

TYLER HOFFMAN

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EDUCATION

Arizona State University, Tempe, AZ

September 2021 - May 2026 (estimated)

Doctor of Philosophy, Geography

Advised by Prof. Peter Kedron

NSF Graduate Research Fellowship Awardee

University of Maryland, College Park, MD

August 2017 - May 2021

Bachelor of Science with High Honors, Mathematics; minors in Computer Science and History

Presidential Scholarship Recipient; Earned University Honors Certificate in April 2019

Cumulative GPA 3.75/4.00

PUBLICATIONS

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>

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*

RESEARCH EXPERIENCE

Geospatial Data Analysis, Oshan Lab, University of Maryland

May 2020 - Present

Undergraduate Researcher

- Developing open source software for the widespread use of spatial interaction modeling and spatial econometrics models.
- 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

May 2018 - Present

Undergraduate Researcher

- Designed and implemented a complex system model to study the evolution of vision. Presented at Ecological Society of America (ESA) Conference 2020.
- 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 REU, University of North Carolina Greensboro

May - July 2020

REU Participant

- Employed unsupervised learning for outlier detection in topological data analysis settings to extract insights from sea ice datasets.

Naval Surface Warfare Center, Carderock Division

May - August 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 one such method for arbitrary geometries.

Math Directed Reading Program

Spring 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.

AWARDS AND LEADERSHIP

NSF Graduate Research Fellowship Award

2021 - 2026

Award Recipient

- Received the National Science Foundation Graduate Research Fellowship Award for graduate work in computationally intensive research in the social sciences. The award is worth \$138,000.

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.

Maryland Undergraduate Researcher of the Year Award

2021

Award Recipient

- Received the Maryland Undergraduate Researcher of the Year award recognizing fruitful pursuits of learning and scholarship beyond the classroom. The award is worth \$1,000.

UMD Flagship Fellowship

2021

Award Winner

- Received but declined the Flagship Fellowship for graduate studies at the University of Maryland, College Park. The award is worth \$60,000 over 4 years.

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.

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 75 in one year and Top 50 in the 2019-2020 season.
- Honorable Delegate (Third Place), NYU Model UN Conference (April 2018)
- Outstanding Delegate (Second Place), William and Mary Model UN Conference (April 2019)

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

2018 - 2019

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

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

CONFERENCES AND WORKSHOPS

GIS Research UK (GISRUK) 2021

14-16 April 2021

Contributing Speaker

- Presented a talk which introduces an endogenous, model-driven criterion for the number of clusters to select when pursuing spatial clustering.

Ecological Society of America 2020 Meeting

3-6 Aug 2020

Contributing Speaker

- Presented a talk entitled “Perceptual evolution: How the spatially explicit interplay of biological and environmental factors shapes resource uptake” which explores work done by A. Swain and T. Hoffman on the evolution of vision through agent-based simulation.

UMD COMBINE Network Epidemiology Online Workshop Series

April 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 postbacs to research epidemiological network science and produce a poster which introduces and explains current research for public health officials.

SKILLS AND LANGUAGES

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