Emi Cervantes
Curriculum Vitae

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Education

The Pennsylvania State University   State College, PA
Ph.D. Statistics   Aug 2024 – Current
Research interests: Network sciences, Data Science Education
Fellowships: University Graduate Fellowship (2024 – 2026)
             Dean's Distinguished Graduate Fellowship (2024 – 2029)

University of California, Irvine   Irvine, CA
B.S. Mathematics – Data Science Concentration   Sep 2020 – Jun 2024
Minor: Statistics

Honors & Awards

Penn State

2024 - 2025	University Graduate Fellowship (UGF)
2024 - 2029	Dean's Distinguished Graduate Fellowship (DDGS)

- 2024 – 2025: George Downs Endowed Graduate Fellowship, Robert Graham Endowed Graduate Fellowship

UC Irvine

Jun 2024	UC Irvine Department of Mathematics Undergraduate Research and Department Service Award
Jan 2024	Pi Mu Epsilon JMM Undergraduate Student Travel Grant
Dec 2023	Undergraduate Research Opportunities Program (UROP) Research Fellowship ($444)
Sep 2023	UC Irvine School of Physical Sciences Advancing Inclusive Excellence (AIE) Award ($500)
Jun 2023	Working Memory and Plasticity Symposium Best Presentation
Jan 2023 – Dec 2023	Career Pathways for Research in Learning, Education, Analytics, and Data Science (CP-LEADS) Fellowship (IES funded $6000)
Jan 2022 – Aug 2022	SoCal Data Science Fellowship (REU, NSF funded $5000)
2020 - 2024	Dean's Honor List
Dec 2020 – Jun 2024	Hispanic Scholarship (HSF) Scholar

- Walmart Foundation/HSF Scholarship Program Scholarship ($4000)

Research Experience

Greedy Approach to Kaczmarz Method with Oblique Projection   2022 – 2024

UC Irvine Department of Mathematics | PI: Anna Ma, Ph.D.

- Developed and proved theorems for the new iterative algorithm, the *greedy Kaczmarz method with oblique projections (GKO)* to solve large-scale linear systems.
- Utilized *Python* to run extensive numerical experiments of the algorithm to ensure its functionality and wrote the manuscript for publication.

Causes of Math Anxiety: Mathematical Background and Attitudes   2024

UC Irvine School of Education | PI: Fernando Rodriguez, Ph.D.

- Constructed and conducted a survey study with appropriate measures for math anxiety, mind wandering, and other relevant factors.
- Analyzed the effects of college students' mathematical backgrounds and attitudes on their math with a focus on the relationship between math anxiety and mind wandering using *causal inference models* and *structural equation models*.

Gender Differences in the Impact of Worked Examples on Math Anxiety   2023

UC Irvine School of Education |

PI: Lindsey Richland Ph.D., June Ahn Ph.D., Fernando Rodriguez Ph.D.

- Implemented *structural equation models* to large data from pre-post design experiments, to evaluate the gender-specific effects of worked examples on math anxiety using *R* packages.
- Built the models based on the theoretical frameworks on the relationship between mind wandering and math anxiety, and their effect on students' learning achievements through collaboration with PI and lab members.

Impact of Mediterranean and DASH Diets on MPN Symptoms   2022

UC Irvine School of Medicine | PI: Angela Fleischman Ph.D., M.D.

- Employed *linear mixed effect model* to clinical trial data with *R* software to determine the effectiveness of Mediterranean diets in improving symptoms of patients with myeloproliferative neoplasms (MPN).
- Collaborated with a diverse group of researchers including biologists and computer scientists, to find a solution to our research question, and presented findings at conferences.

Cancer Treatment and Development of Resistance   2022

UC Irvine Department of Mathematics | PI: Anthony Zamora, Natalia Komarova Ph.D.

- Developed *population growth ODE models* to predict the population growth of susceptible and resistant tumor cells, under different therapy conditions.
- Created simulation software using *Python* packages to test and optimize the model while adjusting the conditions of cancer therapy.

Professional Experiences

Research Assistant   Jan 2024 – Jun 2024

Science of Learning ([SOL](#)) Lab - UC Irvine School of Education
- Participated in weekly lab meetings, offering insights and conducting exploratory data analysis on ongoing study data using *R*.
- Led multiple in-person studies across elementary and middle schools in Orange County, CA, to study children's higher-order thinking skills in math education.

Professional Project

Anime Genre Predictor and Recommendation Engine   **Code** ⌂

- Developed a predictive model using Scikit-learn LogisticRegression with Python to forecast anime genres based on reviews and airing time.
- Implemented an anime recommendation system with a cosine similarity algorithm, providing personalized anime recommendations based on user preferences and viewing patterns

Selected Talks and Presentations

Talk

Cervantes E. & Tran J. (2024 January). A Greedy Approach to Kaczmarz Method with Oblique Projections. Presented at Joint Mathematics Meetings. San Francisco, CA.

