MATTHEW I JONES

Curriculum Vitae

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ACADEMIC APPOINTMENTS

College of the Holy Cross, Worcester, MA *August 2024-Present*
Visiting Assistant Professor

Yale University, New Haven, CT *July 2022-August 2024*
Postdoctoral Associate
Yale Institute for Network Science / Human Nature Lab

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: *Simple Autonomous Agents can Enhance Creative Semantic Discovery by Human Groups*, Atsushi Ueshima, Matthew I. Jones, and Nicholas A. Christakis, Nature Communications 15(5212), 2024

A2: *Containing Misinformation: Spatial Games of Fake News*, Matthew I. Jones, Scott D. Pauls, and Feng Fu, PNAS Nexus 3(3), 2024

A3: *Estimating Recycling of Fish in Catch-and-Release Fisheries*, Thomas S. Jones, Matthew I. Jones, Melissa Treml, and Thomas Heinrich, Fisheries 47(12), 2022

A4: *Polarization, Abstention, and the Median Voter Theorem* Matthew I. Jones, Antonio D. Sirianni and Feng Fu, Humanities and Social Science Communications 9(43), 2022

A5: *The Dual Problems of Coordination and Anti-coordination on Random Bipartite Graphs*, Matthew I. Jones, Scott D. Pauls, and Feng Fu, New Journal of Physics 23(113018), 2021

A6: *Random Choices can Facilitate the Solving of Collective Network Coloring Problems by Artificial Agents*, Matthew I. Jones, Scott D. Pauls, and Feng Fu, iScience 24(4), 2021

Preprints

P1: *Bringing Leaders of Network Sub-Groups Closer Together Does Not Facilitate Consensus*, Matthew I. Jones and Nicholas A. Christakis, arXiv: 2408.09309, 2024

P2: *New fairness criteria for truncated ballots in multi-winner ranked-choice elections*, Adam Graham-Squire, Matthew I. Jones, and David McCune, arXiv: 2408.03926, 2024

P3: *Equilibria and Group Welfare in Vote Trading Systems*, Matthew I. Jones, arXiv: 2406.09536, 2024

P4: *It is Easy for Multi-Issue Bundles to Advance Anti-Democratic Agendas*, Matthew I. Jones, Matthew Chervenak, and Nicholas A. Christakis, arXiv: 2307.11873, 2023

TEACHING EXPERIENCE

College of the Holy Cross — Worcester, MA
Visiting Assistant Professor — *Fall 2024 - Spring 2025*

· Designed course syllabi. Wrote daily lectures. Wrote and graded homework, quizzes, and exams.

Math 135 - Calculus 1 (2 sections) — *Fall 2024*
Math 244 - Linear Algebra — *Fall 2024*
Math 135 - Calculus 1 (2 sections) — *Spring 2025*
Math 199 - Discrete Mathematics — *Spring 2025*

Dartmouth College — Hanover, NH
Instructor of Record — *Fall 2019 - Fall 2021*

· Designed course syllabi. Wrote daily lectures. Wrote and graded homework, quizzes, and exams.

Math 36 - Mathematical Models in the Social Sciences — *Fall 2021*
Math 22 - Linear Algebra with Applications — *Spring 2021*
Math 8 - Calculus of Functions of One and Several Variables — *Fall 2019*

Teaching Assistant — *Fall 2017 - Winter 2019*

· Held drop-in help sessions. 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

Research Mentorship — New Haven, CT
Postdoc Mentor — *Winter 2023-Present*

· Supervised undergraduate and graduate students on several research projects, several of which have/will result in publications. Provided mentorship and guidance throughout the research process.

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

· Mentored 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
Graduate 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 two week long math camps for middle and high school students.

RESEARCH PRESENTATIONS

Talks

1. Dept. of Mathematics, Le Moyne College, Syracuse, NY *January 2024*
   Graph Colorings: How to Make Maps and Work Together
2. Depts. of Mathematics and Data Analytics, Dickinson College, Carlisle, PA *January 2024*
   The Distributed Graph Coloring Problem and Social Coordination
3. Center for Mathematical Biology, University of Pennsylvania, Philadelphia, PA *January 2024*
   The Distributed Graph Coloring Problem and Social Coordination
4. Joint Math Meeting 2024, San Francisco, CA *January 2024*
   Nash Equilibrium in a Low-Information Vote Trading Game
5. Dept. of Math, Stats, and CS, Hollins University, Roanoke, VA *December 2023*
   Enhancing Group Creativity with Bots
6. Dept. of Mathematics and Statistics, Williams College, Williamstown, MA *November 2023*
   Enhancing Group Creativity with Bots
7. Human Nature Lab, Yale University, New Haven, CT *April 2023*
   Three Experiments on Homophily, Consensus, and Information
8. Applied and Computational Math Seminar, Dartmouth College, Hanover, NH *March 2023*
   Nash Equilibrium in a Low-Information Vote Trading Game
9. Human Nature Lab, Yale University, New Haven, CT *November 2022*
   The Value of Vote Trading: A Mathematical Model of Multi-Issue Group Decision-Making
10. New England Statistics Symposium 2022, Storrs, CT *May 2022*
    Random Human Behavior in a Distributed Network Coloring Problem
11. Fu Lab, Dartmouth College, Hanover, NH *March 2022*
    Spatial Games of Fake News
12. Dept. of Math and Stats, Washington State University, Pullman, WA *November 2021*
    Polarization, Third Parties, and the Median Voter Theorem
13. Minnesota Dept. of Natural Resources, Fisheries, MN *October 2021*
    Angler Recycling Rate: An Ill-Posed Inverse Problem
14. Fu Lab, Dartmouth College, Hanover, NH *September 2021*
    Random Behavior in Collective Network Coloring Problems
15. Human Nature Lab, Yale University, New Haven, CT *April 2021*
    Random Behavior in Collective Network Coloring Problems
16. eSMB Annual Meeting 2020, virtual *August 2020*
    Spatial Games of Fake News
17. Applied and Comuptational Math Seminar, Dartmouth College, Hanover, NH *October 2020*
    Voter Preference and Party Ideological Shifts
18. 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

In the Press

1. New Research Predicts Rising Political Polarization *March 2022*
   Dartmouth News (Click here for link)
   phys.org (Click here for link)
2. The Science of Group Creativity *July 2024*
   The Sunwater Institute (Click here for link)

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 ACTIVITIES AND SERVICE

Pedagogy Development

- Participant, Fundamentals of Equitable Teaching Workshop, Yale University *Winter 2023*
- Participant, Gender in the Classroom Workshop, Yale University *Winter 2023*
- Participant, Teaching Seminar, Dartmouth College *Summer 2019*
  Intensive summer seminar on pedagogy in mathematics in preparation for teaching classes as a graduate student
- Facilitator, Teaching Assistant Orientation, Dartmouth College *December 2019*
  Led a graduate school-wide orientation for teaching assistants

Peer Review

- Autonomous Agents and Multi-Agent Systems
- Journal of Mathematical Sociology
- PNAS Nexus
- Science Advances
- Scientific Reports

Institutional Service

- Math Graduate Program Committee Graduate Liason *2019 - 2020*
  Worked for communication and conflict resolution between graduate students and faculty.

CODING EXPERIENCE

- Python
- Mathematica
- Matlab
- Java/Groovy
- R

PROFESSIONAL MEMBERSHIPS

- American Mathematical Society (AMS) *joined September 2023*