

Boyan Xu
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Education

Ph.D Mathematics with Designated Emphasis in Computational Biology

University of California-Berkeley, August 2018 - May 2023 (expected)

B.S Mathematics, *University of Illinois at Urbana-Champaign, August 2014 - May 2018*

Research experiences

NSF Mathematical Sciences Graduate Internship, *PI: Dmitriy Morozov*

Lawrence Berkeley National Laboratory, June – August 2019

Research in theoretical neuroscience, grid cells, and persistent cohomology

Graduate Student Research Assistant, *PI: Dmitriy Morozov*

Lawrence Berkeley National Laboratory, January – May 2019

Topological time series analysis on brain wave recordings for seizure detection

Visiting Researcher, *PI: Yannis Kevrekidis*

Chemical Engineering Department at Johns Hopkins University, May – June 2018

Research in manifold learning and dynamical systems

Summer@ICERM REU, *PI: Jose Perea*

Brown University, June – August 2017

Summer program in computational topology

University of Chicago Mathematics REU, *PI: Peter May*

University of Chicago, June – August 2015

Summer program in arithmetic geometry

Papers

State space discovery in spatial representation circuits with persistent cohomology,

In submission to *PLOS Computational Biology* (2020) [link to preprint](#)

Twisty Takens: a geometric characterization of good observations on dense trajectories, *Journal of Applied and Computational Topology* (2019) [arXiv:1809.07131](#) [link](#)

The Graph Laplacian and Morse Inequalities, *Pacific Journal of Mathematics* (2019)

Awards

DOE Computational Sciences Graduate Fellowship

April 2019

NSF GRFP Honorable Mention

April 2018

Barry M. Goldwater Scholarship

March 2016

H. Roy Brahana Prize

March 2016, 2018

Awarded to undergraduate mathematics major at UIUC with most exceptional undergraduate career.

Salma Wanna Memorial Award

April 2015

Awarded to undergraduate student at UIUC for outstanding coursework in math.

Computing skills

Python: Biopython and Pytorch; MATLAB