Zhi-Lin **Pan**

Biosciences Student

(+886) 0958423259 | zilampoon@gmail.com | chilampoon.github.io | chilampoon | chilampoon

Education

National Yang-Ming University

Taipei, Taiwan

Undergraduate Student in Life Sciences

Sep. 2015 - Present

Suspension: Aug. 2018 - Aug. 2019

- Honor Student (top 1): 3 semesters
- Professor Kuang-Dong Wuu Outstanding Genetics Scholarship
- Relevant Coursework: Biochemistry, Cell and Molecular Biology, Genetics, Genomics, Immunology, Neuroscience, R and Python Programming, Data Structure and Algorithms, Biostatistics, Honor Calculus, Linear Algebra

Research Experience

Undergraduate Researcher

Taipei, Taiwan

Supervisor: Prof. Cho-Yi Chen, National Yang-Ming University

Mar. 2018 – Present

Project: Analysis of multi-tissue transcriptomes reveals candidate genes and pathways influenced by cerebrovascular diseases

- Built a multivariate linear regression model and applied to GTEx RNA-seq data
- Conducted limma-voom differential expression analysis and Gene Set Enrichment Analysis
- Interpreted the results and identified links between cerebrovascular diseases and tissue expression

Research Internship

Pittsburgh, PA

Supervisors: Prof. Silvia Liu & Prof. George Tseng, University of Pittsburgh

Mar. 2019 – Aug. 2019

Project: Nonparametric robust order-based machine learning for accurate inter-study prediction of categorical and continuous outcomes

- Selected and converted features with k top scoring pair (kTSP) algorithm
- Developed and diagnosed random forest models for prediction of cancer outcomes
- Implemented simulations based on realistic statistical models and estimated parameters

Research Internship

Singapore

Supervisor: Dr. Jonathan Göke, Genome Institute of Singapore

Aug. 2018 – Jan. 2019

Project: Machine learning predicts tumor metastatic potential

- Quantified raw transcript reads and summarized into gene-level values using Salmon and Tximport
- Applied machine learning algorithms to predict tumor metastasis potential from TCGA pancancer RNA-seq
- Evaluated models by feature selection and engineering using differential expression and pathway analysis

Summer Internship

Hong Kong

Supervisor: Prof. Jiguang Wang, Hong Kong University of Science and Technology

Jun. 2017 – Aug. 2017

Project: Identify noncoding somatic variants in paired primary-recurrent brain tumors

- Received training of large sequencing data manipulation in Unix environment
- Called variants from whole-genome sequencing data of glioblastoma samples
- Detected clusters of frequent mutations in noncoding regions using 'hotspot' analysis

International Genetically Engineered Machine Competition (iGEM)

Taipei, Taiwan & Boston, MA

Gold Medal (Overgrad), NYMU-Taipei 2016 iGEM team

Oct. 2015 – Nov. 2016

Project: Integrated Orchard Safeguard

- Designed the main project, gene circuits and wet experiments
- Conducted molecular cloning and fungal transformation
- Interviewed researchers in the field of entomopathogenic fungi, CRISPR/Cas9, etc.
- Participated in wiki and poster documentation writing

Publications

1. Analysis of multi-tissue transcriptomes reveals candidate genes and pathways influenced by cerebrovascular diseases

Zhi-Lin Pan, Cho-Yi Chen

bioRxiv preprint, 2019 doi: https://doi.org/10.1101/806893

2. Robust Order-based Machine Learning framework: a non-parametric predictive model with order-based feature selection for transcriptomic data
Zhi-Lin Pan, Wei Zong, Kelly Cahill, Yuchen Pan, Silvia Liu, George Tseng
Paper in preparation

Skills

Languages R & R Markdown, Python, Matlab, awk & sed
Environments Linux/Unix, Mas OS, AWS Cloud Computing/Ronin