**Mayleen Cortez**

mec383@cornell.edu | mayleencortez.com

**EDUCATION**

**Cornell University**

Pursuing a Ph.D. in Applied Mathematics

**California State University Channel Islands**

Bachelor of Science in Mathematics

Minor in Computer Science *Spring 2020*

**RESEARCH EXPERIENCE**

MSRI-UP Student Researcher

Research Director: Dr. Pamela Harris, Williams College, MA

Mathematical Sciences Research Institute *Summer 2019*

* Gave presentations and wrote a technical report on my research project
* Completed an applied combinatorics research project on parking functions and peaks in collaboration with other MSRI-UP students
* Utilized SageMath and Python to advance the research

Student Researcher

Mentor: Dr. Alona Kryshchenko, CSU Channel Islands, CA

Course taken for credit (MATH 398) *Spring 2019*

* Engaged with a small team of students to create a machine learning model to detect the Waldo character from Martin Handford’s *Where’s Waldo* series
* Utilized Amazon Web Services (SageMaker, S3, DeepLens, Lambda) to train and implement machine learning models
* Collaborated with the group to write a comprehensive report on our project and its applications in computer vision

Student Researcher

Mentor: Dr. Jason Miller, CSU Channel Islands, CA

Course taken for credit (UNIV 498) *Fall 2018*

* Worked on developing a collection of Python scripts that allow for real-time detection of hotspots on solar panels via drone technology
* Created a final report detailing the results of my work and a roadmap for future work
* Explored the Python library OpenCV, concepts in digital image processing and others’ work in Computer Vision to create original code to detect hotspots on solar panels

REU Student Researcher

Mentor: Dr. Allison L. Lewis, Lafayette College, PA

St. Mary’s College of Maryland ESP-REU *Summer 2018*

* Used compartmental modeling and sensitivity analysis to determine the best way to eradicate tuberculosis
* Collaborated on a written report detailing the research completed by my research group to submit to an undergraduate biomathematics journal
* Delivered weekly oral presentations
* Wrote and debugged R programs to simulate SEIR population dynamics, run calculations and produce helpful graphics

**SELECTED PRESENTATIONS**

M. Cortez, M. Hobson, S. M. Ellis. *Peaks in Parking Functions.* MSRI-UP Final Presentations. Mathematical Sciences Research Institute, Berkeley, CA. 25 July 2019.

J. Camarillo, M. Contreras, M. Cortez, A. Martos. *Finding Waldo: An Investigation into Machine Learning for Object Detection.* SAGE Student Research Conference. Camarillo, California. 4 May 2019.

M. Cortez. *Combating Tuberculosis Using Time-Dependent Sensitivity Analysis.* SAGE Student Research Conference. Camarillo, California. 4 May 2019.

J. Camarillo, M. Contreras, M. Cortez, A. Martos. *Finding Waldo: An Investigation into Machine Learning for Object Detection.* Mathematical Association of America Southern California Regional Conference. Camarillo, California. 6 April 2019.

M. Cortez. *Using Time-Dependent Sensitivity Analysis to Combat Tuberculosis.* Nebraska Conference for Undergraduate Women in Math. Lincoln, Nebraska. 26 January 2019.

K. B. Clarke, M. Cortez, B. E. Thomas. *Combating Tuberculosis: Using Time-Dependent Sensitivity Analysis to Develop Strategies for Treatment and Prevention.* Joint Math Meetings. Baltimore, Maryland. 19 January 2019.

**PUBLICATIONS**

Clark, Kendall B.; Cortez, Mayleen; Hernandez, Cristian; Thomas, Beth E.; and Lewis, Allison L. (2019) "Combating Tuberculosis: Using Time-Dependent Sensitivity Analysis to Develop Strategies for Treatment and Prevention," Spora: A Journal of Biomathematics: Vol. 5: Iss.1, 14–23.

**LANGUAGE AND TECHNICAL SKILLS**

* Fluent in English and Spanish, both written and verbal
* Proficient in LaTeX, Microsoft Office, Windows and Mac OS
* Some familiarity with Java, C, R, Python, MatLab, and Amazon Web Services

**WORK EXPERIENCE**

Instructional Student Assistant, *CSU Channel Islands* *2018 to 2020*

* Helped students learn by developing their conceptual knowledge of math content and assisting them with class assignments
* Complied with safety standards, policies and procedures
* Lead tutoring sessions by asking questions and encouraging critical thinking, creativity and collaboration between students

**SERVICE**

* Volunteer *2021*

*Virtual Expanding Your Horizons Conference*

* Reunion Weekend Panelist *2021*

*The Enhancing Diversity in Graduate Education Program*

* Grad School Demystified Panelist *2020*

*Cornell Undergraduate Research Board*

* Homework Help Volunteer *2018 to 2020*

*Iglesia Evangelica Rey de Reyes*

* Translator *2016 to 2021*

*Iglesia Evangelica Rey de Reyes*

* Youth Leader *2015 to 2021*

*Iglesia Evangelica Rey de Reyes*

* Board Member *2015 to 2019*

*It’s a New Day*

**UNIVERSITY INVOLVEMENT & MEMBERSHIPS**

* Center for Applied Math Mentoring Program Coordinator *2021 to present*
* AWM Cornell Chapter ZigZag Mentor *2020 to 2021*
* Data Science Club (President) *2019 to 2020*
* SACNAS *2019 to present*
* Math Club (Member, 2019 Treasurer) *2018 to 2020*
* Louis Stokes Alliance for Minority Participation *2018 to present*
* Gamma Beta Phi Honor Society *2018 to 2019*
* Math Alliance Scholar *2018 to present*
* American Mathematical Society *2018 to present*

**FELLOWSHIPS, AWARDS & ACCOMPLISHMENTS**

National Science Foundation Graduate Research Fellowship – Awarded 2020, Consists of three years of Ph.D. funding

Cornell Sloan-Colman Graduate Diversity Fellowship – Awarded 2020, Consists of three years of Ph.D. funding

Semester Honors – AY15/16, AY16/17, Spring 2018, AY18/19, AY19/20

Outstanding Poster Presentation — California State University Channel Islands, Spring 2019, Sage Student Research Conference

Outstanding Oral Presentation — California State University Channel Islands, Spring 2019, Sage Student Research Conference

Outstanding Poster — California State University Channel Islands, Spring 2019, Mathematical Association of America California-Nevada Regional Conference

Scored on the Putnam Exam — California State University Channel Islands, December 2018, Mathematical Association of America Putnam Competition

Outstanding Oral Presentation — California State University Channel Islands, Fall 2018, Student Research Showcase

**REFERENCES**

**Selenne Bañuelos, PhD.**

*Assistant Professor – Department of Mathematics,* CSU Channel Islands

1 University Dr, Camarillo, CA 93012

Email: selenne.banuelos@csuci.edu

**Pamela E. Harris, PhD.**

*Assistant Professor – Department of Mathematics and Statistics,* Williams College

33 Stetson Ct. Office 106C, Williamstown, MA 01267

Email: peh2@williams.edu

**Allison L. Lewis, PhD.**

*Assistant Professor – Department of Mathematics,* Lafayette College

730 High St, Easton, PA 18042

Email: lewisall@lafayette.edu

**Carissa Romero, MS.**

*Operations Research Analyst,* NAVAL Surface Warfare Center

4363 Missile Way, Port Hueneme, CA 93043

Email: carissaeromero@yahoo.com