

# Jordan Cahoon

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## Education

- 2024-2029     STANFORD UNIVERSITY  
PhD in Biomedical Data Science
- 2020-2024     UNIVERSITY OF SOUTHERN CALIFORNIA  
BS in Computer Science, Minor in Computational Biology & Bioinformatics  
GPA: 3.86

## Research Experience

- Jul 2023 - Jun 2024     **Undergraduate Researcher.**  
ADVISED BY CHARLESTON CHIANG, IAIN MATHIESON & SARA MATHIESON  
University of Southern California, University of Pennsylvania, & Haverford College
- Developed a deep learning framework to detect archaic gene flow (introgression) in modern populations using genealogical trees.
  - Achieved at least comparable results with statistical method,  $S^*$  across a variety of proposed demographic models.
- Feb 2021 - May 2023     **Undergraduate Researcher.**  
ADVISED BY CHARLESTON CHIANG  
University of Southern California, Keck School of Medicine
- Demonstrated discrepancy when deploying the state-of-the-art TOPMed Reference panel for imputation of non-European populations such as East Asian, South Asian, Oceanian, and Southeast Asian populations, thus exacerbating disparity in performing genome-wide genetic studies in diverse understudied populations.
  - Designed a framework using meta-imputation to improve imputation quality in East and Southeast Asian cohorts, particularly for population-specific variants.
  - Developed interactive map to visualize imputation statistics for over 120 populations from 39 publications.
- Oct 2022 - Sep 2023     **Undergraduate Researcher.**  
ADVISED BY LUIS A. GARCIA  
University of Southern California, Department of Computer Science
- Evaluated generalized stress detection for health workers using wearable devices across three datasets with shared stress representations.
  - Demonstrated gradient boosting trees outperform linear support vector machines, random forest, and feed-forward neural networks for continuous stress detection.

- Identified current limitations of generalized stress detection driven limited shared modalities across datasets, small sample sizes, and varying stress definitions.

Jun 2020 -  
Jan 2021

### **Undergraduate Researcher.**

ADVISED BY ELIA TAIT-WOJNO

University of Washington, Department of Immunology

- Elucidated how the PGD2-CRTH2 pathway suppresses Type 2 intestinal immune response during helminth infections in murine models with single-cell RNA sequencing analysis.
- Identified canonical markers of epithelial immune cell types and characterized gene expression in inflammatory immune response in murine cecum during infection.

Jul 2019 -  
Aug 2019

### **Research Intern.**

ADVISED BY JAKE VALENZUELA

The Institute for Systems Biology, Baliga Lab

- Developed electroporation protocol that facilitates the transfer of CRISPR-Cas9 complex into *C. reinhardtii*.
- Created and presented how nitrogen starvation increases lipid production in *C. reinhardtii*.

## **Work Experience**

Jun 2021 -  
July 2023

### **Viterbi Student Ambassador, Content Lead.**

USC VITERBI SCHOOL OF ENGINEERING ADMISSIONS

- Led team of 12 students to produce bi-weekly virtual student panels about student life for audiences of 200+ prospective engineering students.
- Advertised panels through social media outreach, bi-weekly YouTube videos, and Spotify podcasts.

Aug 2022 -  
May 2023

### **Artificial Intelligence Intern.**

THE ELLISON INSTITUTE FOR TRANSFORMATIVE MEDICINE

- Developed deep learning models to automate the diagnosis for breast and prostate cancer from digital pathology.
- Refined quality control pipeline to process thousands of whole slide images (WSI) in the cloud.

May 2022 -  
Aug 2022

### **Software Engineering Intern. ORACLE CLOUD INFRASTRUCTURE**

- Designed and tested automated daily health checks for cloud billing accounts.

