

**Renee E. Mirka**  
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***Education:***

**Cornell University, 2019 - Present**

Ph.D. in Computer Science (In Progress)

**University of California San Diego, 2017 - 2019**

M.A. in Mathematics

**Washington University in St. Louis, 2013-2017**

B.S. *summa cum laude* in Computer Science with a second major in Mathematics

Outstanding Senior Award in Computer Science and Engineering

Highest Distinction in Mathematics

***Professional Experience:***

**MasterCard Digital Enablement Service Summer Intern, MasterCard, Summer 2015**

- Worked on team responsible for the development and implementation of Apple Pay
- Developed a Java/Javascript application allowing employees to troubleshoot card provisioning requests, onboard new clients, edit system parameters, and decrypt information from the databases
- Participated in internal MasterCard hackathon, TakeInitiative
  - Member of winning team
  - Product was patented (Publication number: 20170262841)

**Cryptologic Access Summer Intern, United States Department of Defense, Summer 2014**

- Obtained a TS/SI/TK security clearance with a full-scope polygraph
- Produced an automated database with corresponding archive directory, nightly logs, e-mail notification, and data and statistics reports
- Presented a brief end-of-summer talk to peers, mentors, supervisors, and administration from the sponsoring organization

***Research Experience:***

**Representation Theory, Brendon Rhoades, Winter 2019**

- Planned reading and working from *Representation Theory* (Fulton, Harris)

**Computability and Proof Theory, Sam Buss, Spring 2018**

- Reading and working from *Computability, Complexity, and Languages* (Davis, Sigal, Weyuker), *Computers and Intractability* (Johnson, Garey), and *Handbook of Proof Theory* (Buss)

**Algebraic Combinatorics (Honor's Thesis), John Shareshian, Fall 2016 - Spring 2017**

- Research culminating in my undergraduate honor's thesis *Generating Functions for Enumerating Chains of Partitions with Distinct Parts* presented in Spring 2017

**Multi-Agent Systems/Game Theory, Sanmay Das, Spring 2016 - Spring 2017**

- Research culminating in a publication beginning with my final project in Multi-Agent Systems studying ways to reduce congestion through information

## ***Publications:***

**Reducing Congestion Through Information Design.** Das, S.; Kamenica, E.; and Mirka, R. In *Proceedings of the 55th Allerton Conference on Communication, Control, and Computing*, pages 1279-1284, 2017. Invited paper.

## ***Teaching Experience:***

- Spring 2019, Teaching Assistant, Combinatorics
- Winter 2019, Teaching Assistant, Introduction to Cryptography
- Fall 2018, Teaching Assistant, Mathematical Reasoning
- Summer 2018, Teaching Assistant, Calculus II
- Summer 2018, Teaching Assistant, Mathematical Reasoning
- Spring 2018, Teaching Assistant, Game Theory
- Winter 2018, Teaching Assistant, Mathematical Reasoning
- Fall 2017, Teaching Assistant, Vector Calculus
- Spring 2017, Teaching Assistant, Multi-Agent Systems
- Spring 2017, Teaching Assistant, Analysis of Algorithms
- Fall 2016, Grader, Theory of Artificial Intelligence and Machine Learning
- Spring 2016, Grader, Foundations for Higher Math
- Fall 2015, Grader, Matrix Algebra
- Summer 2015, Teaching Assistant, Computer Science II
- Spring 2015, Teaching Assistant, Computer Science I
- Spring 2015, Help Desk Tutor, Physics II
- Fall 2014, Help Desk Tutor, Physics I

## ***Service:***

- Mathematics Graduate Student Council, **Chair**, 2018 - 2019 academic year
- 2020 Graduate Student Combinatorics Conference, **Organizing Committee Member (Budget)**, 2018 - 2019 academic year
- Mathematics Graduate Student Seminar (Food for Thought), **Co-organizer**, Fall 2018
- San Diego Refugee Tutoring, **Tutor**, 2018 - 2019 academic year

## ***Graduate Coursework:***

### **Math:**

Algebraic Combinatorics (UCSD)

Algebraic Topology (UCSD)

Probabilistic Combinatorics (UCSD)

Applied Algebra (UCSD)

Complex Analysis (self-study)

Real Analysis (UCSD)

Algebra (WUSTL)

### **CSE:**

Pseudorandomness and Combinatorial Constructions (Cornell)

Bridging Continuous and Discrete Optimization (Cornell)

Multi-Agent Systems (WUSTL)

Computational Geometry (WUSTL)

Approximation Algorithms (WUSTL)

Algorithms for Nonlinear Optimization (WUSTL)

Theory of Artificial Intelligence and Machine Learning (WUSTL)

## Introduction to Artificial Intelligence (WUSTL)