Poster Presentations

Cervantes E. (2024 May). The Complex Relationship Between Math Anxiety and Mind Wandering. Presented at Annual Undergraduate Research Symposium. Irvine, CA.

Cervantes E. & Tran J. (2024 April). A Greedy Approach to Kaczmarz Method with Oblique Projections. Presented at Southern California Applied Mathematics Symposium. San Diego, CA.

Cervantes E. & Ma S. (2023, June). Effectiveness of Worked Examples on Reducing Math Anxiety. Presented at Working Memory and Plasticity Lab Symposium. Irvine, CA.

Cervantes E. & Ma S. (2023, May). Effectiveness of Worked Examples on Reducing Math Anxiety. Presented at Annual Undergraduate Research Symposium. Irvine, CA.

Cervantes E., Davityan M., Halabi A., Truong J., Wu M. (2022, August). Impact of Mediterranean and DASH Diets on MPN Symptoms. Presented at Project RAISE Summer Research Symposium. Fullerton, CA.

Cervantes E., Davityan M., Halabi A., Truong J., Wu M. (2022, August). Impact of Mediterranean and DASH Diets on MPN Symptoms. Presented at SoCal Data Science Fellowship Symposium. Irvine, CA.

Publication

Manuscripts in Preparation

Cervantes E., Ma A., Tran J. (2024+). Greedy Approach to Kaczmarz Method with Oblique Projections. Manuscript in preparation

Service & Leadership

Data @ UCI

Executive Vice President   Jun 2023 – Jun 2024

- Coordinated all aspects of event logistics including venue and selection and vendor management.
- Facilitated meetings with industry and university executives to discuss potential partnerships and collaborations for weekly events and the inaugural Datathon, a Data Science hackathon.

Vice President of Logistics   Jun 2023 – Jun 2024

- Created and led technical workshops on the introduction to data analysis and visualization with R.
- Reached out to sponsors to establish partnerships and managed all logistics aspects for UC Irvine's first inaugural Datathon.

Undergraduate Mathematics Committee

Co-founder, President   Jun 2023 – Jun 2024

- Collaborated effectively with board members to organize and host weekly professional and social events including professor research seminars, panels, and UC Irvine's first inaugural integration bee.
- Received two funding awards from the Department of Mathematics and the School of Physical Sciences (Advancing Inclusive Excellence Award) to secure and improve a new undergraduate study lounge for math majors at UC Irvine.

Faces in Mathematics

External Vice President   Jun 2023 – Jun 2024

- Invited professors to deliver keynote speeches and alumni to participate in the Faces in Mathematics industry conference.
- Managed study room for members and hosted workshops to support lower-division math majors in constructing their four-year college plan.

Director of Professional Development   Jun 2023 – Jun 2024

- Initiated and executed the first inaugural Faces in Mathematics conference at UC Irvine that featured an alumni panel and keynote speech by the professor.
- Established and maintained connections with industry and the Department of Mathematics at UC Irvine for conference and weekly meetings.

Teaching Experiences

Classroom Leader, Mentor   Jun 2022 – Dec 2023

Math CEO - UC Irvine School of Physical Sciences

- Instructed math topics and led classroom activities for Math CEO sessions, an after-school math tutoring program for underserved communities in Orange County, CA.
- Developed and executed weekly lesson plans that incorporated math concepts and their relevance to social justice issues.

Learning Assistant   Jan 2023 – Dec 2023

Math CEO - UC Irvine School of Physical Sciences

- Mentored undergraduate students on curriculum planning and pedagogical tactics in MATH 192 (Studies in the Learning and Teaching of Secondary Mathematics).
- Maintained regular communication with program directors and co-learning assistants, providing detailed reports on each lesson, and offering recommendations for future activities.

Skills

Computer	R (advanced): tidyverse, lme4, laavan, Quarto Python (advanced): NumPy, pandas, Matplotlib, scikit-learn, PyTorch, TensorFlow MATLAB (intermediate): Scientific computing, scripting, data visualization LaTeX (advanced): Document preparation, beamer, bibliography, mathematical notation
Language	English (fluent), Japanese (native speaker)

Certifications

2024 - 2025	Human Subjects Research (HSR) Training for Social & Behavioral Investigators, Collaborative Institutional Training Initiative (CITI Program)
2024 - 2029	UC Irvine Certified Learning Assistant Program (CLAP)
2021	SQL – MySQL for Data Analytics and Business Intelligence, Udemy