

# JINGYOU (ROSE) RAO

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## EDUCATION

**University of California, Los Angeles** Sep. 2021 – Current

PhD Student in Computer Science (Subfield: Computational Biology)

**University of California, Los Angeles** Sep. 2018 – Jun. 2021

Bachelor of Science in Computer Science

Bachelor of Science in Computational and Systems Biology (Concentration: Biological Data Science)

Latin Honors: Summa Cum Laude Cumulative GPA: 3.978

## RESEARCH

**Pimentel Lab (Department of Computational Medicine, UCLA)** July. 2020 – Current

Graduate Student Researcher

*Those projects aim to understand gene regulation by designing experiments and building computational tools based on CRISPR technology using Bayesian statistics and machine learning, which facilitates understanding of disease mechanisms and finding drug targets.*

*Project:* Computational Approaches for Inferring Gene Regulation in *in situ* Perturbation Screens

(Will give a talk in CSHL Biological Data Science Conference 2022)

- Developed a robust framework to normalize and infer the effect sizes of perturbation in *in situ* transcriptomics data using Bayesian hierarchical model on RStan with Markov chain Monte Carlo (MCMC)
- Aim to understand gene regulation by designing experiments and building computational tools based on CRISPR technology using Bayesian statistics and machine learning

*Project:* Quantifying Uncertainty in Estimation of Isoform Expression Heritability

(Presented a poster in CSHL Genome Informatics Conference 2021)

- Built a random-effects simulation framework for individual-level isoform expression data with various correlation and causation structures in eQTL studies on Python
- Implemented a multi-trait mixed effect model and derived the Expectation-Maximization algorithm for isoform expression heritability estimation under the restricted maximum likelihood model on Python

*Mentoring:* Grace Du. Undergraduate student, UCLA.

- Meta-analysis of pooled CRISPR screens with focus on trans-eQTL effects

*Mentoring:* Jianping Ye. Former undergraduate student, UCLA.

- Simulation of pooled CRISPR screen data and method benchmarking

**Ozcan Lab (Department of Electrical Engineering, UCLA)** Sep. 2019 – Jun. 2021

Undergraduate Student Researcher (Direct Mentor: Yi Luo)

*Publication:* Yi Luo et al. "Quantitative particle agglutination assay for point-of-care testing using mobile holographic imaging and deep learning", *Lab on a Chip* (2021). [DOI: 10.1039/d1lc00467k](https://doi.org/10.1039/d1lc00467k)

- Optimized algorithm for the reconstruction process for low-quality holography image using MATLAB
- Reconstructed and applied deep-learning neural network to process the holography using TensorFlow on Python
- Fit linear regression between properties of particles on holography on Python

## LEADERSHIP EXPERIENCE

**Tau Beta Pi (national engineering honor society) at UCLA** Jun. 2020 – Dec. 2021

Academic Outreach Team Officer

- Tutored fellow college students in CS lower division classes for 4 hours per week
- Hosted mathematics review session (linear algebra, calculus) for fellow students 3 times per semester

## SKILLS & ACTIVITIES

**Language:** Chinese (native), English (working proficiency), French (intermediate)

**Interests:** Ashtanga yoga, Backpacking, Sailing, Rock climbing