

Nicholas W. Landry

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Education

University of Colorado Boulder <i>PhD in Applied Mathematics</i> Advisor: Juan G. Restrepo "Contagion on Complex Systems: Structure and Dynamics"	Boulder, CO 2017–2022
University of Colorado Boulder <i>MS in Applied Mathematics</i>	Boulder, CO 2017–2020
University of New Hampshire <i>BS in Mechanical Engineering</i> University Honors, Summa Cum Laude	Durham, NH 2010–2014

Experience

Research

University of Vermont <i>TGIR Postdoctoral Research Fellow</i>	Burlington, VT 2022–Present
University of Colorado Boulder <i>Research Assistant</i>	Boulder, CO 2019–2022
University of New Hampshire <i>Research Assistant</i>	Durham, NH 2013–2015

Industry

Pacific Northwest National Laboratory <i>PhD Intern in the Data Sciences and Analytics Group</i>	Seattle, WA Summer 2021
Turbocam International <i>Manufacturing Engineer</i>	Barrington, NH 2014–2017

Funding

- NSF Award 2224051, "Conference: Computational Approaches for Contagion on Complex Social Systems", \$34,770 2022
Co-writer with Juan G. Restrepo (PI; University of Colorado Boulder)
- NSF Award 2121905, "HNDS-I: Developing a software library for the analysis and visualization of spreading processes on social hypergraphs", \$80,193 2021–2022
Co-writer with Juan G. Restrepo (PI; University of Colorado Boulder)

Publications

- **Nicholas W. Landry**, jimi adams, *On limitations of uniplex networks for modeling multiplex diffusion*, PLoS ONE, 2023. DOI: 10.1371/journal.pone.0279345
- **Nicholas W. Landry**, Juan G. Restrepo, *Hypergraph assortativity: a dynamical systems perspective*, Chaos, 2022. DOI: 10.1063/5.0086905
- **Nicholas W. Landry**, *Effect of time-dependent infectiousness on epidemic dynamics*, Physical Review E, 2021. DOI: 10.1103/PhysRevE.104.064302

- **Nicholas W. Landry**, Juan G. Restrepo, *The effect of heterogeneity on hypergraph contagion models*, Chaos, 2020. DOI: 10.1063/5.0020034
- **Nicholas W. Landry**, Marko Knezevic, *Delineation of First-Order Elastic Property Closures for Hexagonal Metals Using Fast Fourier Transforms*, Materials, 2015. DOI: 10.3390/ma8095303
- Marko Knezevic, **Nicholas W. Landry**, *Procedures for reducing large datasets of crystal orientations using generalized spherical harmonics*, Mechanics of Materials, 2015. DOI: 10.1016/j.mechmat.2015.04.014
- Marko Knezevic, Daniel J. Savage, **Nicholas W. Landry**, *Towards Computationally Tractable Simulations of Metal Forming Processes With Evolving Microstructures*, Proceedings of the ASME International Manufacturing Science and Engineering Conference, 2014. DOI: 10.1115/MSEC2014-3984

Presented Work

Invited Talks

- *Higher-order models for social and epidemiological contagion* January 2023
Network Science Institute at Northeastern Boston, MA
- *Community structure in hypergraphs and the emergence of polarization* October 2022
AMS Fall Eastern Sectional Meeting Amherst, MA
- *Hypergraph dynamics: assortativity and the expansion eigenvalue* April 2022
Special Session on Combinatorial Approaches to Topological Structures and Applications at the Joint Mathematics Meetings
- *Hypergraph assortativity: A dynamical systems perspective* March 2022
Higher-Order Interactions: The Next Frontier of Complex Systems at the APS March Meeting
- *Contagion on Complex Systems: Structure and Dynamics* January 2022
Harvard Center for Communicable Disease Dynamics
- *Contagion on Complex Systems: Structure and Dynamics* January 2022
University of Vermont
- *Contagion on Complex Systems: Structure and Dynamics* January 2022
Dartmouth College
- *Contagion on Complex Systems: Structure and Dynamics* January 2022
CU Boulder Applied Mathematics Dynamics Seminar
- *Hypergraph dynamics: a dynamical systems perspective* December 2021
Graph Theory and its Applications session at the 2021 Winter Canadian Mathematical Society (CMS) Meeting
- *The effect of contact structure on hypergraph contagion models* May 2021
Dynamics on Networks with Higher Order Interactions Minisymposium, SIAM Dynamical Systems Conference
- *The effect of heterogeneity on hypergraph contagion models* October 2020
Fundamentos y Enseñanza de la Física y los Sistemas Dinámicos, Universidad de Antioquia
- *The effect of heterogeneity on hypergraph contagion models* September 2020
CU Boulder Applied Mathematics Dynamics Seminar
- *Hypergraph Contagion* February 2020
Colorado Chapter of Society of Young Network Scientists

