Heng-Chien (Leo) **Liou**

NETWORK SCIENCE · COMPUTATIONAL SOCIAL SCIENCE · SOCIAL NETWORKS

✉ liouhengchien@gmail.com | ⌂ leohcliou.github.io | leohcliou | heng-chien-liou

"Philosophers have hitherto only interpreted the world in various ways; the point is to change it."-Karl Marx

Research Statement

My ultimate goal is to bridge between engineering science, social science, and biological science. Currently, I adopt the perspective from network science and various computational tools to pursue this goal.
Keywords: *Network Science*, *Computational Social Science*, *Social Networks*

Education

National Taiwan University (NTU)   *Taipei, Taiwan*
B.S.Eng. in **Electrical Engineering** and B.S. in **Psychology**   *Sep. 2016 - Jun. 2021 (expected)*
- **GPA: 4.25/4.30** 1st year: 4.18, 4.29 / 2nd year: 4.27, 4.27 / 3rd year: 4.27, 4.26 / 4th year: 4.26
- Selected Courses (all with letter grade **A+**)
  - **Information, Systems & Decision Science**
    Probability & Statistics, Information Theory [†], Control Systems, Game Theory [†], Data Structure & Programming, Design & Analysis of Algorithms[†]
  - **Social Science**
    Economics I-II, Introductory Sociology, Sociological Theory (1), Social Psychology, Psychology of Personality
  - **Problem Domain**
    Neural & Behavioral Modeling[†]

([†] denotes graduate-level courses)

MITx (Massachusetts Institute of Technology through edX)   *Online*
MicroMasters Program in **Statistics and Data Science**   *Feb. 2019 - Oct. 2020 (expected)*
- Expected to complete four graduate level courses, at a similar pace and level of rigor as on-campus courses at MIT.
- Credentials: Probability ↗, Data Analysis in Social Science ↗, Fundamentals of Statistics ↗, Machine Learning ↗

University of British Columbia   *Vancouver, BC, Canada*
Vancouver Summer Program   *July. 2017 - Aug. 2017*
- Training on design thinking with group project and presentation experience.

Research Experience

TONIC Research Group @ National Taiwan University (NTU)   *Taipei, Taiwan*
Undergrad Research on Network Science, advised by Prof. Hung-Yun Hsieh   *Sep. 2018 - PRESENT*
- Formation of Friendship Networks among Agents with Personality Traits
  – Admitted proposal to MoST College Student Research
  – Developed computational network models to incorporate psychological concept into network science research
  – Manuscript submitted to ASONAM 2020 main research track

Institute of Sociology, Academia Sinica   *Taipei, Taiwan*
Undergrad Research on Computational Sociology, advised by Prof. Hsuan-Wei Lee   *Jan. 2020 - PRESENT*
- Social Consensus and Cultural Variation: Modeling and Theorizing for Social Dynamics
  – Research proposal submitted to MoST College Student Research
  – Abstract submitted to 2020 Conference on Computational Sociology poster track

Collective Algorithms Lab @ NTU   *Taipei, Taiwan*
Undergrad Research on Algorithmic Game Theory, advised by Prof. Ho-Lin Chen   *Sep. 2019 - PRESENT*
- Fairness for Vaccine Allocation on Networks
  – Introduced the concern of fairness into the vaccine allocation problem

Vision and Learning Lab @ NTU

Taipei, Taiwan

Undergrad Research on Computer Vision, advised by Prof. Yu-Chiang Frank Wang

Nov. 2018 - Aug. 2019

- Deep Learning for Social Relationship Recognition
  – Surveyed, implement and reproduced literature to develop methods

Professional Development and Certification

Online learning

Online

Broad training from Coursera, edX and other online learning platforms

March. 2019 - RRESENT

- **Information, Systems & Decision Science**
  Game Theory ⏻, Quantum Machine Learning ⏻
- **Social Science**
  Moral Foundations of Politics ⏻, Intro to Social Research Methods ⏻, Classical Sociological Theory ⏻, Anthropology of Current World Issues ⏻
- **Social Networks**
  Network Dynamics of Social Behavior ⏻

Selected Course Projects

A Brief Review of Brain Machine Interface with Focus on RFID-inspired System

Electromagnetism (II), *term paper*

- Surveyed the literature of RFID technology, BMI deisgn.

Hook-up: motives and individual difference

Social Psychology, *group oral presentation*

- Surveyed the social psychology literature about hook-up, casual sex and friends-with-benefit.

Emotional Resonance on Structured Network: A Simulation Approach

Special Project (on network science), *term paper*

- Conducted simulation of emotion contagions on social network model.
- Examined the epidemic prevalence within community structure.

Survey on Social Contagion Theory with Emphasis on Emotion Contagions

Special Project (on network science), *oral presentation*

- Surveyed the literature about social contagions theory, emotion contagions.

Extracurricular Activity

Global Initiatives Symposium Organizing Committee

Taipei, Taiwan

Officer of Academics and Curation

Oct. 2016 - July. 2017

- Organized and host Pre-Symposium Speech: Revolution of Sustainable Life.
- Was responsible for one of the academic topics- Low Carbon Economy in annual symposium.

Viking Bar

Taipei, Taiwan

Writer for Technology and Business Section

Sep. 2016 - Jan. 2018

- Analyzed several topics in modern technology development.
- Also wrote articles about personal growth, interdisciplinary learning, gender equality.

NTU Musical Club

Taipei, Taiwan

Member & Main Actor

Sep. 2016 - Jun. 2017

- Learned how to act and sing like a musical actor.
- Participated in annual musical performance with one of the main roles.

Honors & Awards

Research Grants

2019   College Student Research, Ministry of Science and Technology

Awards

2017-9   Presidential Awards (Dean's List) **4 semesters**, National Taiwan University
2017   Instructor Recommendation, Critical Writing on Chinese Classics

Scholarship

2019   Mr. Chien Shih-Liang Memorial Scholarship, National Taiwan University
2018   Delta Electronics Scholarship, Delta Electronics
2018   Scholarship, National Taiwan University Hong Kong Alumni Association
2018   Irving T. Ho Memorial Scholarship, Irving T. Ho Memorial Foundation
2017   Folk Committee Scholarship, Office of Zhongshan District, Taipei City

Skills

Programming   Python, C++
Language   Mandarin (native), English (fluent)
Research Method   Agent-based Modeling, Social Network Analysis, Game Theoretic Analysis

Learning Interest

Math   Probability Theory, Mathematical Statistics
Engineering   Optimization, System Dynamics
Sociology   Analytical Sociology, Gender and Queer Theory
Psychology   Personality, Social Relationship, Friendship