

Sara Colando

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EDUCATION

Ph.D. in Statistics, Carnegie Mellon University, Pittsburgh, PA 2024 - 2029 (Expected)

- **Coursework:** Probability and Mathematical Statistics, Statistical Computing, Regression Analysis

B.A. in Mathematics and Philosophy, Pomona College, Claremont, CA 2024

- Graduated *magna cum laude* and with departmental honors (GPA: 3.99/4.00)
- Undergraduate Thesis: Selecting ChIP-Seq Normalization Methods from the Perspective of Their Technical Conditions, advised by Dr. Johanna Hardin (received excellent thesis designation by department)

PUBLICATIONS

1. **Colando, S.**, & Hardin, J. (2024). Philosophy within Data Science Ethics Courses, *Journal of Statistics and Data Science Education*, 32(4), 361-373. <https://doi.org/10.1080/26939169.2024.2394542>

RESEARCH EXPERIENCE

Pomona College Department of Mathematics and Statistics

Research Assistant to Dr. Johanna Hardin May 2022 – Present

- Analyzing ChIP-Seq normalization techniques by their underlying technical assumptions to help improve differential-binding analysis practices
- Creating reproducible ChIP-Seq read count simulations using R, Bash, and High-Performance Computing to test how violating normalization method assumptions affects the average false discovery rate and power of identifying genomic regions with differential DNA occupancy

Data Science Ethics Independent Project (Supervisor: Dr. Johanna Hardin) May – Oct 2023

- Synthesized resources and pedagogies of existing Data Science Ethics undergraduate courses to connect key ethical concepts to data science practices
- Created a website to effectively communicate data science ethics concepts and relevant background information to a broad community of decision-makers
- Aided in Pomona College's development of an ethics course for the recently approved data science minor

Carnegie Mellon University Department of Statistics and Data Science

Research Assistant to Dr. Ron Yurko May - Aug 2023

- Performed mixture-model clustering analysis to discover trends in movement patterns for injured racehorses
- Identifying horses who under-raced through residual analysis of a created expected race count model
- Engaged in 8 weeks of lectures about popular statistical analysis techniques, data engineering, and novel data science methodologies employed in sports analytics

Self-Directed Project

Data Analysis and Visualization Creator Jan 2021 - May 2024

- Conducting exploratory data analysis in R to improve data visualization and communication skills using data provided by the "R for Data Science" Online Learning Community
- Helping students new to R become more familiar with the programming language and troubleshoot errors in 2-hour Pomona TidyTuesday workshop offered each week

University of California, San Diego Halicioğlu Data Science Institute

Intelligence, Data, Ethics, and Society (IDEAS) Summer Institute Participant Aug 2023

- Participated in workshops taught by experts in domains like data science, AI, philosophy, and law to improve critical and interdisciplinary thinking on data science and AI ethics topics
- Collaborated with three other students on a two-week research project, examining practical methods of implementing responsible data science and AI practices in a California wildfire resource allocation algorithm

University of Michigan School of Public Health

Big Data Summer Institute Research Assistant to Dr. Nikola Banovic

June - Aug 2022

- Collaborated with three other students to implement a partially Bayesian neural network to quantify and communicate prediction uncertainty in a supervised brain tumor segmentation model via Python's PyTorch and TensorFlow packages
- Collaborated with three other students on a two-week research project, examining practical methods of implementing responsible data science and AI practices in a California wildfire resource allocation algorithm

TEACHING EXPERIENCE

Carnegie Mellon Department of Statistics and Data Science

Graduate Teaching Assistant

Aug 2024 – Present

- 36-226: Introduction to Statistical Inference (Spring 2025)
- 36-600: Overview of Statistical Learning and Models (Fall 2024)

Pomona College Department of Mathematics and Statistics

Course Mentor and Grader

Jan 2021 – May 2024

- MATH158: Statistical Linear Models (Spring 2024)
- MATH058B: Introduction to Biostatistics (Spring 2023)
- MATH060: Linear Algebra (Fall 2021)

1-2-1 Summer Bridge Program Teaching Assistant

June - Sep 2021

- Led 1.5-hour meetings, twice per week, for three small cohorts of incoming Pomona College students
- Organized group bonding by preparing icebreakers and virtual games for 40+ students in the program
- Mathematical concepts taught: logic, statistics, calculus I and II, combinatorics, and number theory

Pomona College Center for Speaking, Writing, and the Image

Course Writing Partner

Aug – Dec 2023

- First-Year Interdisciplinary Seminar: I Disagree (Fall 2023)

Pomona College Department of Biology

Course Mentor and Grader

Aug - Dec 2022

- BIOL040: Introductory Genetics with Lab (Fall 2022)

PRESENTATIONS

- **Colando, S.** & Hardin, J. "Philosophy Within Data Science Ethics Courses", CAUSE Webinar, October 2024
- **Colando, S.**, Pipping, J., Wilson K. "Clustering Race Horse Movement Profiles to Discover Trends in Injured Horses", Carnegie Mellon Sports Analytics Conference 2023, November 2023
- **Colando, S.** "Analyzing Data Science Ethics Pedagogies", Claremont Center for Mathematical Sciences Poster Session, September 2023
- **Colando, S.** "Analyzing Data Science Ethics Pedagogies", Intensive Summer Experience Symposium, September 2023
- **Colando, S.**, Pipping, J., Wilson K. "Clustering Race Horse Movement Profiles to Discover Trends in Injured Horses", Summer Undergraduate Research Experience (SURE) 2023 Project Showcase, July 2023
- **Colando, S.** Panelist for "Pomona Funded Summer Experiences Informational Session", Family Weekend, October 2022
- **Colando, S.** "Analyzing ChIP-Seq Normalization Techniques through the Lens of their Biological Assumptions", Intensive Summer Experience Symposium, September 2022
- **Colando, S.** "Analyzing ChIP-Seq Normalization Techniques through the Lens of their Biological Assumptions", Claremont Center for Mathematical Sciences Poster Session, September 2022
- Chu, C., **Colando, S.**, Nandi, D., Serrano, X. "Quantifying Uncertainty in a Tumor Segmentation Model", A Symposium on Big Data, Human Health, and Statistics. July 2022

LEADERSHIP AND SERVICE

Carnegie Mellon University College Department of Statistics and Data Science

TeachStat Working Group

Aug 2024 - Present

Mentorship Committee

Mentor for Undergraduates

Pomona College Department of Philosophy

Search and Selection Student Representative for Tenure-track Faculty Position

Aug 2023 - Mar 2024

Pomona-Pitzer Athletics

Varsity Women's Cross Country Team Captain

Aug – Nov 2023

HONORS AND AWARDS

Blair Nixon Award, Pomona College

2024

- Given to a senior student who exemplifies the high ideals of the College in scholarship, sportsmanship, and organized athletic pursuits

Bruce Jay Levi Senior Prize, Department of Mathematics and Statistics, Pomona College

2024

- Given to a senior mathematics major who throughout their time at Pomona has demonstrated a commitment to collaborative learning, fostering an inclusive mathematical community, and to expanding their own academic comfort zone

W.T. Jones Prize in Philosophy, Department of Philosophy, Pomona College

2024

- In recognition of a senior philosophy major who has shown interest and talent in integrating philosophy with larger humanistic concerns

Phi Beta Kappa, Pomona College

2024

Sigma Xi, Pomona College

2024

Pomona College Scholar, Pomona College

2020-2024

Women's Cross Country and Track and Field Varsity Letter Recipient, Pomona-Pitzer Athletics

2020-2024