## **Awards & Honors**

USC Discovery Scholar 2024

USC QCB Google Alumni Award in Quantitative Biology 2024

Knight-Hennessy Scholarship Finalist 2024

Barry Goldwater Scholarship 2023

Astronaut Scholarship Finalist 2023

USC Viterbi Dean's List 2020-2024

USC Viterbi Undergraduate Merit Research Fellowship 2020

USC Presidential Scholarship 2020

USC Dornsife Thematic Option, Reading & Writing 2020

## Publications

- [5] **Cahoon JL**, Rui X, Tang E, Simons C, Langie J, Chen M, Lo YC, Chiang CWK. *"Imputation Accuracy Across Global Human Populations."* Am. J. Hum. Genet. 2024 May 2. [International Genetic Epidemiology Society 32nd Annual Meeting Best Poster]  
doi: 10.1016/j.ajhg.2024.03.011.
- [4] Fan C, **Cahoon JL**, Dinh BL, Vecchy DO, Huber C, Edge MD, Mancuso N, Chiang CWK. *"A likelihood-based framework for demographic inference from genealogical trees"*. Preprint. 2023 Oct 10.  
doi: 10.1101/2023.10.10.561787.
- [3] **Cahoon JL**, Garcia L. *"Continuous Stress Monitoring for Healthcare Workers: Evaluating Generalizability Across Real-World Datasets"*. The 14th ACM Conference on Bioinformatics, Computational Biology, and Health Informatics (ACM-BCB). 2023 Sept 3.  
doi: 10.1145/3584371.36129741.
- [2] Sheng X, Xia L, **Cahoon JL**, Conti DV, Haiman CA, Kachuri L, Chiang CWK. *"Inverted genomic regions between reference genome builds in humans impact imputation accuracy and decrease the power of association testing."* Hum. Genet. Genom. Adv. 2022 Nov 11. [HGGAdvances Award for Outstanding Early Career Publication]  
doi: 10.1016/j.xhgg.2022.100159.
- [1] Oyesola OO, et. al. *"PGD2 and CRTH2 counteract Type 2 cytokine-elicited intestinal epithelial responses during helminth infection."* J Exp Med. 2021 Sep 6;218(9):e20202178.  
doi: 10.1084/jem.20202178.

## Oral Presentations & Other Projects

- May 2023 Imputation Efficacy Across Global Human Populations, *Southern California Evolutionary Genetics and Genomics Meeting 2023*, University of California Irvine.
- Dec 2022 Assessing Imputation Quality for Diverse Populations, *Department Research Seminar, Center for Genetic Epidemiology* Keck School of Medicine.
- Nov 2022 Predicting Foster Care Outcomes in the United States with the National Youth in Transition Database, *Artificial Intelligence for Sustainable Development Final Presentation*, University of Southern California.
- Nov 2022 Detecting Chronic Stress in Medical Residents with Wearable Devices, *Fall CAIS++ Project Showcase 2023*, University of Southern California.
- Apr 2022 Utilizing Reinforcement Learning to Predict Polyculture Formations, *Spring CAIS++ Project Showcase 2022*, University of Southern California.
- Dec 2021 Modeling Malaria Outbreaks Utilizing Weather Factors, *Fall CAIS++ Project Showcase 2021*, University of Southern California.
- Apr 2021 Predicting pandemic risk of Influenza mutations with Deep Learning, *Spring CAIS++ Project Showcase 2021*, University of Southern California.

## Teaching

- Jan - Apr 2023 Project mentor for undergraduate machine learning projects through CAIS++
- Sep - Dec 2022 Curriculum Lead for open source deep learning curriculum for undergraduates
- Jan - May 2022 Course Producer for CSCI 104, Data Structures and Objected Oriented Programming

## Leadership

Aug 2022 -  
May 2023

**Co-President.** The Center for Artificial Intelligence's Student Branch (CAIS++)  
Directed all organization initiatives, including 5-8 semester projects, 4 Fall curriculum groups, two project showcases, weekly general meetings, and speaker events to engage undergraduates in artificial intelligence.

Sep 2021 -  
May 2022

**Project Manager.** Novus Think Tank. Oversaw six focus project groups that targeted critical social issues impacting the university and surrounding areas.