

RUONAN (ELIZABETH) ZHAO

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TECHNICAL SKILLS/OTHER

Programming Languages: Python (numpy, pandas, scikit-learn, matplotlib), MATLAB, R (dplyr, ggplot2), SQL

Other Softwares: LaTeX, Git, Microsoft office

Languages: English (fluent), Mandarin (native)

EDUCATION

NEW YORK UNIVERSITY	New York, NY
The Courant Institute of Mathematical Sciences	
MS in Mathematics	09/2017 - 01/2020
UNIVERSITY OF CALIFORNIA, IRVINE	Irvine, CA
BS in Mathematics	09/2013 - 08/2017

EXPERIENCE

UNIVERSITY OF CALIFORNIA, IRVINE	Irvine, CA
Research Assistant	04/2020 - Present
<ul style="list-style-type: none">Collaborated closely with research team to design, implement and test MATLAB programs for exploring properties of chromatin architecturesFormally analyzed mathematical theories to prove experimented resultsWrote and edited manuscript for publication	
NEW YORK UNIVERSITY	New York, NY
Teaching Assistant for Probability, Statistics, & Decision Making	09/2019 - 12/2019
<ul style="list-style-type: none">Prepared recitations on graph theory, probability, statistics, and game theory for 50 studentsCooperated with course instructors to keep track of recitationsEvaluated students' performance by grading quizzes and final exams	
Teaching Assistant for Data to Discovery Lab Sessions	09/2018 - 12/2018
<ul style="list-style-type: none">Supervised 50 students to work on lab assignments on analyzing large datasets in RResolved any inquiries made by studentsAssessed students by grading midterm and final exams	

PROJECTS

Chromatin Remodeling Using Percolation Theory	04/2020 - Present
<ul style="list-style-type: none">Mathematically examined the numerical results given by chemical reaction networks of Histone AcetylationTested percolation theory by using shortest-path algorithms in MATLAB to explain ultrasensitive transitions in chromatin remodelingPresented at Mathematics Association of America (MMA) So-Cal section	
Class Notes English-to-Chinese Translation.	03/2020 - 06/2020
<ul style="list-style-type: none">Interpreted and translated deep learning concepts from text notes and lecture videos in topics of the architecture of LSTM, VAE, and the Truck Backer-Upper	
A Theoretical Analysis of the Comparison Between LIME and SHAP (Report Link)	09/2019 - 12/2019
<ul style="list-style-type: none">Mathematically proved that LIME fails when width of Gaussian kernel is arbitrarily smallReproduced key results from LIME in Python utilizing open source code and dataResearched different options of kernels to verify theoretical claims of SHAP in Python	
Finding Optimal Conversion Rate From Reticulate Body to Elementary Body of <i>C. Trachomatis</i> in a Cell (Report Link)	06/2015 - 08/2015
<ul style="list-style-type: none">Developed logistic growth model of Chlamydia to find optimal conversion rate and switch point between Chlamydial statesApplied calculus of variations to find critical points in the transition between Chlamydial statesComputed conversion rate of Chlamydia applying numerical methods in MATLABVerified optimal conversion rate exists is dependent on the optimal switch point	