

# Hung-Ching Chang

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🐙 [Hung-Ching-Chang](#)

in [Hung-Ching \(Rick\) Chang](#)

## Education

### National Taiwan University (NTU)

#### M.S. in Biostatistics

*Thesis:* Development of a knowledge-based and data-driven network construction method for gene sets.

*Advisor:* Chuhsing Kate Hsiao

**Taipei, Taiwan**

Sep 2017 - Jun 2019

### National Cheng Kung University (NCKU)

#### B.S. in Mathematics / B.B.A. in Statistics

Graduate courses: Numerical Analysis, Stochastic Processes, Molecular Biology

**Tainan, Taiwan**

Sep 2013 - Jun 2017

## Publications

1. **Chang, H.**, Chu, C., Lin, S. et al. Network hub-node prioritization of gene regulation with intra-network association. *BMC Bioinformatics* 21, 101 (2020).
2. Chang, Y., Tung, Y., Lee, K., Chen, T., Hsiao, Y., **Chang, H.** et al. Potential Therapeutic Agents for COVID-19 Based on the Analysis of Protease and RNA Polymerase Docking. *Preprints* (2020).
3. **Chang, H.**, Hsiao, C. Development of a knowledge-based and data-driven network construction method for gene sets. *Master's thesis*.

## Research Experience

### Statistician / Data Scientist

- Consult with customers/colleagues to explain and implement statistical models
- Design tools for predicting genetic networks with survival analysis
- Build model for antibiotic resistance prediction using deep learning and machine learning techniques, such as Bayesian neural network
- Integrate 3rd party tools into our platform, [Taigenomics](#)
- Build automated genome-wide association study (GWAS) pipeline including pre-impute QC, phasing, imputation and analysis
- Establish the [virus transmission tool](#) for COVID-19

**Taiwan AI Labs**

**Taipei, Taiwan**

Jan 2020 - present

### Research Assistant

Advisor: Prof. Chuhsing Kate Hsiao

- Developed topology-based and network-based methods for pathway/gene set analysis and applied them to breast and ovarian cancer studies
- Focused on gene expression profile and pathway databases, such as KEGG database
- Presented at Research Poster Exhibition 2019, NTU

**NTU**

**Taipei, Taiwan**

Sep 2017 - Jun 2019

### Guest Scientist in "Mathematics in Life Sciences"

Advisor: Prof. Alexander Bockmayr

- Research project: Gene regulation in regulatory flux balance analysis (rFBA)
- Recovered the Boolean rules that regulate metabolism from the metabolic network

**Freie Universität Berlin**

**Berlin, Germany**

Jul 2018 - Aug 2018

### International Genetically Engineered Machine Competition (iGEM)

NCKU Tainan team --- [Official team page](#)

Advisor: Prof. I-Son Ng

- Simulated the diffusion of urine via finite differencing explicit method
- Build a statistical model to classify normal and pre-diabetes parameters
- Completed the project in collaboration with students from six different colleges
- Acquired knowledge in Molecular Biology and Synthetic Biology

**NCKU**

**Tainan, Taiwan**

Jul 2016 - Sep 2017

## Teaching Experience

### Teaching Assistant, Applied Bayesian Statistical Analysis [EPM5047]

- Taught OpenBUGS, answered questions and graded homework
- Created video lectures on Youtube, such as the OpenBUGS tutorial [\[link\]](#)

**NTU**

**Taipei, Taiwan**

2018 Fall

### Mathematics/Statistics Tutor

- Taught a wide range of students from high school to university levels
- Tutored international students in Precalculus in 2017

**Taiwan**

2014 - 2017

## Conference

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- 11<sup>th</sup> International Conference on Multiple Comparison Procedures** *Taipei, Taiwan*  
— Oral Presentation (invited) *Dec 2019*
- 4<sup>th</sup> iGEM Asia-Pacific Conference** *Tainan, Taiwan*  
— Organizer & Poster Presentation *Aug 2016*

## Honor & Awards

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- Research Poster Exhibition 2019** *Taipei, Taiwan*  
• Outstanding Poster Presentation Award *May 2019*  
• 2 recipients/year in Biostatistics
- Germany – Taiwan Academic Exchange Scholarship** *Germany & Taiwan*  
• Offered by the German Academic Exchange Service (DAAD) *Jul 2018*  
• 10 recipients/year in Taiwan
- International Genetically Engineered Machine Competition (iGEM)** *MA, USA*  
• Gold Medal & the Best Presentation *Oct 2016*  
• Nominated for the Best Diagnostics Project
- Achievement of Excellence Study Grant** *Tainan, Taiwan*  
• Offered by Prof. Kwok-Kun Kwong of NCKU *2016*
- Basic Statistics Competition** *Tainan, Taiwan*  
• Distinguished Honor Award *2016*  
• Top 3% in over 500 competitors

## Leadership

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- Student Association of the Mathematics Department** *NCKU*  
— President *Jul 2014 - Jun 2015*
- United Student Associations** *NCKU*  
— Executive Director in college of science *Jul 2014 - Jun 2015*

## Workshop Experience

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- Taipei Summer Institute in Statistical Genetics (SISG). *Taipei, Taiwan. (2017)*
- Workshop on Experimental Design and Uncertainty Quantification. *NCKU, Taiwan. (2016)*
- Statistical Science Camp. *Academia Sinica, Taiwan. (2016)*
- Mathematical Modeling (Summer course). *NCKU, Taiwan. (2016)*
- Taiwan Mathematical Society Annual Meeting, *NCKU, Taiwan. (2014)*

## License

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- Big Data Analyst – Associate Level** *Taiwan*  
— Certified by the Ministry of Economic Affairs, R.O.C. *2017*

## Language & Programming Skill

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- Language** **Native** Mandarin, Taiwanese | **Proficient** English | **Basic** German & Spanish
- Programming** **Proficient** R, Python, Matlab, Linux, shell, git
- Data analysis** Statistics, Machine learning frameworks/algorithms, Bioinformatics tools