

FARICA ZHUANG

✉ farica@upenn.edu 🌐 faricazjj.github.io in <https://www.linkedin.com/in/faricazhuang/>

EDUCATION

University of Pennsylvania Ph.D Computer Science 2025	Aug. 2021 - Current
Duke University Master's of Science Computer Science 2020	Aug. 2018 - May 2020
UC San Diego Bachelor's of Science Applied Mathematics with a minor in Computer Science 2018	July 2016 - June 2018
Foothill College Associate's of Science Mathematics 2016	Aug. 2014 - June 2016

RESEARCH PROJECTS

Modeling RNA secondary structures (In progress) Jan. 2022 - Current

Summary: Currently, deep learning methods such as convolutional neural network has proven to perform well on detecting RNA secondary structures. Here, we explore other deep learning methods that are able to improve upon the current state-of-the-art models and study the effects of mutations on these structures that are linked to diseases.

- Presented as a long talk at ISMB 2022

APAeval (In progress) May 2021 - Current

Summary: Alternative polyadenylation (APA) is an RNA-processing mechanism that generates distinct 3' termini on transcripts, allowing a single gene to encode multiple variants. Studies have reported a critical role for APA-mediated gene regulation during development or disease. Given the importance of APA, identifying and quantifying usage of identified polyadenylation sites (PAS) on a global scale is critical for understanding the underlying mechanisms of APA-mediated gene regulation. Here, we evaluate computational methods for the detection and quantification of poly(A) sites and estimating their differential usage across RNA-seq samples

- Presented as a long talk at ISMB 2022

Hip Fracture (Published) Apr. 2019 - Oct. 2020

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, ISSN 1525-8610,

<https://doi.org/10.1016/j.jamda.2020.09.025>.

(<http://www.sciencedirect.com/science/article/pii/S1525861020308227>)

Share Link: <https://authors.elsevier.com/a/1b%7EE-5QyCq5vC3>

- Gave an oral presentation at South Carolina National Big Data Health Science Conference Feb 2020
- Built models to predict 30 and 365 day readmission and mortality rate among hipfracture patients
- Develop 23 python training modules and videos focused on data science for incoming post-docs and phd students in the school of nursing

GENESIS: Gene-specific machine learning models for variants of uncertain significance (Published) Apr. 2019 - Mar. 2022

A machine learning-based prediction model for variants of uncertain significance found in catecholaminergic polymorphic ventricular tachycardia and 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 MBBS, William Eisner BSc, Ricardo Henao PhD, Andrew P. Landstrom MD PhD

Circulation: Arrhythmia and Electrophysiology, 2022

<https://www.ahajournals.org/doi/full/10.1161/CIRCEP.121.010326>

- Generated machine learning models that can predict the pathogenicity of unknown RYR2, KCNQ1, KCNH2, SCN5A cardiovascular related genes variants, all of which could cause arrhythmic disease of the heart and sudden cardiac death

Modeling transcription factor binding (Submitted) Aug. 2019 - Current

Cooperative transcription factor binding model elucidates genomic features that improve binding to neighboring sites

Vincentius Martin, [Farica Zhuang](#), Yuning Zhang, and Raluca Gordan

Submitted to RECOMB

- Analyzed and modeled how pairs of different transcription factors (TFs), Ets1 and Runx1, affect each other's binding to the DNA in close proximity
- Presented as a poster at RECOMB 2019

EMPLOYMENT

Eureka by SAP , <i>Software Engineer</i> , Newport Beach, CA	May 2020 - Aug. 2021
Duke University , <i>Research Assistant</i> , Durham, NC	Jan. 2019 - July 2020
Duke University , <i>Teaching Assistant</i> , Durham, NC	Jan. 2019 - May 2020
Teradata , <i>Software Engineer Intern</i> , Rancho Bernardo, CA	July 2018 - Aug. 2018
UC San Diego , <i>Conversation Leader/Teaching Assistant</i> , La Jolla, CA	Oct. 2016 - May 2018
UC San Diego , <i>Summer Academy Tutor/Mentor</i> , La Jolla, CA	Aug. 2017 - Sept. 2017
Foothill College , <i>Pass the Torch Tutor</i> , Los Altos Hills, CA	Jan. 2015 - May 2016

AWARDS

Outstanding Teaching Assistant Award , <i>Duke University</i>	2020
HackXX Women's Hackathon Beginner Hackers Champion , <i>UCSD</i>	2017
Honors Scholar , <i>Foothill College</i>	2016
Outstanding Student Award , <i>Foothill College</i>	2015

ACTIVITIES

ACM-W President Duke University Chapter	2019 - 2020
<ul style="list-style-type: none">• Kickstarted a mentorship program to help new students transition to a new environment• Organized mock interviews and inter-organization negotiation webinar to encourage professional development among students• Held social events like paint-nite, movie night, and friendsgiving to help foster a close-knit and supportive community of women in computing• Collaborated with undergraduate ACM chapter to hold a Road to Grad School Q&A to guide undergrad students and build a bridge between grad and undergrad students	
Indo@Duke Founder & Vice-President	2019 - 2020
<ul style="list-style-type: none">• Planned social events to help foster a supportive community among Indonesian students and working professionals in Durham	
Graduate and Professional Student Council Duke University	2019 - 2020
<ul style="list-style-type: none">• Represented the voices of Computer Science students• Attended biweekly meeting with over 200 other representatives from all across campus to discuss and solve campus-wide issues	
Dance Company Foothill College	2014 - 2016
<ul style="list-style-type: none">• Performed at San Francisco Chinese New Year Parade, broadcasted to over 2 million viewers worldwide• Performed at Foothill College Spring Show 2016 for a crowd of over 300 people	
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Syrian Refugee Tutor	2015 - 2016
San Diego, CA <ul style="list-style-type: none">• Taught English and Math weekly to Syrian Refugees who were transitioning to US schools	
High School Student Immersion Program	2019 - 2020
Durham, NC <ul style="list-style-type: none">• Taught introduction to programming to high school students who were invited to Duke University for an immersion program in Computational Biology	
Food Pantry at Duke University	2019 - 2020
Durham, NC <ul style="list-style-type: none">• Helped with food packing and distribution to help fight food insecurity on campus	
Food Pantry at Foothill College , <i>Los Altos Hills, CA</i>	2014 - 2016
<ul style="list-style-type: none">• Helped with food packing and distribution to help fight food insecurity on campus	