

Jad Omar Salem

Assistant Professor, U.S. Naval Academy
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EDUCATION:

Ph.D. in Algorithms, Combinatorics, and Optimization Georgia Institute of Technology Thesis Topic: Online Learning with a view toward Fairness Advisor: Swati Gupta	2023
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 Advisor: Lola Thompson Honors Project: Ergodic Methods in Number Theory	2017

RESEARCH:

Minimax Fairness in Combinatorial Optimization

- Joint with Reuben Tate and Stephan Eidenbenz
- Ongoing

Poset Selection under Adversarial Behavior

- Joint with Robert Laudone and Tyler Perini
- Ongoing

Learning Cut Distributions with Quantum Optimization

- Joint with Bao Bach, Cameron Ibrahim, Reuben Tate, Stephan Eidenbenz, and Ilya Safro
- Ongoing

Quantum Hypergraph Partitioning

- Joint with Cameron Ibrahim, Bao G. Bach, Reuben Tate, Kien X. Nguyen, Stephan Eidenbenz, and Ilya Safro
- Accepted to the **IEEE International Conference on Quantum Computing and Engineering (QCE26)**

Algorithmic Challenges in Ensuring Fairness at the Time of Decision

- Joint with Swati Gupta and Vijay Kamble
- **Operations Research**, accepted April 2025
- **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
- **Management Science**, published October 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**

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**

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”	

TEACHING EXPERIENCE:

U.S. Naval Academy

As course coordinator

SA233: Introduction to Operations Research with Programming	Sp24, Sp25
SA320: Dynamic and Stochastic Models	Fa24, Fa25
SA403: Graph and Network Algorithms	Sp26

As instructor

SA233: Introduction to Operations Research with Programming	Sp24, Sp25
SM261: Linear Algebra	Fa25
SM317: Statistical Learning	Fa26
SA320: Dynamic and Stochastic Models	Fa23, Fa24, Fa25
SA403: Graph and Network Algorithms	Sp26
SA475B: Capstone	Sp26

Georgia Institute of Technology

As instructor

Math 2603: Discrete Mathematics (“overall effectiveness” rating of 4.7/5 by students)	2022
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As teaching assistant

Finite Mathematics, Discrete Mathematics, Linear Algebra, Applied Combinatorics	2017-19, 21
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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

UNDERGRADUATE ADVISING:

Honors and Research Projects

<i>Mixed integer programs for summer training scheduling</i>	2025-2026
<i>Last-coverage probabilities in Markov Chains</i>	2026

Academic Advising, Operations Research Major

2024-

I currently have seven advisees.

SELECTED TALKS:

- October 2024:** *Trajectory-Constrained Convex Optimization*
INFORMS 2024
Basic Notions Seminar, Mathematics Department, USNA
- *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

* Peer-reviewed venue

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 Temporal Fairness in Online Decision-Making 2023**
OPTIMA (Mathematical Optimization Society Newsletter)
Co-written with Swati Gupta and Vijay Kamble
- Invited book chapter in Springer's *Studies in Computational Intelligence*** 2023
Temporal Notions of Algorithmic Fairness
Co-written with Swati Gupta and Vijay Kamble

SERVICE AND OUTREACH:

- Faculty Performance Committee, Mathematics Department, USNA** 2026
- Research Committee, Mathematics Department, USNA** 2023-

Midshipmen Engagement Committee, Mathematics Department, USNA	
Committee member	2023-
Chair	2024-
Provost DEI Task Force, USNA	
Task force member	2024
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.	
Admissions Committee, Ross Mathematics Program	2019-20
Committee member	
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.	
High School Math Competition	2019-21
Served on the organizing committee for Georgia Tech's High School Math Competition.	

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	