Zixuan (Eleanor) Zhang

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EDUCATION

Columbia University Mailman School of Public Health 05/2020
Master of Science (MS) in Biostatistics, GPA: 4.0/4.3

University of California, Davis 06/2018
Bachelor of Science (BS) in Genetics & Genomics
- Graduated with high honors, GPA: 3.8/4.0

SKILLS

- Computer: R programming, SAS, Matlab, Microsoft office, website hosted on Github, Git version control
- Knowledge: Statistical method, Data science, Genetics, Longitudinal Analysis, Survival Analysis, Machine Learning
- Language: Fluent both orally and written in English and Mandarin

RESEARCH EXPERIENCES

Department of System Biology, Columbia University Medical Center 09/19 - present
Graduate Research Assistant
- Assist with developing a variable threshold association test by gene-specific weighting of missense genetic variants using sigmoid function. Apply this method to a major risk gene of pulmonary arterial hypertension (PAH) using Perl script.
- Explore and apply Bayesian approach to assess the risk of rare genetic variants in case and control comparison of PAH using whole exome sequencing data.

Department of Neurology at the Columbia University Medical Center 02/19 – present
Graduate Research Assistant
- Examine association between candidate plasma lipid biomarker data and risk of memory impairment associated with Alzheimer disease (AD) among 300 adults with Down Syndrome.
- Clean and summarize the demographic and medical record data in R.
- Apply clustering method to investigate the lipid profiles and other risk factors among individuals with varying stages of AD progression.
- Develop longitudinal analysis to evaluate the association between candidate lipid biomarkers at baseline and memory impairment over follow-up years.

Department of Mathematics & Department of Pharmacology, UC Davis 07/17 - 09/17
Undergraduate Research Assistant
- Reproduced a computational model of heart tissue with ischemic region called gap model in Matlab to investigate a hypothesized mechanism of cardiac arrhythmias.
- Investigated reflected waves under prescribed non-excitable gap lengths and how stochastic ion channel dynamics can affect the propensity of reflected waves by simulation.
- Performed data analysis of computation simulation and multiscale modeling in Matlab.
- Presented a poster at Undergraduate Research Conference at UC Davis.

RELEVANT COURSEWORKS AND PROJECTS

Data Science I&II in R programming:
- Performed data analysis pipeline including data wrangling, exploratory data analysis, visualization on multiple datasets and version control in R.

- Applied supervised and unsupervised statistical learning tools (nonlinear, logistic regression, boosting, decision tree algorithms, and clustering methods) and validation approach including cross validation and bootstrap.
- Published a website with four other team members which presents the analysis result of data science related job posts from Indeed, including text mining, odds ratio calculation, and visualizations (http://shanj.tk/P8105_final_website.io/index.html).

Project: Epigenome-wide association analysis in breast cancer

- Created code in R to extract DNA methylation data of 20 individuals from TCGA database.
- Performed quality control and data cleaning on 450k DNA methylation sites in R.
- Conducted epigenome association test at each methylation site to identify significant methylation site related to stages of breast cancer.
- Edited project report and discovered 10 significant sites with annotated gene labels after multiple testing adjustment in tabular table and visualized in Manhattan plot.

TEACHING EXPERIENCE

Department of Biostatistics, Columbia University Medical Center 09/19 – 12/19

Teaching Assistant, Biostatistics Method I

- Prepared and guided discussion session for topics on biostatistics method including hypothesis testing and linear regression for 90 students.
- Held office hours and provided academic tutoring for homework assignment and class material.

Department of Biostatistics, Columbia University Medical Center 09/19 – 12/19

Teaching Assistant, Data Science I

- Held weekly office hours for a class size of 150 students to provide tutoring for data science assignments using R.
- Guided 4 groups of students in preparation and presentation of final group project.

ABSTRACTS AND PRESENTATIONS

Poster Presentation

Zixuan Zhang, Timothy J. Lewis, Daisuke Sato. (April 27, 2018). "Stochastic Ion Channel Activity in Ischemic Regions of the Heart can Cause Reflected Waves." Poster session presented at Undergraduate Research Conference at UC Davis, CA.

HONORS

Recipient, Dean's Honors List, College of Letters and Sciences, Fall 2014
Recipient, Dean's Honors List, College of Agricultural and Environmental Sciences, Winter 2015 and Fall 2015
Recipient, Dean's Honors List, College of Biological Sciences, Spring 2017 and Spring 2018

UNIVERSITY SERVICE

President 01/18 – 01/20

Career China Club at Columbia University Mailman School of Public Health

- Planned and organized 6 career-oriented events for graduate students at Columbia University.
- Invited speakers from pharmaceutical industries to visit campus and share working experience with students.
- Reached out to campus partners Office of Career Service to collaborate on H1B information session for international students.