Chia-Hung **Yang**

Network Scientist Studying Evolution and Emergent Behavior

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Education

Northeastern University — *Boston, MA, United States*

Ph.D. in Network Science — *Sep. 2016 - PRESENT*

Advisor: Prof. Samuel V. Scarpino

National Tsing Hua University — *Hsinchu, Taiwan*

B.S. in Physics — *Sep. 2011 - Jun. 2015*

Thesis Advisor: Prof. Kuo-An wu

Experience

Emergent Epidemic Lab, Northeastern University — *Boston, MA, United States*

Research Assistant — *Sep. 2017 - PRESENT*

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

Network Science Institute, Northeastern University — *Boston, MA, United States*

Research Assistant — *Sep. 2016 - Aug. 2017*

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

Condensed Matter Theory Group, Department of Physics, National Tsing Hua University — *Hsinchu, Taiwan*

Research Assistant — *May 2014 - Jun. 2015*

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

Publications

Reproductive barriers as a byproduct of gene network evolution

Yang CH & Scarpino SV — *bioRxiv 2020.06.02.147322*

The effect of human mobility and control measures on the COVID-19 epidemic in China — *May 2020*

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 — *Science 368(6490): 493–497*

Presentations

Talks

Mutation-Selection Balance of Gene Regulatory Circuits — *Providence, RI, United States*

Evolution 2019 — *Jun. 2019*

Population-Genetics Modeling of Gene Regulatory Networks — *Burlington, VT, United States*

Network Models in Cellular Regulation Symposium, NetSci 2019 — *May 2019*

Ensemble of Gene Regulatory Networks Consequent to Evolutionary Processes — *Burlington, VT, United States*

Statistical Inference on Network Models Symposium, NetSci 2019 — *May 2019*

Emergence of Laplace-Distributed Growth Rates in Network Dynamics — *Boston, MA, United States*

APS March Meeting 2019 (American Physical Society March Meeting) — *Mar. 2019*

Reproductive Barriers Results from Gene Regulatory Evolution — *Montpellier, France*
2nd Joint Congress on Evolutionary Biology — *Aug. 2018*

Reproductive Barriers Results from Gene Regulatory Evolution — *Nahant, MA, United States*
3rd Annual Marine Science Center Graduate Student Symposium — *May 2018*

Emergence of Laplace-Distributed Growth Rates in Complex Systems — *Boston, MA, United States*
9th Complenet (International Conference of Complex Networks) — *Mar. 2018*

Pattern Formation in Interacting Prey-Predator Systems — *Hsinchu, Taiwan*
Complex System Symposium at National Center for Theoretical Science — *May. 2015*

Posters

Ensemble of Gene Regulatory Networks Consequent to Evolutionary Processes — *Burlington, VT, United States*
NetSci 2019 (International School and Conference on Network Science) — *Jun. 2019*

Ensemble of Gene Regulatory Networks Consequent to Evolutionary Processes — *Cold Spring Harbor, United States*
Cold Spring Harbor Laboratory Network Biology Meeting 2019 — *Mar. 2019*

Speciation Results from Gene Network Evolution — *Yokohama, Japan*
SMBE 2018 (Annual Meeting of the Society of Molecular Biology and Evolution) — *Jul. 2018*

Speciation Results from Gene Network Evolution — *Paris, France*
NetSci 2018 (International School and Conference on Network Science) — *Jun. 2018*

Speciation Results from Gene Regulatory Network Evolution — *Boston, MA, United States*
NetSci 2018 (International School and Conference on Network Science) — *Mar. 2018*

Linear Stability Analysis for Interactive Prey-Predator Systems — *Hsinchu, Taiwan*
The Physical Society of Republic of China (Taiwan) Annual Meeting — *Jan. 2015*

Honors & Awards

2017 **SYNS Travel Grant,** Society of Young Network Scientist, NetSci 2017 — *Indianapolis, IN, United States*

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*

Reviewer
Physical Review E, Entropy, & Scientific Reports

Translator
Complexity Explained Booklet (Traditional Chinese) — *complexityexplained.github.io*

Outreach

Open NetSci Hackathon 2019 *Burlington, VT, United States*

Participant of the Converting Network Format Project *May 2019*

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

DataHack@Yale 2017 *New Haven, CT, United States*

Participant of the McChrystal Group *Feb. 2017*

- Visualized organizational cooperation networks and spotlighted influencers

Skills

Programming Python, R, Julia, C/C++, LaTeX, SQL
Languages Traditional Chinese, English

Open Source Software

netrd — Comparing Graph Distances between Network Reconstructions

Co-Developer *github.com/netsiphd/netrd*

- Implemented reconstruction methods and dynamics simulators on networks

netconv — Converting Network Data Formats

Co-Developer *github.com/netsiphd/netconv*

- Designed core data structure and implemented file format converters

Organization Membership

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