

CV: Andrew Liu (2/27/20)

University of Utah, Department of Mathematics

math.utah.edu/~aliu

Education

2014 – 2019 **University of California, Los Angeles, CA, USA:** BS, Mathematics

2019 – **University of Utah, Salt Lake City, UT, USA:** PhD, Mathematical Biology

Publications

A. Liu, M.A. Porter. “Spatial Strength Centrality and the Effect of Spatial Embeddings on Network Architecture”, *Physical Review E*, in review (arXiv:1910.01174)

Research Experience

2019 – Computational Neuroscience with Alla Borisjuk (Salt Lake City, UT, USA)

- Using techniques of network science and algebraic topology to study dynamics on networks representing neuronal networks
- Examining dynamical models of neurons and coupled oscillators

2018 – 2019 Spatial Network Theory with Mason A. Porter (Los Angeles, CA, USA)

- Researching spatial network models that represent real world networks such as air traffic, fungal growth, and social networks
- Creating novel spatial network models as well as spatial network characteristics to quantify the effects of spatial connection on network topology

2016 – 2017 iGEM Synthetic Biology Lab (Los Angeles, CA, USA)

- Designing gene sequences to implant into and produce protein cages in *E. coli* bacteria to encapsulate drug molecules for release at targeted sites

Mentoring Experience

2019 – Undergraduate Mentoring (Salt Lake City, UT, USA)

- Instructing undergraduate research into dynamical systems on networks, including introductory network theory

Professional Experience

2017 – 2018 EMCORE Corporation (Alhambra, CA, USA)

Intern / Part-time Employee. Data Analyst, Software Engineer

- Led data analysis projects to detect production line defects

- Designed an online project managements web application
- Developed production line quality testing automation software

Talks

- 2019 *Spatial Network Models*, Neuroscience Research Group, Salt Lake City, UT
- 2019 *An Introduction to Topological Data Analysis*, Neuroscience Research Group, Salt Lake City, UT
- 2019 *Dynamics of Trail Following in Ants*, Math Bio Journal Club, Salt Lake City, UT
- 2019 *Chimera States of Coupled Oscillators*, Math Bio Journal Club, Salt Lake City, UT
- 2019 *Mathematical Modelling in Computational Neuroscience*, Neuroscience Engineering Research Group, Salt Lake City, UT

Relevant Courses

- Fall 2019 Analysis of Numerical Methods I
- Fall 2019 Ordinary Differential Equations
- Fall 2019 Applied Linear Operators and Spectral Methods
- Fall 2019 Computational Neuroscience
- Fall 2019 Cellular and Molecular Neuroscience
- Spring 2019 Analysis of Numerical Methods II
- Spring 2019 Partial Differential Equations
- Spring 2019 Applied Complex Variables and Asymptotic Methods
- Spring 2019 Algebraic Topology

Programming Skills

Python, MATLAB, LaTeX