Jalani Kofi Williams

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RESEARCH INTERESTS

Broadly, Jalani is interested in applying techniques from applied probability and decision making under uncertainty to guide the design of large-scale service systems (e.g. datacenters). In the long term, he aims to create a world where we have the theoretical foundation for understanding when a system is efficient, performant, and robust. Recently, Jalani has been focusing on investigating how the energy-saving methods being used in today's datacenters affect the fundamental characteristics of their latency performance.

related areas: applied probability, queueing theory, cloud computing, decision-making under uncertainty

EDUCATION

Carnegie Mellon University – Pittsburgh, PA
August 2018 – Ongoing
Advisor: Weina Wang
6th year PhD student in the Computer Science Department.

California Institute of Technology -- Pasadena, CA
October 2012 – June 2016
B.S. Mechanical Engineering, Minor in Computer Science

WORK EXPERIENCE

Summer Research Intern, The Aerospace Corporation – El Segundo, CA
June 2020 – August 2020
Manager: Michael Nemerouf
Worked on research related to space debris monitoring.

Research Technician Associate, California Institute of Technology– Pasadena, CA
October 2017 – June 2018
PI: David Anderson
Worked on an automated mouse behavior recognition system. Part of a team which implemented a computer vision system for mouse pose estimation, as well as a software pipeline and GUI which automated the annotation generation process.

Instructor and Tutor, HBar Tutoring LLC – Pasadena, CA
August 2016 – July 2018

Director: Rosemary Rohde
Taught and tutored students across a variety of age ranges concerning a variety of subjects.

TA, "Freshman Summer Research Institute," California Institute of Technology – Pasadena, CA
July 2014 – August 2014, July 2015 – August 2015
Instructor: Lily Khadjavi
Graded homework, held office hours, and led recitations for a preparatory math course for URM freshmen.

AWARDS

CAARMS Poster Award, "Best Algorithm" for ***The M/M/k with Deterministic Setup Times***, 2023

Invited Participant, Stanford MS&E Rising Stars Program, 2023

CAARMS Poster Award, "Best Theory" for ***Towards Understanding the M/M/k/Setup*****,** 2022

GEM Fellowship, 2021

Gates Millennium Scholarship, 2012-2021

PUBLICATIONS

- **Jalani Williams**, Weina Wang, Mor Harchol-Balter. The M/M/[1]k/Setup with deterministic setup times. *Proc. ACM SIGMETRICS Int. Conf. Measurement and Modeling of Computer Systems (SIGMETRICS)*, June 19 - June 23, 2023, Orlando, FL.

- Weina Wang ⓡ Anupam Gupta ⓡ **Jalani Williams**. Probing to Minimize. *Proc. Conf. on Innovations in Theoretical Computer Science (ITCS)*, January 31 - February 3, 2022, Berkeley, CA.

- Cristina Segalin, **Jalani Williams**, Tomomi Karigo, et al. The Mouse Action Recognition System (MARS) software pipeline for automated analysis of social behaviors in mice. *eLife*. 2021.

PRESENTATIONS

- "The M/M/k with Deterministic Setup Times," CAARMS 2023, Poster

- "The M/M/k with Deterministic Setup Times," SIGMETRICS 2023, Conference Talk

- "Setup Times in Multiserver Systems," Cornell ORIE Colloquium, Invited Talk

[1] ⓡ: Denotes random author ordering.

- "Setup Times in Multiserver Systems," Stanford MS&E Rising Stars 2023, Invited Talk
- "Understanding the M/M/k/Setup-Deterministic," Simons Institute Data-Driven Decision-making Processes Program, Poster
- "A Tight Analysis of Server Farms with Setup Times," INFORMS Annual Meeting, Invited Talk
- "Towards Understanding the M/M/k/Setup," CAARMS 2022, Poster
- "Towards Understanding the M/M/k/Setup," Stochastic Networks 2022, Poster
- "Probing To Minimize," ITCS 2022, Conference Talk
- "Stochastic Routing with Minimum Cost," SIGMETRICS 2019, Poster

TEACHING EXPERIENCE

Graduate TA, "Analytical Performance Modeling" (15-857/47-774) - Carnegie Mellon University
September 2021 – December 2021
Instructors: Mor Harchol-Balter and Weina Wang
Part of a team of two TAs. Together, we were responsible for creating recitation materials, leading recitation sessions, holding regular office hours, and grading assignments and exams.

Head TA, "Probability and Computing" (15-259/260) - Carnegie Mellon University
February 2021 – May 2021
Instructors: Mor Harchol-Balter and Weina Wang
Led a team of six TAs. Together, we were responsible for creating recitation materials, leading recitation sessions, holding regular office hours, and grading assignments and exams. For an associated "Statistics and Computing" mini-course, lectured for 2 out of the 6 lectures.

UNIVERSITY SERVICE

CSD PhD Student Council, Apparel Working Group
August 2021 – (ongoing)
Part of a team responsible for creating, ordering, and distributing various department apparel (e.g. tshirts, hoodies).

Student Volunteer, CSD Introductory Course
August 2019 - September 2019
Part of a group responsible for organizing and assisting with various new student activities. Included planning research area-specific parties, participating in a student panel, and other volunteer miscellanea.