

# Jad Omar Salem

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## EDUCATION:

- Ph.D. in Algorithms, Combinatorics, and Optimization** 2023  
Georgia Institute of Technology  
Thesis Topic: Online Learning with a view toward Fairness  
Advisor: Swati Gupta
- M.S. in Operations Research**, Georgia Institute of Technology 2022
- M.S. in Mathematics**, Georgia Institute of Technology 2019
- B.A. in Mathematics**, Oberlin College 2017  
Advisor: Lola Thompson  
Honors Project: Ergodic Methods in Number Theory

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## PAPERS:

- Using Algorithms to Tame Discrimination: A Path to Algorithmic Diversity, Equity, and Inclusion*  
– Joint with Swati Gupta and Deven Desai  
– **UC Davis Law Review 2023**
- Don't let Ricci v. DeStefano Hold You Back: A Bias-Aware Legal Solution to the Hiring Paradox*  
– Joint with Swati Gupta and Deven Desai  
– **2022 ACM Conference on Fairness, Accountability, and Transparency (FAccT '22)**  
– Workshopped at the **Privacy Law Scholars Conference 2021**  
– Workshopped at the **Data Law and Ethics Research Colloquium 2021**
- Algorithmic Challenges in Ensuring Fairness at the Time of Decision*  
– Joint with Swati Gupta and Vijay Kamble  
– Major Revision in **Operations Research**  
– **18th Conference on Web and Internet Economics (WINE '22)**  
– Presented at the **Manufacturing and Service Operations Management Conference 2021**
- Secretary Problems with Biased Evaluations using Partial Ordinal Information*  
– Joint with Swati Gupta  
– Forthcoming in **Management Science 2023**  
– Extended abstract appeared in the **16th Conference on Web and Internet Economics (WINE '20)**  
– Presented at the **Cornell ORIE Young Researchers Workshop 2021**  
– Presented at the **Fields Institute Conference on Data Science and Optimization 2019**

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## HONORS AND AWARDS:

- Cornell ORIE Young Researchers Workshop** 2021  
Invited speaker
- Outstanding Student Evaluations**, Georgia Institute of Technology 2018  
Awarded to a teaching assistant  
Received for the course Discrete Mathematics
- High Honors in Mathematics**, Oberlin College 2017

**The Orr Prize** 2017  
Awarded to a senior mathematics major at Oberlin College “on the basis of outstanding achievement in undergraduate mathematics and promise of future professional accomplishment”

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**TEACHING EXPERIENCE:**

**U.S. Naval Academy**  
SA402: Dynamic and Stochastic Models Fall 2023

**Georgia Institute of Technology**  
*As instructor* 2022  
Math 2603: Discrete Mathematics (“overall effectiveness” rating of 4.7/5 by students)  
*As teaching assistant* 2017-19,21  
Finite Mathematics, Discrete Mathematics, Linear Algebra, Applied Combinatorics

**Directed Reading Program** 2019-22  
Mentored undergraduate mathematics majors at Georgia Tech.  
Past projects: Randomized algorithms, Online learning, Facility location, Set Theory

**Ross Mathematics Program** 2015,17-19  
Mentored a group of high school students in an intensive six-week course on number theory.

**Oberlin College** 2014-17  
Teaching Assistant/Workshop Leader

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**SELECTED TALKS:**

\***December 2022:** *Algorithmic Challenges in Ensuring Fairness at the Time of Decision*  
Conference on Web and Internet Economics (WINE 2022)

\***June 2022:** *Don't let Ricci v. DeStefano Hold You Back: A Bias-Aware Legal Solution to the Hiring Paradox*  
ACM Conference on Fairness, Accountability, and Transparency (FAccT '22)

\***June 2021:** *Taming Wild Price Fluctuations: Monotone Stochastic Convex Optimization with Bandit Feedback*  
Manufacturing and Service Operations Management Conference 2021

\***June 2021:** *Hiring Practices: Biased Data, Fairer Algorithms, and Discrimination Law*  
Privacy Law Scholars Conference 2021

\***December 2020:** *Closing the Gap: Mitigating Bias in Online Résumé-Filtering*  
Conference on Web and Internet Economics (WINE 2020)

**October 2020:** *Hiring Practices: Biased Data, Fairer Algorithms, and Discrimination Law*  
with Swati Gupta and Deven Desai  
University of San Diego School of Law

**September 2020:** *Online Selection with Bias*  
Georgia Institute of Technology ACO Student Seminar

**November 2019:** *Secretary Problems under Implicit Bias*  
The Fields Institute Conference on Data Science and Optimization

**May 2017:** *Dynamical Systems, Binary Expansions, and Continued Fractions*  
Oberlin College Honors Lecture Series

\***January 2017:** *Factorization Properties in the Ring of Integer-Valued Polynomials*  
Joint Mathematics Meeting; received “Outstanding Poster Award”

\***August 2016:** *Factorization Properties in the Ring of Integer-Valued Polynomials*  
Young Mathematicians Conference

**OTHER WRITING:**

**Introduction to Online Learning** (lecture notes, to be converted into a book)

Co-written with Swati Gupta for an upper-level undergraduate course

**Algorithmic Challenges in Ensuring Fairness at the Time of Decision**

Forthcoming in *OPTIMA* (Mathematical Optimization Society Newsletter)

Co-written with Vijay Kamble

**Invited book chapter in Springer's *Studies in Computational Intelligence***

*Temporal Notions of Algorithmic Fairness*

Forthcoming, co-authored with Swati Gupta and Vijay Kamble

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**SERVICE AND OUTREACH:**

**Algorithms, Combinatorics, and Optimization Student Seminar** 2021-2023  
Organizer.

**9th Annual GoSTEM Latino College & STEM Fair** 2021  
Workshop session presenter.

**Peer Mentoring Program** 2020  
Served as a mentor to incoming doctoral students in the School of Mathematics.

**Counselor at the Ross Mathematics Program** 2015,2017-19  
Provided mathematical guidance to participants, which included discussing their number theory homework with them, meeting with them regularly to discuss their progress, giving informal lectures on supplementary topics, and leading seminars.

**Admissions for the Ross Mathematics Program** 2019-20  
Served on the admissions committee.

**High School Math Competition** 2019-21  
Served on the organizing committee for Georgia Tech's High School Math Competition.

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**PRIOR RESEARCH EXPERIENCE:**

**Oracle Labs** Summer 2021  
Research Assistant in the Machine Learning Research Group  
Project: Miscalibration in Interviewer Scores

**Fairfield University REU** 2016  
Topic: Elasticity and Catenary Degree in the Ring of Integer-Valued Polynomials  
Advisor: Paul Baginski