Shefali Ramakrishna

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

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Programming: Python (NumPy, pandas, MIP)

Education

Aug 2022 – May 2027 (expected)

Cornell University
Ph.D. in Operations Research and Information Engineering

- Advised by Ziv Scully, working in queueing theory
- Recipient of Operations Research Fellowship
- **Coursework:** Applied Stochastic Processes, Mathematical Programming, Structure of Information Networks, Computational Methods in Operations Research, Probability Models and Inference, AI Applications in Science, Statistical Principles, Stochastic Control and Estimation, Probability Theory

Aug 2020 – May 2022

Bryn Mawr College
M.A. in Mathematics, magna cum laude

- **M.A. Thesis:** Numerical Methods in Sustainability, advised by Prof. Victor Donnay
  Winner of the 2022 Mathematical Association of America Outstanding Student Mathematical Paper Prize
- **GPA:** 4.0/4.0
- **Coursework:** Graduate Complex Analysis, Graduate Analysis I, Graduate Analysis II, Graduate General Topology

Aug 2018 – May 2022

Bryn Mawr College
B.A. in Mathematics, Honors, magna cum laude

- **Relevant Coursework:** Information and Coding Theory, Game Theory, Harmonic Analysis Reading Group, Differential Equations, Numerical Linear Algebra, Math Modeling and Simulation, Abstract Algebra, Elementary Number Theory, Scientific Computing, Economic Statistics with Calculus, Real Analysis, Linear Optimization, Multivariable Calculus

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 (SRC) at SIGMETRICS 2024 for work on **Transform Analysis of Preemption Overhead in the M/G/1**. Competition included a poster session and a research talk for semi-finalists, evaluated by a panel of judges made up of experts in the field. The winning research was recognized for its significant contribution, innovative methods, and effective presentation, and this accolade qualifies the winner for participation in the ACM SRC Grand Finals against other first-place winners from other SIG conferences.

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**. The EPaDel Student Mathematical Papers Prize recognizes one outstanding paper written by an undergraduate student at an institution in the section that year.

May 2022

Anna Pell Wheeler Prize in Mathematics
Bryn Mawr College

- Awarded annually to an undergraduate on the recommendation of the Department of Mathematics, given 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 that has contributed 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 on campus through leadership activities.

Papers and Preprints

Jun 2025 | **Ramakrishna, S.**, Harlev, A., & Scully, Z. (2024, June 13). *Empirical Gittins: M/G/1 Scheduling from Job Size Samples*. Presented at the 2025 Workshop on MAthematical performance Modeling and Analysis. (extended abstract)

Jun 2024 | **Ramakrishna, S.** & Scully, Z. (2024, June 13). *Transform analysis of preemption overhead in the M/G/1*. Presented at the 2024 Workshop on MAthematical performance Modeling and Analysis. ***Winner of 2024 ACM SIGMETRICS Student Research Competition, Graduate Division***. (extended abstract)

Aug 2023 | Cenek, L., Ferguson, L., Gebre, E., Marcussen, C., Meintjes, J., Morrison, R., Ostermeyer, L., & **Ramakrishna, S.** (2023, August 6). *Uniform scrambles on graphs*. Australasian Journal of Combinatorics. (paper)

Sep 2022 | Cenek, L., Ferguson, L., Gebre, E., Marcussen, C., Meintjes, J., Morrison, R., Ostermeyer, L., & **Ramakrishna, S.** (2022, September 6). *Scramble number and tree-cut decompositions*. arXiv.org. (paper)

Jun 2022 | Cenek, L., Ferguson, L., Gebre, E., Marcussen, C., Meintjes, J., Morrison, R., Ostermeyer, L., & **Ramakrishna, S.** (2022, June 14). *Bounds on higher graph gonality*. arXiv.org. (paper)

May 2022 | **Ramakrishna, S.** (2022, May 29). *Transform analysis of preemption overhead in the M/G/1*. Master's Thesis. ***Winner of 2022 MAA Outstanding Student Mathematical Paper Prize***. (paper)

Talks

Jun 2025 | **The Workshop on MAthematical performance Modeling and Analysis**, New York, NY.
Talk: Empirical Gittins: M/G/1 Scheduling from Job Size Samples (extended abstract)

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

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
Conference 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)

Work and Research Experience

Jun 2021 - Aug 2021 | **Undergraduate Researcher in Mathematics**
SMALL REU – Williams College
- Participated in the Chip-Firing group at NSF-funded math REU at Williams College.
- Worked under Prof. Ralph Morrison in the field of algebraic geometry.
- Developed computational tool in Python with SageMath that can find the gonality of any finite graph.
- Presented work on gonality computation with a live talk at the 2021 Young Mathematicians Conference.

May 2021 - Jun 2021 | **Undergraduate Researcher in Mathematical Biology**
University of Utah
- Participated in an interdisciplinary research project in the field of Mathematical Biology.
- Presented work on modeling adhesion of T-Cells to antigen-presenting cells.

May 2020 - Aug 2020 | **Operational Analytics Intern**
Air Methods Corporation
- Used mixed-integer programming with Branch and Cut solver (over 1000 variables) to create a schedule generator in Python, using PANDAS and MIP packages.
- Implemented customizability based on employee preferences to schedule generator.
- Runtime of schedule generator reduced by a factor of 100 compared to previous process.
- Schedule generator now used for nurses and medics at over 140 medical air transport bases across the U.S.

Teaching Experience

Aug 2024 - Dec 2024 | **ORIE Head TA, Cornell University**
Engineering Probability and Statistics 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.

Aug 2023 - Dec 2023 | **ORIE Course Assistant, Cornell University**
Reinforcement Learning, Prof. Soroosh Shafiee
- Tutored students at weekly office hours, graded student work, and designed course assignments.

Jan 2022 - May 2022,
Jan 2021 - May 2021,
Aug 2019 - Dec 2019 | **Mathematics Course Assistant, Bryn Mawr College and Haverford College**
Differential Equations, Prof. Victor Donnay
Linear Optimization, Prof. Robert Manning
Multivariable Calculus, Prof. David Lippel
- Tutored students during weekly labs and at weekly office hours and graded student assignments.

Other Activities

Jan 2023 - Aug 2024 | **Operations Research Graduate Assembly Treasurer**
- Organized Spring and Fall 2023 picnics for department.
- Restarted award-winning INFORMS student chapter for Cornell, served treasurer.
- Managed budget and organizing fundraisers for graduate student activities in the department.
- Organized "Women in ORIE" events for women in the department.
- Organized the 2024 PhD visit days for Cornell's Operations Research department.

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

Aug 2020 - May 2022 | **Math Major Representative**
- Started and held office hours for current students to talk to Major Representatives.
- Personally organized four Math Department events.
- Took notes at monthly department meetings, which were then released to students.