Kathleen Champion

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Education

University of Washington   Seattle, WA
Ph.D., Applied Mathematics   *August 2019*
M.S., Applied Mathematics   *December 2015*
- *Advisors:* Nathan Kutz & Steve Brunton
- *Thesis:* From data to dynamics: discovering governing equations from data

Dartmouth College   Hanover, NH
B.A., Mathematics with High Honors   *June 2011*
- *Advisors:* Alex Barnett & Amy Gladfelter
- *Honors Thesis:* Markov Chain Monte Carlo for Automated Tracking of Genealogy in Microscopy Videos

Awards & Honors

National Science Foundation Graduate Research Fellow   2016-2019

Boeing Service Award, UW Applied Mathematics   2019

Rising Stars in Computational & Data Sciences workshop participant   2019

Achievement Rewards for College Scientists (ARCS) Foundation Fellowship 2014-2017

Best Poster Award, 2017 International Conference on Mathematical Neuroscience 2017

Computational Neuroscience Training Grant   2015-2016

Boeing Fellowship   2014-2015

Publications

Kathleen Champion, Bethany Lusch, J. Nathan Kutz, and Steven L. Brunton. *Data-driven discovery of coordinates and governing equations.* Proceedings of the National Academy of Sciences.. 2019.

Kathleen Champion, Peng Zheng, Aleksandr Y. Aravkin, Steven L. Brunton, and J. Nathan Kutz. *A unified sparse optimization framework to learn parsimonious physics-informed models from data.* arXiv:1906.10612 (preprint). 2019.

Kathleen P. Champion, Steven L. Brunton, and J. Nathan Kutz. *Discovery of Nonlinear Multiscale Systems: Sampling Strategies and Embeddings.* SIAM Journal on Applied Dynamical Systems 18(1):312-333. 2019.

Experience

University of Washington Applied Mathematics   Seattle, WA
Postdoctoral Research Associate   *2019-present*

Institute for Pure and Applied Mathematics   Los Angeles, CA
Visiting Scholar, *Machine Learning for Physics and the Physics of Learning*   *September-December 2019*

HERE Technologies   Seattle, WA
Data Science Intern   *Summer 2017*

Johns Hopkins University Applied Physics Laboratory	Laurel, MD
Associate Professional Staff	*2011–2014*

Johns Hopkins University Applied Physics Laboratory	Laurel, MD
Technical Intern	*Summer 2010*

Selected Presentations

Data-driven discovery of complex systems: uncovering interpretable nonlinear models
European Numerical Mathematics and Advanced Applications Conference, Egmond Aan Zee, The
Netherlands, *September 30, 2019*

Simultaneous discovery of coordinates and parsimonious dynamics using autoencoders
International Congress on Industrial and Applied Mathematics, Valencia, Spain, *July 19, 2019*

Machine learning for the discovery of governing dynamical models
Applied Mathematics: The Next 50 Years, Seattle, WA, *June 21, 2019*

Simultaneous discovery of coordinates and parsimonious dynamics
Physics Informed Machine Learning Workshop, Seattle, WA, *June 6, 2019*

Simultaneous discovery of coordinates and parsimonious dynamics
Rising Stars in Computational & Data Sciences Workshop, Austin, TX, *April 9, 2019*

Data-driven discovery of nonlinear dynamics
SIAM Conference on Computational Science and Engineering, Spokane, WA, *February 27, 2019*

Whole-cortex imaging and analysis: interpreting neural activity across the mouse cortex
Allen Institute Showcase, Seattle, WA, *December 14, 2017*

Inferring brain-wide dynamics from wide-field calcium imaging data
Neural Computation and Engineering Connection, Seattle, WA, *January 19, 2017*

Determining the dimensionality of brain-wide activity from calcium imaging data
SAMSI Workshop on Optical Imaging Data Analysis, Research Triangle Park, NC, *February 2, 2016*

Teaching & Outreach

Committee member, UW Applied Mathematics Diversity Committee	2017-2019
Mentor & co-founder, Women in Applied Math Mentorship Program	Spring 2018
President, Society for Industrial and Applied Mathematics UW Student Chapter	2016-2017
Outreach Chair, Society for Industrial and Applied Mathematics UW Student Chapter	2015-2016
Co-organizer/instructor, Women in Science and Engineering (WiSE) UP Summer Bridge Program computational neuroscience mini-course	June 2016
Panelist, Bellevue School District STEM Career Fair	May 2016
Teaching Assistant, UW Neurobiology 450: Current Research Literature in Neurobiology	Fall 2015
Teaching Assistant, UW AMath 383: Introduction to Continuous Mathematical Modeling	Spring 2015