Aug 2021

Hung-Ching Chang

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Personal Web
Hung-Ching-Chang
Hung-Ching (Rick) Chang

Education

University of Pittsburgh (UPitt) — ***PA, US***
Ph.D. in Biostatistics — *Aug 2021 - present*
Advisor: George C. Tseng & Kayhan Batmanghelich

National Taiwan University (NTU) — ***Taipei, Taiwan***
M.S. in Biostatistics — *Sep 2017 - Jun 2019*
Thesis: Development of a knowledge-based and data-driven network construction method for gene sets.
Advisor: Chuhsing Kate Hsiao

National Cheng Kung University (NCKU) — ***Tainan, Taiwan***
B.S. in Mathematics / B.B.A. in Statistics — *Sep 2013 - Jun 2017*
Graduate courses: Numerical Analysis, Stochastic Processes, Molecular Biology

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 — ***Taiwan AI Labs***
Taipei, Taiwan
Jan 2020 – Jun2021
- 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

Research Assistant — ***NTU***
Advisor: Prof. Chuhsing Kate Hsiao
Taipei, Taiwan
Sep 2017 - Jun 2019
- 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

Guest Scientist in "Mathematics in Life Sciences" — ***Freie Universität Berlin***
Advisor: Prof. Alexander Bockmayr
Berlin, Germany
Jul 2018 - Aug 2018
- Research project: Gene regulation in regulatory flux balance analysis (rFBA)
- Recovered the Boolean rules that regulate metabolism from the metabolic network

International Genetically Engineered Machine Competition (iGEM) — ***NCKU***
NCKU Tainan team --- *Official team page*
Tainan, Taiwan
Jul 2016 - Sep 2017
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

Conference

11th International Conference on Multiple Comparison Procedures — ***Taipei, Taiwan***
Dec 2019
— *Oral Presentation (invited)*

4th iGEM Asia-Pacific Conference — ***Tainan, Taiwan***
Aug 2016
— *Organizer & Poster Presentation*

Honor & Awards

Research Poster Exhibition 2019 — ***Taipei, Taiwan***
May 2019
- Outstanding Poster Presentation Award
- 2 recipients/year in Biostatistics

Germany – Taiwan Academic Exchange Scholarship — ***Germany & Taiwan***
Jul 2018
- Offered by the German Academic Exchange Service (DAAD)
- 10 recipients/year in Taiwan

International Genetically Engineered Machine Competition (iGEM) — ***MA, USA***
Oct 2016
- Gold Medal & the Best Presentation
- Nominated for the Best Diagnostics Project

Achievement of Excellence Study Grant — ***Tainan, Taiwan***
2016
- Offered by Prof. Kwok-Kun Kwong of NCKU

Basic Statistics Competition — ***Tainan, Taiwan***
2016
- Distinguished Honor Award
- Top 3% in over 500 competitors

Leadership

Student Association of the Mathematics Department — ***NCKU***
Jul 2014 - Jun 2015
— *President*

United Student Associations — ***NCKU***
Jul 2014 - Jun 2015
— *Executive Director in college of science*

Workshop Experience

- **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

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

Language & Programming Skill

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