Shefali Ramakrishna Westfield

Ph.D. Candidate in Operations Research at Cornell University
B.A., M.A. in Mathematics

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Research Interests: Queueing theory, scheduling, stochastic processes, data-driven decision-making
Programming: Python (NumPy, pandas, MIP, SciPy, SageMath, scikit-learn), R, MATLAB, SQL, Git, LaTeX

Education

Aug 2022 – May 2027 (expected)
Cornell University
Ph.D. in Operations Research and Information Engineering
- Advised by Ziv Scully, working in queueing theory and scheduling
- **GPA:** 4.02
- Recipient of Operations Research Fellowship
- **Coursework:** Applied Stochastic Processes, Probability Theory, Mathematical Programming, Stochastic Control and Estimation, Probability Models and Inference, AI Applications in Science, Statistical Principles, Computational Methods in Operations Research

Aug 2018 – May 2022
Bryn Mawr College
B.A. and M.A. in Mathematics, Honors, magna cum laude
- **M.A. Thesis:** Numerical Methods in Issues of Sustainability, advised by Prof. Victor Donnay
  Winner of the 2022 Mathematical Association of America Outstanding Student Mathematical Paper Prize
- **Graduate GPA:** 4.0

Papers and Preprints

Submitted
Ramakrishna, S., Peng, E., & Scully, Z. *Priority Scheduling in the M/G/1 with Preemption Overhead*. Manuscript submitted for publication. arXiv:2605.01522. ***Winner of 2024 ACM SIGMETRICS Student Research Competition, Graduate Division.*** (preprint)

2026
Ramakrishna, S., Harlev, A., & Scully, Z. *Empirical Gittins for Data-Driven M/G/1 Scheduling with Arbitrary Job Size Distributions*. **Proceedings of the ACM on Measurement and Analysis of Computing Systems (SIGMETRICS), 2026.** (paper)

2023
Cenek, L., Ferguson, L., Gebre, E., Marcussen, C., Meintjes, J., Morrison, R., Ostermeyer, L., & **Ramakrishna, S.** (2023). *Uniform scrambles on graphs*. Australasian Journal of Combinatorics. (paper)

2022
Cenek, L., Ferguson, L., Gebre, E., Marcussen, C., Meintjes, J., Morrison, R., Ostermeyer, L., & **Ramakrishna, S.** *Scramble number and tree-cut decompositions*. arXiv:2209.01459. (preprint)

2022
Cenek, L., Ferguson, L., Gebre, E., Marcussen, C., Meintjes, J., Morrison, R., Ostermeyer, L., & **Ramakrishna, S.** *Bounds on higher graph gonality*. arXiv:2206.06907. (preprint)

Talks

Nov 2026
AMS Fall Western Sectional Meeting, Special Session on Theory and Applications of Markov Models, Tempe, AZ.
Talk: Priority Scheduling in the M/G/1 with Preemption Overhead (preprint)

Oct 2026
Computer Science Colloquium, Amherst College
Talk: Pause and Effect: Priority Scheduling with Preemption Overhead

Oct 2026
De-stressing Math Collective, Bryn Mawr College
Talk: Pause and Effect: Priority Scheduling with Preemption Overhead

Apr 2026
De-stressing Math Collective, Bryn Mawr College
Talk: To Infinity and Beyond: An Introduction to Branching Processes (link)

Jul 2025
INFORMS Applied Probability Society Conference, Atlanta, GA.
Talk: Empirical Gittins: M/G/1 Scheduling from Job Size Samples (extended abstract)

Jun 2025
Workshop on MAthematical performance Modeling and Analysis (MAMA), Stony Brook, NY.
Talk: Empirical Gittins: M/G/1 Scheduling from Job Size Samples (extended abstract)

Jun 2024
Reinforcement Learning for Stochastic Networks (RL4SN), Toulouse, France.
Talk: Designing M/G/1 Scheduling Policies from Job Size Samples (program)

Jun 2024 | **Workshop on MAthematical performance Modeling and Analysis (MAMA)**, Venice, Italy.
Talk: Transform Analysis of Preemption Overhead in the M/G/1 (preprint)

May 2022 | **Masters Thesis Defense**, Bryn Mawr College
Talk: Design of Queuing Simulation for Electric Car Chargers (recording) (thesis)

Feb 2022 | **Distressing Math Collective**, Bryn Mawr College
Talk: An introduction to chip-firing games and gonality computation (abstract)

Aug 2021 | **Young Mathematicians Conference**, Ohio State University
Talk: Speeding up gonality computation (recording)

May 2021 | **Bio-Mathematics Research Group**, University of Utah
Talk: Modeling Adhesion of T-cells to Antigen-Presenting Cells (slides)

Non-PhD Research and Internship Experience

Jun 2021 – Aug 2021 | **Undergraduate Researcher in Mathematics**
SMALL REU – Williams College
- Chip-Firing group at NSF-funded REU under Prof. Ralph Morrison (algebraic geometry/combinatorics).
- Developed Python/SageMath tool to compute gonality of any finite graph.
- Presented at the 2021 Young Mathematicians Conference.

May 2021 – Jun 2021 | **Undergraduate Researcher in Mathematical Biology**
University of Utah
- Interdisciplinary research project modeling adhesion of T-cells to antigen-presenting cells.

