Farica Zhuang

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Education

University of Pennsylvania August 2021 - present
Doctor of Philosophy (PhD); Computer Science

Duke University August 2018 - May 2020
Master of Science (MS); Computer Science

UC San Diego July 2016 - June 2018
Bachelor of Science (BS); Applied Mathematics, minor in Computer Science

Foothill College August 2014 - June 2016
Associate in Science (AS); Mathematics

Work Experience

Deep Learning TA Comp Sci, UPenn
ESE 546 Principles of Deep Learning Teaching Assistant August 2022 - present

Eureka by SAP Newport Beach, CA
Software Engineer May 2020 - August 2021

Python Course Developer School of Nursing, Duke
Introduction to Python online course developer January 2019 - May 2020

Gordan Lab Comp Sci, Duke
Computational Biology Research Assistant advised by Prof. Raluca Gordan January 2019 - May 2020

Machine Learning Engineer School of Nursing, Duke
Research Assistant for Prof. Michael Cary, Chair of School of Nursing January 2019 - May 2020

CS 101 TA Comp Sci, Duke
Teaching Assistant for Compsci 101: Introduction to Computer Science January 2019 - May 2020

Teradata Rancho Bernardo, CA
Software Engineer Intern June 2018 - August 2018

Ongoing Projects

Modeling RNA secondary structures and variants that affect them

Developed a bert-based model using transcriptomic sequences to model RNA secondary structure formation in the non-coding regions. Studying the mechanisms for variants in these structures with disease phenotypes and how they affect protein expression levels

APAeval (Submitted to RNA Journal) **Link to bioRxiv** Link to github
Evaluated alternative polyadenylation (APA) computational methods for the detection, quantification of poly(A) sites, and estimation of their differential usage across RNA-seq samples

Modeling cooperative transcription factor binding (Submitted to NAR)

Based on ChIP-seq and data from high-throughput assay we designed, analyzed and modeled how pairs of transcription factors (TFs) affect each other's binding to the DNA in close proximity

Publications

*Equal contribution

1. Machine Learning Algorithms to Predict Mortality and Allocate Palliative Care for Older Patients With Hip Fracture

   Michael P. Cary, **Farica Zhuang**, Rachel Lea Draelos, Wei Pan, Sathya Amarasekara, Brian J. Douthit, Yunah Kang, Cathleen S. Colon-Emeric, *Journal of the American Medical Directors Association, 2020,* link

2. A machine learning-based prediction model for variants of uncertain significance found in catecholaminergic polymorphic ventricular tachycardiaand long QT syndrome-associated genes

   Rachel L. Draelos MS*, Jordan E. Ezekian MD MPH*, **Farica Zhuang** MS, Zhushan Zhang MD PhD, Perathu Kannu Rakesh Manivannan MBBSc, William Eisner BSc, Ricardo Henao PhD, Andrew P. Landstrom MD PhD, *Circulation: Arrhythmia and Electrophysiology, 2022* link

Teaching

ESE 546: Principles of Deep Learning UPenn
Teaching Assistant & Penn Online Course Developer 2022- present

Compsci 101: Introduction to Computer Science Duke
Teaching Assistant 2019 - 2020

NC School of Science and Mathematics Durham, NC
Python instructor for high school immersion program 2019 - 2020

Syrian Refugee Center San Diego, CA
English and Math tutor 2017 - 2018

English Language Institute UC San Diego
English Conversation Leader & Teaching Assistant 2017 - 2018

Summer Academy UC San Diego
Math Teaching Assistant 2017

Pass the Torch Foothill College
English tutor 2015 - 2016

Presentations

RNA in action: Form and function — ASHG
Talk — Upcoming in Nov 2023

Integrative RNA Biology session (iRNA COSI) — ISMB
Long Talk & poster — 2022

Variant Interpretation session (VarI COSI) — ISMB
Long Talk & poster — 2022

Big Data in Health — UofSC National Big Data Health Science Conference
Talk & poster — 2020

Regulatory & Systems Genomics — RECOMB/ISCB Conference
Poster — 2019

Awards

Outstanding Teaching Assistant Award — 2020
Duke University

HackXX Women's Hackathon Beginner Hackers Champion — 2017
UC San Diego

Honors Scholar — 2016
Foothill College

Outstanding Student Award — 2015
Foothill College

Leadership

ACM-W President Duke University Chapter — 2019 - 2020

Indo@Duke Co-Founder and Vice-President — 2019 - 2020

Graduate and Professional Student Council Duke University — 2019 - 2020

Skills

Computational skills	Python; PyTorch; Java; C++; C; Unix/BASH; R; TensorFlow; machine learning; deep learning; data analysis; bioinformatics
Biology	RNA-seq; ChIP-seq; RNA secondary structure; transcription factor; variants; gene regulation; protein expression; PheWAS; GWAS; GTEx
Languages	English (native); Indonesian (native); Mandarin (fluent); Hokkien (fluent)