 36 - Mathematical Models in the Social Sciences *Fall 2021*

Project-focused course covering voting systems, probability, game theory, and networks

Math 22 - Linear Algebra with Applications *Spring 2021*

Linear algebra course ending with singular value decomposition

Math 8 - Calculus of Functions of One and Several Variables *Fall 2019*
Second calculus course covering series and multi-variable functions

Teaching Assistant *Fall 2017 - Winter 2019*

· Held drop-in help sessions three times per week. Graded exams and homework. Mentored students on research projects.

Math 23 - Differential Equations *Winter 2019*
Math 76 - Topics in Applied Mathematics *Summer 2018*
Math 23 - Differential Equations *Winter 2018*
Math 13 - Calculus of Vector-valued Functions *Fall 2017*

Arizona State University Tempe, AZ
Learning Assistant *Fall 2015 - Spring 2017*

· Graded homework. Facilitated in-class active learning environment.

EDUCATIONAL OUTREACH

Mathematics Department - Directed Reading Program Hanover, NH
Grad Student Mentor *Winter 2021, Winter 2022*

· Mentored three undergraduates reading advanced math textbooks. Discussed text and problems. Helped prepare end-of-term presentations. Topics included networks, game theory, and markets.

Dartmouth Rural STEM Educator Partnership Hanover, NH
Grad Student Mentor *Fall 2020 - Spring 2021*

· Wrote and redesigned middle school STEM curriculum. Created instructional videos.

Dartmouth College Exploring Mathematics Camp Hanover, NH
Co-Instructor *Summer 2019*

· Designed and taught week long math camps for middle and high school students on the mathematics of games and complex networks.

RESEARCH PRESENTATIONS

Talks

1. Applied and Computational Math Seminar, Dartmouth College, Hanover, NH March 2023
   Nash Equilibrium in a Low-Information Vote Trading Game
2. Human Nature Lab, Yale University, New Haven, CT November 2022
   The Value of Vote Trading: A Mathematical Model of Multi-Issue Group Decision-Making
3. New England Statistics Symposium 2022, Storrs, CT May 2022
   Random Human Behavior in a Distributed Network Coloring Problem
4. Fu Lab, Dartmouth College, Hanover, NH March 2022
   Spatial Games of Fake News
5. Dept. of Mathematics and Statistics, Washington State University, Pullman, WA November 2021
   Polarization, Third Parties, and the Median Voter Theorem
6. Minnesota Dept. of Natural Resources, Fisheries, MN October 2021
   Angler Recycling Rate: An Ill-Posed Inverse Problem

7. Fu Lab, Dartmouth College, Hanover, NH — September 2021
   Random Behavior in Collective Network Coloring Problems
8. Human Nature Lab, Yale University, New Haven, CT — April 2021
   Random Behavior in Collective Network Coloring Problems
9. eSMB Annual Meeting 2020, virtual — August 2020
   Spatial Games of Fake News
10. Applied and Comuptational Math Seminar, Dartmouth College, Hanover, NH — October 2020
    Voter Preference and Party Ideological Shifts
11. Graduate Student Seminar, Dartmouth College, Hanover, NH — 2018 - 2022
    Various Topics

Posters

1. SIAM Annual Meeting 2020, virtual — July 2020
   Spatial Games of Fake News
2. IC^2S^2 2020, virtual — July 2020
   Spatial Games of Fake News

HONORS AND AWARDS

- Ken Bogart Teaching Award — *October 2021*
  Department-wide award for excellence in advancing the educational mission of the department.
- Dartmouth Graduate Fellowship — *2017–2022*
- Graduated Summa Cum Laude — *May 2017*
  Arizona State University, B.S. Physics

PROFESSIONAL SERVICE

Peer Review

- Scientific Reports
- Science Advances
- Autonomous Agents and Multi-Agent Systems

Other

- Math Graduate Program Committee Graduate Liason — *2019 - 2020*
  Worked to address intradepartment conflict between grad students and faculty.