

# Mayleen Cortez-Rodriguez

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## EDUCATION

### Cornell University

Ph.D. Candidate, Applied Mathematics  
Masters of Science (Awarded August 2023)

August 2020 - Present

### California State University, Channel Islands

Bachelors of Science, Mathematics  
Minor in Computer Science

August 2015 - May 2020  
*summa cum laude*

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## PAPERS

- **Cortez-Rodriguez, M.**, Eichhorn, M., and Yu., C. L., “Combining Rollout Designs and Clustering for Causal Inference under Low-order Interference.” *arXiv preprint* arXiv:2405.05119 (2024).
  - **Cortez-Rodriguez, M.**, Eichhorn, M., and Yu., C. L., “Exploiting Neighborhood Interference with Low Order Interactions under Unit Randomized Design.” *Journal of Causal Inference*, vol. 11, no. 1, 2023.
  - **Cortez-Rodriguez, M.**, Eichhorn, M., and Yu., C. L., “Staggered Rollout Designs Enable Causal Inference Under Interference Without Network Knowledge”, In *Proceedings of Thirty-sixth Conference on Neural Information Processing Systems (NeurIPS)*, 2022.
  - Clark, K. B., **Cortez, M.**, Hernandez, C., Thomas, B. E., and Lewis, A. L. “Combating Tuberculosis: Using Time-Dependent Sensitivity Analysis to Develop Strategies for Treatment and Prevention”, *Spora: A Journal of Biomathematics*, 2019: Vol 5.1. 14-23.
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## SELECTED CONFERENCE PRESENTATIONS

- “Combining Rollout Designs and Clustering for Causal Inference under Low-order Interference”, *Joint Statistical Meetings*, Portland, OR, August 2024
  - “Staggered Rollout Designs for Estimating the Total Treatment Effect Under Network Interference”, *Institute for Operations Research and the Management Sciences (INFORMS) Annual Meeting*, Phoenix, AZ, October 2023
  - “Exploiting Neighborhood Interference with Low Order Interactions under Unit Randomized Design”, *American Causal Inference Conference (ACIC)*, Austin, TX, May 2023.
  - “Staggered Rollout Designs Enable Causal Inference without Graph Knowledge”, *Neural Information Processing Systems Conference (NeurIPS)*, New Orleans, LA, November 2022.
  - “Exploiting Neighborhood Interference and Low-Order Interactions for Causal Inference”, *Neural Information Processing Systems, (NeurIPS) Causal Machine Learning for Real-World Impact Workshop*, New Orleans, LA, November 2022.
  - “Combating Tuberculosis: Using Time-Dependent Sensitivity Analysis to Develop Strategies for Treatment and Prevention”, *Joint Math Meetings (JMM)*. Baltimore, MD, January 2019.
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## UNDERGRADUATE RESEARCH EXPERIENCE

**Undergraduate Program**, Mathematical Sciences Research Institute Summer 2019

- Collaborated on an applied combinatorics research project on peaks in parking functions
- Utilized SageMath and Python to advance the research

**Mathematics Department**, California State University, Channel Islands Spring 2019

- Created a machine learning model to detect the Waldo character from the *Where's Waldo* series
- Utilized Amazon Web Services to train and implement machine learning models

**Mathematics Department**, California State University, Channel Islands Fall 2018

- Worked on developing a collection of Python scripts that assist in real-time detection of hot-spots on solar panels via unmanned aerial vehicles
- Explored the Python library OpenCV, concepts in digital image processing and others' work in computer vision to create original code

**Emerging Scholars Program**, St. Mary's College of Maryland Summer 2018

- Developed a compartment model for the spread of tuberculosis in different types of regions
- Created scripts in R to run simulations and obtain experimental results
- Delivered weekly oral presentations on research progress

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## TEACHING AND TUTORING EXPERIENCE

**Statistics and Data Science Department**, Cornell University Fall 2023

*Teaching Assistant for STSCI/INFO/ILRST 3900: Causal Inference*

- Led three discussion sections, including helping to design and prepare material for those discussions
- Assisted in grading, managing Ed Discussion, and updating course website

**Mathematics Department**, California State University, Channel Islands Fall 2019 - Spring 2020

*Instructional Student Assistant*

- Tutored students in calculus and statistics
- Put together study guides with practice problems and step-by-step solutions

**Project PROMESAS**, California State University, Channel Islands Spring 2018 - Spring 2019

*Instructional Student Assistant*

- Tutored students in mathematics and computer science
- Helped students develop good study habits and strategies

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## LANGUAGE AND TECHNICAL SKILLS

- English and Spanish, fluent, both written and verbal
  - Proficiency in LaTeX, Python, Microsoft Office, Windows OS, and Mac OS
  - Knowledge of version control, Git, and GitHub
  - Experience with Visual Studio Code, Spyder, Jupyter Notebook, Google Colab, R Studio
  - Familiarity with Java, R, Julia, MatLab, and SQL
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## RELEVANT COURSEWORK

Numerical Analysis, Abstract Algebra, Measure Theory, Applied Stochastic Processes,  
Theoretical Statistics, Object-Oriented Programming, Data Structures, Matrix Computations

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## UNIVERSITY INVOLVEMENT, SERVICE, AND COMMUNITY CONTRIBUTIONS

### Cornell University

- *Center for Applied Math Mentoring Program*: Mentor Present
- *Center for Applied Math Mentoring Program*: Coordinator Fall 2021 - Summer 2024
- *ECE 7930: Succeeding in the Graduate Environment*: Panelist Fall 2023
- *Boyce Thompson Institute Social Mentoring Program*: Mentor Summer 2023
- *Cornell McNair Grad Panel Luncheon*: Panelist Summer 2023
- *ZigZag Mentoring Program, Association for Women in Math*: Mentor Spring 2022
- *K-12 Education and Outreach, Math Department*: JRMF Volunteer Spring 2021, Spring 2022
- *The Enhancing Diversity in Graduate Education Program*: Panelist Summer 2021
- *Expanding Your Horizons Virtual Conference*: Volunteer Spring 2021
- *ZigZag Mentoring Program, Association for Women in Math*: Mentor Fall 2020 - Spring 2021
- *CURB Grad School Demystified*: Panelist Fall 2020, Fall 2021

### California State University, Channel Islands

- *Data Science Club*: Founding President Fall 2019 - Spring 2020
- *Math Club*: Treasurer Fall 2019 - Spring 2020
- *Louis Stokes Alliance for Minority Participation*: Scholar Fall 2018 - Spring 2020
- *College for a Day (Middle School Outreach Program)*: Volunteer March 2018

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## AWARDS, FELLOWSHIPS, AND RECOGNITION

- CASE Fellowship**, American Mathematical Society Awarded March 2024
  - The Robert Mozia Graduate Student Distinguished Service Award**,  
Cornell Diversity Programs in Engineering Awarded Spring 2023
  - Graduate Research Fellowship**, National Science Foundation Awarded Spring 2020
  - Sloan Graduate Diversity Fellowship**, Cornell University Awarded Spring 2020
  - Outstanding Poster Presentation**, CSU Channel Islands Spring 2019
  - Outstanding Oral Presentation**, CSU Channel Islands Spring 2019
  - Outstanding Poster**, Mathematical Association of America (MAA) Spring 2019
  - Scored on the Putnam Exam**, MAA Putnam Competition Fall 2018
  - Outstanding Oral Presentation**, CSU Channel Islands Fall 2018
  - Semester Honors**, CSU Channel Islands Fall 2015 - Spring 2017, Spring 2018 - Spring 2020
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