May 2020 – Aug 2020 | **Operational Analytics Intern**
Air Methods Corporation
- Built Python MIP-based schedule generator (1000+ variables) for nurses and medics; reduced runtime by a factor of 100. Tool now deployed across 140+ U.S. air transport bases.

Teaching Experience

Aug 2026 – Dec 2026 | **Instructor of Record (first half of semester), Cornell University**
ORIE 3500: Engineering Probability and Statistics: Modeling and Data Science II, co-taught with Prof. Jamol Pender
- Designed and delivered all lectures for a 150+ student introductory probability course for engineers; wrote assignments, discussion questions, and exams, held office hours, and managed course policies and logistics for the first half of the semester.
- Served as Head TA for the second half of the semester, and designed all course materials (recitation handouts, homeworks, quizzes) for that half as well.
- Directly supervise six master's students on individual, open-ended final projects that apply course tools (distribution modeling, simulation, estimation, hypothesis testing) to topics of their own choosing.
- Designed the project structure: one-on-one topic and planning meetings, a proposal, a plan with minimum and full versions plus an early result, a flash talk, and a final report with code.

Aug 2025 – Dec 2025 | **ORIE Head TA, Cornell University**
Generative AI with OR Applications, Prof. David Goldberg
- Independently designed course assignments and developed grading rubrics; held weekly office hours and graded assignments and quizzes.

Aug 2024 – Dec 2024 | **ORIE Head TA, Cornell University**
ORIE 3500: Engineering Probability and Statistics: Modeling and Data Science II, Prof. Pierre Patie
- Coordinated a 150+ student course, managed a team of 9 TAs, led recitations and office hours, graded work, and developed course materials and logistics.

Jun 2024 – Dec 2025 | **Undergraduate Research Mentor, Cornell University**
- Provided ongoing informal mentorship to an undergraduate student preparing for doctoral study, including regular feedback on research presentations, posters, and research statements, and helped her through an independent study of queueing theory over Summer 2024.

Aug 2023 – Jan 2024 | **Doctoral Tutor, Cornell University**
- Provided sustained informal tutoring to a fellow doctoral student throughout ORIE 6700 (Statistical Principles) meeting twice weekly for individual instruction, reviewing lecture material and helping bridge any conceptual gaps.

Aug 2023 – Dec 2023,
Jan 2022 – May 2022,
Jan 2021 – May 2021,
Aug 2019 – Dec 2019 | **Course Assistant, Cornell University, Bryn Mawr College, and Haverford College**
Reinforcement Learning, Prof. Soroosh Shafiee
Differential Equations, Prof. Victor Donnay
Linear Optimization, Prof. Robert Manning
Multivariable Calculus, Prof. David Lippel
- Tutored students at weekly office hours and labs and graded student work; for Reinforcement Learning, also designed course assignments.

Awards

Jun 2024 | **ACM SIGMETRICS Graduate Student Research Competition, 1st Place**
Association for Computing Machinery (ACM) SIGMETRICS Conference
- Awarded first place in the graduate division of the ACM Student Research Competition at SIGMETRICS 2024 for work on **Transform Analysis of Preemption Overhead in the M/G/1**. Qualifies winner for participation in the ACM SRC Grand Finals.

May 2022 | **MAA EPaDel Outstanding Student Mathematical Paper Prize**
Mathematical Association of America, Eastern Pennsylvania and Delaware Section
- Awarded for master's thesis, **Numerical Methods in Sustainability**. Recognizes one outstanding paper by an undergraduate in the section annually.

May 2022 | **Anna Pell Wheeler Prize in Mathematics**
Bryn Mawr College
- Awarded annually on the recommendation of the Department of Mathematics, solely on the basis of academic distinction and achievement.

May 2022 | **Mary Louise Cookson Prize in Mathematics**
Bryn Mawr College
- Awarded to a mathematics major in recognition of exceptional service contributing to the life of the department.

May 2022, May 2021 | **Community Building Honor Roll**
Bryn Mawr College
- Awarded to students who invest time and energy to create a sense of belonging, inclusiveness, and community through leadership activities.

Leadership and Service

May 2026 – present | **Operations Research Graduate Assembly (ORGA) Co-President, Cornell University**
- Lead the ORIE graduate student organization; organize department community events
- Revitalizing the INFORMS student chapter to build more interaction between graduate and undergraduate students.

Jan 2023 – Aug 2024 | **Operations Research Graduate Assembly Treasurer, Cornell University**
- Restarted award-winning INFORMS student chapter; served as treasurer.
- Organized "Women in ORIE" events and department social events.
- Organized the 2024 PhD Visit Days for Cornell's Operations Research department.

May 2021 – May 2022 | **Distressing Math Collective Student Coordinator, Bryn Mawr College**
- Organized and promoted weekly mathematical talks within the department.

Jan 2021 – May 2022 | **Student Mathematics Antiracism Reading and Praxis (SMARP) Founder and Organizer, Bryn Mawr College**
- Founded and organized a student antiracism self-education reading group within the Math Department.
- Curated media and readings focused on antiracist efforts in mathematics for bimonthly discussions.

Aug 2020 – May 2022 | **Math Major Representative, Bryn Mawr College**
- Held open office hours for students; organized four department events; took and distributed notes from monthly department meetings.