Contributed Talks

- *Hypergraph community structure and the emergence of polarization* October 2022
Conference on Complex Systems Palma, Spain

- *Hypergraph community structure and the emergence of polarization* September 2022
SIAM Network Science Workshop
- *Hypergraph community structure and the emergence of polarization* July 2022
NetSci
- *Hypergraph community structure and the emergence of polarization* March 2022
Northeast Regional Conference on Complex Systems (Best Oral Presentation)
- *Hypergraph dynamics: assortativity and the expansion eigenvalue* November 2021
International Conference on Complex Networks and their Applications
- *On limitations of uniplex networks for modeling multiplex diffusion* July 2021
Networks
- *Hypergraph community structure and the emergence of polarization* June 2021
TopoNets: Networks Satellite
- *The effect of time-dependent infectiousness on epidemic dynamics* March 2021
Front Range Applied Mathematics Student Conference
- *The effect of heterogeneity on hypergraph contagion models* September 2020
TopoNets: NetSci Satellite Conference
- *Improvisatory Elements of Teaching* February 2019
Workshop for the Graduate Teacher Program Boulder, CO
- *So You Think You're Bad at Math* January 2019
Ignite Talk for the Graduate Teacher Program's Spring Conference Boulder, CO
- *Music Data Mining: Finding Structure in Song* Fall 2018
Statistics, Optimization, and Machine Learning Seminar, Applied Math Boulder, CO

Posters.....

- *Community structure in hypergraphs and the emergence of polarization* January 2022
Dynamics Days
- *The effect of time-dependent infectiousness on epidemic dynamics* March 2021
Northeastern Regional Conference on Complex Systems
- *The effect of heterogeneity on hypergraph contagion models* August 2020
Dynamics Days Digital
- *The effect of simplex and network degree distribution on simplicial contagion models* January 2020
Dynamics Days Hartford, CT

Software Demonstrations.....

- XGI October 2022
TopoNets Satellite Conference of the Conference on Complex Systems Palma, Spain
- XGI July 2022
Higher-Order Models in Network Science Satellite Conference of NetSci Online
- XGI and HyperContagion August 2022
Contagion on Complex Social Systems Workshop Boulder, CO

Software

- CompleX Group Interactions (XGI): Creator and Core Developer NumFOCUS affiliated
- HyperContagion: Creator and Core Developer
- HyperNetX: Contributor

Awards

- Chief Student Marshal for UNH Commencement 2014 based on GPA and contributions to the college 2014
- Mechanical Engineering Faculty Choice Award for Poster at UNH Undergraduate Research Conference 2014
- Nominee for the Goldwater Scholarship; 1 of 4 students representing UNH 2012
- Eagle Scout 2008

