

Chia-Hung Yang

NETWORK SCIENTIST STUDYING EVOLUTION AND EMERGENT BEHAVIOR

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Education

Northeastern University

PH.D. IN NETWORK SCIENCE

Advisor: Prof. Samuel V. Scarpino

Boston, MA, United States

Sep. 2016 - PRESENT

National Tsing Hua University

B.S. IN PHYSICS

Thesis Advisor: Prof. Kuo-An wu

Hsinchu, Taiwan

Sep. 2011 - Jun. 2015

Experience

Emergent Epidemic Lab, Northeastern University

RESEARCH ASSISTANT

- Formulated a population-genetics modeling approach for the evolution of gene regulatory networks
- Investigated new insights from gene network evolution on traditional evolutionary theories

Boston, MA, United States

Sep. 2017 - PRESENT

Network Science Institute, Northeastern University

RESEARCH ASSISTANT

- Developed a mechanistic model that elucidated widely observed temporal patterns in ecological and financial systems

Boston, MA, United States

Sep. 2016 - Aug. 2017

Condensed Matter Theory Group, Department of Physics, National Tsing Hua University

RESEARCH ASSISTANT

- Analyzed and predicted the characteristic length scale of pattern formation in interacting prey-predator systems

Hsinchu, Taiwan

May 2014 - Jun. 2015

Publications

netrd: A library for network reconstruction and graph distances

MCCABE S, TORRES L, LAROCK T, HAQUE SA, YANG CH, HARTLE H, & KLEIN B

Oct. 2020

arXiv 2010.16019

Reproductive barriers as a byproduct of gene network evolution

YANG CH & SCARPINO SV

Jun. 2020

bioRxiv 2020.06.12.147322

The effect of human mobility and control measures on the COVID-19 epidemic in China

KRAEMAR MUG, YANG CH, GUTIERREZ B, WU CH, KLEIN B, PIGOTT DM, OPEN COVID-19 DATA WORKING GROUP, PLESSIS LD, FARIA NR, LI R, HANAGE WP, BROWNSTEIN JS, LAYAN M, VESPIGNANI A, TIAN H, DYE C, CAUCHEMEZ S, PYBUS OG, & SCARPINO SV

May 2020

Science 368(6490): 493-497

Presentations

TALKS

Mutation-Selection Balance of Gene Regulatory Circuits

EVOLUTION 2019

Providence, RI, United States

Jun. 2019

Population-Genetics Modeling of Gene Regulatory Networks

NETWORK MODELS IN CELLULAR REGULATION SYMPOSIUM, NETSCI 2019

Burlington, VT, United States

May 2019

Ensemble of Gene Regulatory Networks Consequent to Evolutionary Processes

STATISTICAL INFERENCE ON NETWORK MODELS SYMPOSIUM, NETSCI 2019

Burlington, VT, United States

May 2019

Emergence of Laplace-Distributed Growth Rates in Network Dynamics

APS MARCH MEETING 2019 (AMERICAN PHYSICAL SOCIETY MARCH MEETING)

Boston, MA, United States

Mar. 2019

Reproductive Barriers Results from Gene Regulatory Evolution

2ND JOINT CONGRESS ON EVOLUTIONARY BIOLOGY

Montpellier, France

Aug. 2018

Reproductive Barriers Results from Gene Regulatory Evolution

3RD ANNUAL MARINE SCIENCE CENTER GRADUATE STUDENT SYMPOSIUM

Nahant, MA, United States

May 2018

Emergence of Laplace-Distributed Growth Rates in Complex Systems

9TH COMPLENET (INTERNATIONAL CONFERENCE OF COMPLEX NETWORKS)

Boston, MA, United States

Mar. 2018

Pattern Formation in Interacting Prey-Predator Systems

COMPLEX SYSTEM SYMPOSIUM AT NATIONAL CENTER FOR THEORETICAL SCIENCE

Hsinchu, Taiwan

May. 2015

POSTERS

Ensemble of Gene Regulatory Networks Derived from Population Genetics

NETSCI 2020 (INTERNATIONAL SCHOOL AND CONFERENCE ON NETWORK SCIENCE)

Burlington, VT, United States

Jun. 2019

Ensemble of Gene Regulatory Networks Consequent to Evolutionary Processes

NETSCI 2019 (INTERNATIONAL SCHOOL AND CONFERENCE ON NETWORK SCIENCE)

Rome, Italy

Sep. 2020

Ensemble of Gene Regulatory Networks Consequent to Evolutionary Processes

COLD SPRING HARBOR LABORATORY NETWORK BIOLOGY MEETING 2019

Cold Spring Harbor, United States

Mar. 2019

Speciation Results from Gene Network Evolution

SMBE 2018 (ANNUAL MEETING OF THE SOCIETY OF MOLECULAR BIOLOGY AND EVOLUTION)

Yokohama, Japan

Jul. 2018

Speciation Results from Gene Network Evolution

NETSCI 2018 (INTERNATIONAL SCHOOL AND CONFERENCE ON NETWORK SCIENCE)

Paris, France

Jun. 2018

Speciation Results from Gene Regulatory Network Evolution

NETSCI 2018 (INTERNATIONAL SCHOOL AND CONFERENCE ON NETWORK SCIENCE)

Boston, MA, United States

Mar. 2018

Linear Stability Analysis for Interactive Prey-Predator Systems

THE PHYSICAL SOCIETY OF REPUBLIC OF CHINA (TAIWAN) ANNUAL MEETING

Hsinchu, Taiwan

Jan. 2015

Honors & Awards

2017 **SYNS Travel Grant**, Society of Young Network Scientist, NetSci 2017

IN, United States

2012 **Outstanding Academic Achievement Award**, National Tsing Hua University

Hsinchu, Taiwan

Professional Service

Outreach Coordinator

GRADUATE STUDENT ASSOCIATION OF NETWORK SCIENCE

May 2018 - PRESENT

Co-Organizer

2ND ANNUAL NETWORK SCIENCE RESEARCH SYMPOSIUM

Jun. 2019 - Nov. 2019

Co-Organizer

1ST ANNUAL NETWORK SCIENCE RESEARCH SYMPOSIUM

May 2018 - Nov. 2018

Voluntary Lecturer

NETWORK SCIENCE GRADUATE STUDENT BOOTCAMP

Aug. 2017, 2018, 2019, & 2020

Reviewer

PHYSICAL REVIEW E, ENTROPY, & SCIENTIFIC REPORTS

Translator

COMPLEXITY EXPLAINED BOOKLET (TRADITIONAL CHINESE)

complexityexplained.github.io

Outreach

Open NetSci Hackathon 2019

PARTICIPANT OF THE CONVERTING NETWORK FORMAT PROJECT

- Developed netconv, a command-line lightweight graph format converter

[Burlington, VT, United States](#)

May 2019

DataHack@Yale 2017

PARTICIPANT OF THE MCCRYSTAL GROUP

- Visualized organizational cooperation networks and spotlighted influencers

[New Haven, CT, United States](#)

Feb. 2017

Skills

Programming Python, Julia, R, C/C++, LaTeX, SQL

Languages Traditional Chinese, English

Open Source Software

netrd — Comparing Graph Distances between Network Reconstructions

CO-DEVELOPER

- Implemented reconstruction methods and dynamics simulators on networks

github.com/netsiphd/netrd

netconv — Converting Network Data Formats

CO-DEVELOPER

- Designed core data structure and implemented file format converters

github.com/netsiphd/netconv

Organization Membership

American Physical Society, Network Science Society, Society of the Study of Evolution, and Society of Young Network Scientists.