

# TYLER D. HOFFMAN

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## EDUCATION

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### Arizona State University, Tempe, AZ

2021 - 2026 (estimated)

Ph.D, Geography; advised by Professor Peter Kedron  
NSF Graduate Research Fellowship Recipient

### University of Maryland, College Park, MD

2017 - 2021

B.S. with High Honors, Mathematics; minors in Computer Science and History  
President's Scholarship Recipient; Earned University Honors Certificate in April 2019

## PUBLICATIONS

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P. Kedron, S. Bardin, **T. D. Hoffman**, M. Sachdeva, M. Quick, J. Holler. In review. "A Replication of DiMaggio et al. (2020) in Phoenix, AZ." *Annals of Epidemiology*.

**T. Hoffman\***, A. Swain\*, W. F. Fagan. (2021). "Trade-offs in sensory characteristics shape the evolution of perception." *Frontiers in Ecology and Evolution*, 9. <https://doi.org/10.3389/fevo.2021.698041>

A. Lawson, **T. Hoffman**, Y. Chung, K. Keegan, S. Day. (2021). "A density-based approach to feature detection in persistence diagrams for firm data." *Foundations of Data Science*. <http://dx.doi.org/10.3934/fods.2021012>

W. F. Fagan, **T. Hoffman**, D. Dahiya, E. Gurarie, R. S. Cantrell, C. Cosner. (2019). "Improved foraging by switching between diffusion and advection: benefits from movement that depends on spatial context." *Theoretical Ecology*, 13 (2), 127–136. <https://doi.org/10.1007/s12080-019-00434-w>

*\*equal contributions*

## CONFERENCE PROCEEDINGS

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**T. D. Hoffman**, T. Oshan. (2021). "A Supervised Heuristic for a Balanced Approach to Regionalization." GIS Research UK Conference Proceedings. <https://doi.org/10.5281/zenodo.4670015>

## GRANTS AND AWARDS

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### The College Graduate Excellence Award

2022

*Award Recipient*

— The award is worth \$100. Received the College Graduate Excellence Award for excellent academic and research work in the 2021-2022 academic year.

### NSF Graduate Research Fellowship Award

2021 - 2026

*Award Recipient*

— The award is worth \$164,450 over five years. Received the National Science Foundation Graduate Research Fellowship Award for graduate work in computationally intensive research in the social sciences.

### University Graduate Fellowship

2021

*Award Recipient*

— The award is worth \$3,000. Received a University Graduate Fellowship from the ASU School of Geographical Sciences and Urban Planning for work over summer 2021.

- Maryland Undergraduate Researcher of the Year Award** 2021  
*Award Recipient*
- The award is worth \$1,000. Received the Maryland Undergraduate Researcher of the Year award recognizing fruitful pursuits of learning and scholarship beyond the classroom.
- UMD Flagship Fellowship** 2021  
*Award Winner (declined)*
- The award is worth \$60,000 over 4 years. Received but declined the Flagship Fellowship for graduate studies at the University of Maryland, College Park.
- Math Department Strauss Teaching Assistant** 2020 - 2021  
*Award Recipient*
- Received the Strauss Teaching Assistant award to teach a section of Calculus I in the fall and Calculus II in the spring.
- UMD President's Scholarship** 2017 - 2021  
*Award Recipient*
- Merit scholarship worth \$32,000 over four years.
- RESEARCH EXPERIENCE**
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- GIScience, Kedron Lab, Arizona State University** 2021 - Present  
*Graduate Researcher*
- Designing methods to enable causal inference in spatial settings.
  - Integrating novel ideas of process into geographic information systems.
- Spatial Data Science, GEOSMASH Lab, University of Maryland** 2020 - Present  
*Affiliate (2021-Present); Previously Undergraduate Researcher (2020-2021)*
- Developing open source software for the widespread use of spatial interaction modeling and the study of spatial scale.
  - Software has been incorporated in the Python Spatial Analysis Library (PySAL) Spatial Interaction (SpInt) module and can be found at this Github link.
- Mathematical Biology, Fagan Lab, University of Maryland** 2018 - 2021  
*Undergraduate Researcher*
- Designed and implemented a complex system model to study the evolution of vision.
  - Pursued novel modeling techniques in the fields of population dynamics and movement ecology by partial differential equations (PDEs) and agent-based simulations to examine forager motion.
  - Analyzed dynamical systems relating to the spread of disease and the vector-host relationship.
- Computational Statistics, University of North Carolina Greensboro** 2020  
*Research Experience for Undergraduates (REU) Participant*
- Employed unsupervised learning for outlier detection in topological data analysis settings to extract insights from sea ice datasets.
- Structural Acoustics, Naval Surface Warfare Center Carderock Division** 2019  
*Naval Research Enterprise Internship Program (NREIP) Intern*
- Evaluated new finite and boundary element methods to solve computationally hard problems relating to acoustic-structure interaction.

- Created a tool which implements a boundary element method for arbitrary geometries.

## **Math Directed Reading Program, University of Maryland**

2018

### *Participant*

- Studied manifold theory under the direction of a graduate student mentor.
- Delivered a talk proving that the Klein bottle cannot be embedded in three dimensions.

## **CONFERENCES AND WORKSHOPS**

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**T.D. Hoffman**, T. Oshan. (2022). “A model-driven approach to regionalization and spatial change-of-support.” Association of American Geographers 2022 Annual Meeting.

**T.D. Hoffman**, T. Oshan. (2021). “A Supervised Heuristic for a Balanced Approach to Regionalization.” GIS Research UK (GISRUK) 2021.

**T. Hoffman**, A. Swain, K. Leyba, W.F. Fagan. (2020). “Perceptual evolution: How the spatially explicit interplay of biological and environmental factors shapes resource uptake.” Ecological Society of America 2020 Meeting.

## **LEADERSHIP**

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### **School of Geographical Sciences Graduate Student Committee**

2022

#### *President*

- Elected President of the committee for the 2022 calendar year. The President serves as an immediate liaison between the faculty and administration and the graduate student body.

### **Model United Nations Team**

2017 - 2021

#### *Senior Executive Advisor; Vice President; Undersecretary-General for Crisis at UMUNC I*

- Vice President and founding member of the University of Maryland Model United Nations Team.
- Helped to raise the team from unranked to Top 50 nationwide in two seasons.
- Outstanding Delegate (Second Place), William & Mary Model UN Conference (April 2019)
- Honorable Delegate (Third Place), NYU Model UN Conference (April 2018)

### **University Senate, College of Computer, Mathematical, and Natural Sciences**

2018 - 2019

#### *Senator and Programs, Courses, and Curricula (PCC) Committee Member*

- Participated in Senate discussions on campus affairs. Engaged in coalitions to better the university.
- Reviewed proposals for new and modified majors, minors, and certificate programs as a member of the Programs, Courses, and Curricula Committee.

## **WORKSHOPS**

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### **UMD COMBINE Network Epidemiology Online Workshop Series**

2020

#### *Participant*

- Attended a series of lectures from prominent epidemiological network scientists on cutting-edge techniques in the field and their relevance to the contemporary coronavirus epidemic.
- Led a team of graduate students and postdocs to research epidemiological network science and produce a poster which introduces and explains current research for public health officials.

## **SKILLS AND LANGUAGES**

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**Proficient in** Python, Julia, Unix/Linux/Bash, L<sup>A</sup>T<sub>E</sub>X, MATLAB/Octave, C, Java, OCaml  
**Familiar with** R, APL, Netlogo, Fortran, Rust, Go, Ruby, Perl, French, Arduino, HTML/CSS