Jordan Cahoon

Curriculum vitae

Contact

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Education

Exp. 2024   **B.S. Computer Science**, *University of Southern California*, 3.86 GPA, Minor in Computational Biology & Bioinformatics

Research Experience

July - Present   **Undergraduate Researcher**, *Advised by Charleston Chiang, Iain Mathieson & Sara Mathieson*, Los Angeles, California & Philadelphia, Pennsylvania, University of Southern California, University of Pennsylvania & Haverford College

- On-going project collaboration to develop a deep learning method to detect ancient introgression from ancestral recombination graphs without a sequenced reference.
- Achieved comparable results in simulation with statistical method, S*.

Feb 2021 - Present   **Undergraduate Researcher**, *Chiang Lab*, Los Angeles, California, University of Southern California, Keck School of Medicine

- Demonstrated inadequacy 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 - Sept 2023   **Undergraduate Researcher**, *Advised by Luis A. Garcia*, Los Angeles, California, 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**, *Tait-Wojno Lab*, Seattle, Washington, 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 - Aug 2019	**Research Intern**, *Baliga Lab*, Seattle, Washington, The Institute for Systems Biology

- Developed electroporation protocol that facilitates 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**, *Viterbi School of Engineering Admissions*, Los Angeles, California, University of Southern California

- Led team of 12 students to produce bi-weekly virtual student panels about student life for audiences of 50-250 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*, Los Angeles, California

- 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 - Aug 2022	**Software Engineering Intern**, *Oracle Cloud Infrastructure*, Seattle, Washington

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

Publications

4 **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. Hyatt Regency Houston.

3 **Cahoon JL**, Rui X, Tang E, Simons C, Langie J, Chen M, Lo YC, Chiang CWK. *"Imputation Efficacy Across Global Human Populations."* Preprint. 2023 Jun 22. doi: 10.1101/2023.05.22.541241.

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."* Human Genetics and Genomics Advances. 2022 Nov 11. 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.

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, 2 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 key social issues impacting the university and surrounding areas

Teaching Experience

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

Awards

Astronaut Scholarship Nominee

Barry Goldwater Scholarship

USC Viterbi Dean's List

USC Viterbi Undergraduate Merit Research Fellowship

USC Presidential Scholarship

USC Dornsife Thematic Option, Reading & Writing Honors