

# BENJAMIN FREIXAS EMERY

Senior Member of the Technical Staff at Sandia National Laboratories

## Contact

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## Education

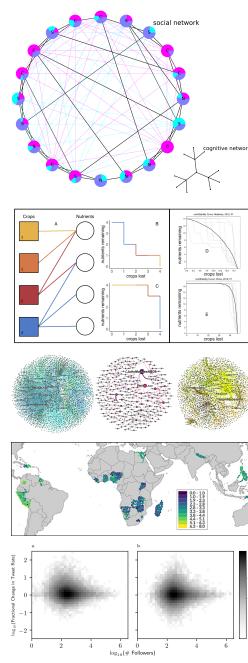
### *The University of Vermont*

M.S. in Complex Systems and Data Science - College of Engineering and Mathematical Sciences  
M.S. Thesis - *Network scientific and information theoretic approaches to social media in extreme climate events*  
Graduated in May 2019

### *The University of Vermont*

B.S. in Statistics - College of Engineering and Mathematical Sciences  
B.S. in Physics - College of Arts and Sciences  
Minor in Mathematics - College of Engineering and Mathematical Sciences  
Graduated in May 2016

## Research papers



- [6] **B. F. Emery**, “A model of narrative reinforcement on a dual-layer social network,” *ArXiv preprint (in submission)*, 2022.
- [5] A. Naugle, D. Kroccheck, C. Warrender, K. Lakkaraju, L. Swiler, S. Verzi, **B. F. Emery**, J. Murdock, M. Bernard, and V. Romero, “What can simulation test beds teach us about social science? results of the ground truth program,” *Computational and Mathematical Organization Theory*, pp. 1–22, 2022.
- [4] C. C. Nicholson, **B. F. Emery**, and M. T. Niles, “Global relationships between crop diversity and nutritional stability,” *Nature Communications*, vol. 12, no. 1, pp. 1–9, 2021.
- [3] **B. F. Emery**, M. T. Niles, C. M. Danforth, and P. S. Dodds, “Local information sources received the most attention from Puerto Ricans during the aftermath of Hurricane Maria,” *PLOS ONE*, vol. 16, no. 6, p. e0251704, 2021.
- [2] M. T. Niles, **B. F. Emery**, S. Wiltshire, M. E. Brown, B. Fisher, and T. H. Ricketts, “Climate impacts associated with reduced diet diversity in children across nineteen countries,” *Environmental Research Letters*, vol. 16, no. 1, p. 015010, 2021.
- [1] M. T. Niles, **B. F. Emery**, A. J. Reagan, P. S. Dodds, and C. M. Danforth, “Social media usage patterns during natural hazards,” *PLOS ONE*, vol. 14, no. 2, p. e0210484, 2019.

## Conference presentations

- “A projected model of online disinformation cascades”, talk, Networks 2021, Online, July 2021.
- “Using the frequency of Teletherm flickering to map the propensity for climatic regime transitions”, poster, SAMSI Climate Opening Workshop, Research Triangle Park, North Carolina, August 2017.

## Software

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Proficient in	Experienced in
Python	Javascript / D3
BASH	MATLAB
LaTeX	R

## Teams and organizations

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*Albuquerque Mountain Bike Association, New Mexico*  
Member of the Trail Development Committee (2021-present)

*PLOS ONE*  
Manuscript reviewer (2020-present)

*Computational StoryLab, University of Vermont Complex Systems Center, Vermont*  
Researcher (2016-2019)  
Original research conducted in collaboration with Professors Chris Danforth and Peter Dodds.

*Niles Lab Team, University of Vermont Department of Food Systems, Vermont*  
Researcher (2018-2019)  
Original research under the guidance of Professor Meredith Niles.

*Student Complexity Research and Pizza Seminars, University of Vermont Complex Systems Center, Vermont*  
Director (2017-2019)  
Organizing informal seminars for students to gather and discuss research ideas and results.

*UVM Cycling Team, University of Vermont Club Sports, Vermont*  
Member (2012-2019)  
2015-2016 Mountain Bike Season Coordinator  
National Championships Racer (2015, 2018)  
Eastern Conference Mountain Bike Season Omnium Champion (2018)

*UVM Society of Physics Students, University of Vermont Department of Physics, Vermont*  
4-year member (2012-2016)  
Secretary (2015-2016)

*UVM Bikes, University of Vermont, Vermont*  
2016 Campus Bike Shop Volunteer Mechanic

## Work experience

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Senior Member of the Technical Staff - *Sandia National Laboratories, Applied Information Sciences Center*  
May 2022 - present

Member of the Technical Staff - *Sandia National Laboratories, Applied Information Sciences Center*  
October 2019 - May 2022

Contributing to basic research in areas including power grid resilience and social systems modeling, and to the development of new unsupervised learning techniques. Principally investigating questions surrounding the spread and influence of online misinformation.

Research Scientist - *University of Vermont Department of Food Systems*  
June 2018 - October 2019

Generated visuals and analyzed data for a research projects led by Professor Meredith Niles, supported by a grant from the National Institute of Food and Agriculture.

Graduate Teaching Assistant - *University of Vermont Department of Mathematics and Statistics*  
January 2017 - December 2018

Taught introductory college mathematics courses ranging from algebra to calculus, and held drop-in help sessions for students enrolled in mathematics courses.

Data Science Contractor - *EQUITAS Life Sciences Consulting*  
January 2018 - August 2018

Used machine learning methods to help clients in the medical industry classify the products of competitors and easily identify their own analogous products.

Data Analyst / Business Consultant Intern - *Cox Automotive / Dealer.com*  
May 2017 - August 2017

Analyzed data collected by the Customer Support team at Dealer.com. Made meaningful conclusions about the effectiveness of their practices, offered strategic plans to improve customer satisfaction and company growth. Created tools in Python for the company to use in assessing the trajectories employee performance.

Astronomy Education Intern - *Saint Paul's School Advanced Studies Program*  
June 2016 - August 2016

Assisted in teaching an introductory astronomy class for excelling high school seniors. The curriculum included fundamentals of astronomy, emerging topics, and the basics of astronomical research, such as navigating the sky with telescopes and analyzing astronomical data with Python. Also supervised the students' residential life and recreation.

Intern / Technology Analyst - *UVM Office of Technology Commercialization*  
January 2016 - April 2016 and September 2012 - May 2013

Provided preliminary analysis of patent applications and conducted prior art research. Compiled sell sheets for confirmed patents held by UVM professors.

### **Secondary spoken / written languages**

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Spanish - Limited working proficiency