Leadership, Mentoring, and Service

- University of Colorado Boulder** **Boulder, CO**
Graduate Peer Mentor 2020-2021
Met with students over the course of the semester to check in and offer support
- CU Boulder Applied Math Department** **Boulder, CO**
Lead Teaching Assistant 2018-2019
- Led a weekly seminar for 15 first year students
 - Facilitated video consultations to student TAs to help develop effective teaching skills
 - Informed students about important topics, like obtaining residency, finding a research advisor, summer opportunities, and succeeding as a grad student
- CU Boulder Applied Math Department** **Boulder, CO**
Graduate Student Representative 2018-2019
- Gathered student input through polls and meetings
 - Met with the Applied Mathematics graduate committee to voice student concerns
 - Collaborated with students and faculty to help create policies agreeable to both parties
- I Have a Dream Foundation of Boulder County** **Lafayette, CO**
Tutoring Volunteer 2018
Tutored underprivileged students in the local school district in math and science
- University of New Hampshire** **Durham, NH**
Vice President of UNH Chapter of Pi Mu Epsilon 2012-2013

Organizer.....

- Talkbocopus seminar series** **Burlington, VT**
Co-organizer Fall 2022
- Models and Methods for Sparse (Hyper) Network Science at JMM** **Boston, MA**
Co-organizer January 6, 2023
- TopoNets symposium at the Conference on Complex Systems** **Palma, Spain**
Co-organizer October 18-19, 2022
- Contagion on Complex Social Systems Workshop** **Boulder, CO**
Co-chair August 10-12, 2022
- CU Boulder Applied Math Department** **Boulder, CO**
Joint coordinator of the Dynamical Systems seminar Spring 2021, 2022

Reviewer.....

Journals

Nature Communication Physics, Nature Communications, Physical Review Research, Scientific Reports, Physical Review E

Conferences

Algorithm Engineering and Experiments (2022)

Teaching

University of Colorado Boulder

Boulder, CO

Instructor

Summer 2020

Taught Calculus 1 for Engineers to 20 students five days a week in a remote learning setting; managed a teaching assistant, presented concepts, and developed course material and exams.

University of Colorado Boulder

Boulder, CO

Teaching Assistant

2017-Present

- Calculus 1 for Engineers (APPM 1350): Fall 2017
- Calculus 2 for Engineers (APPM 1360): Spring 2018, Summer 2019, Fall 2019
- Calculus 3 for Engineers (APPM 2350): Fall 2018
- Differential Equations and Linear Algebra (APPM 2360): Spring 2019, Fall 2020, Spring 2021
- Matrix Methods (APPM 3310): Spring 2020

Workshops

- *MRC: Models and Methods for Sparse (Hyper) Network Science* Participant *June 2022*
Buffalo, NY
- *Complex Networks Winter Workshop (CNWW)* Participant *January 2021*
Online
- *Statistics and Modeling with Novel Data Streams at the SISMID summer school* Participant *June 2020*
Online
- *Understanding and Exploring Network Epidemiology in the Time of Coronavirus* Participant *April 2020*
Online

Certifications

Certificate in College Teaching

Boulder, CO

Graduate Teacher Program

November 2018

- Attended 20 hours of teaching-related workshops
- Observed by a faculty member to vouch for my teaching
- Participated in 2 consultations using video footage from my class
- Attended 20 hours of discipline-specific teaching workshops.
- Wrote a teaching portfolio, outlining my teaching experience, skills, and philosophy

Travel Grants

- *CU Boulder Graduate School Student Travel Grant* *2020, 2022*
- *2022 JMM Grad Student Travel Grant* *2022*
Awarded a \$1,300 travel grant
- *Networks 2021 Registration Waiver* *2021*
Awarded a registration waiver for Networks 2021 which is being held virtually
- *SIAM Student Travel Award* *2021*
Awarded a registration waiver for SIAM DS 2021 which is being held virtually

Organizations and Affiliations

- Society for Industrial and Applied Mathematics (SIAM)
- The Network Science Society
- International Network for Social Network Analysis

Media

- *Interactions Within Larger Social Groups Can Cause Tipping Points in Contagion Flow*
AIP Press Release October 20th, 2020
- *Contagion on Complex Networks*
Radio, Season 3 Episode 13, Probably Novel at University of Colorado Boulder February 3rd, 2020