

Prakirt Jhunjunwala

Curriculum Vitae

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Education and Research

- Ongoing **Postdoctoral Research Fellow**
DRO Division, Columbia Business School | Collaborator: Jing Dong & Yash Kanoria
- 2018-23 **Ph.D. in Operations Research**
Dissertation: Design and Analysis of Stochastic Processing and Matching Networks
ISyE, Georgia Institute of Technology | Advisor: Siva Theja Maguluri | GPA: 3.93/4
- 2018-23 **Masters in Mathematics**
School of Mathematics, Georgia Institute of Technology | GPA: 3.93/4
- 2014-18 **B.Tech (and Honors) in Electrical Engineering with Minor in Mathematics**
Indian Institute of Technology, Bombay | GPA: 9.07/10

Publications

- Exponential Tail Bounds on Queues: A Confluence of Non-Asymptotic Heavy Traffic and Large Deviations**
Authors: Prakirt Raj Jhunjunwala, Daniela Hurtado-Lange, Siva Theja Maguluri
Conference: Accepted to IFIP Performance 2023
Journal: Under Review in Mathematics of Operations Research.
- Heavy Traffic Joint Queue Length Distribution without Resource Pooling**
Authors: Prakirt Raj Jhunjunwala, Siva Theja Maguluri
Conference: Accepted to IFIP Performance 2023
Journal: Under Review in Mathematics of Operations Research.
- Matching Queues with Abandonment in Quantum Switches: Stability and Throughput Analysis**
Authors: Martin Zubeldia, Prakirt Raj Jhunjunwala, Siva Theja Maguluri
Journal: Minor Revision in Operations Research.
- Join-the-Shortest Queue with Abandonment: Critically Loaded and Heavily Overloaded Regimes**
Authors: Prakirt Raj Jhunjunwala, Martin Zubeldia, Siva Theja Maguluri
Journal: Major Revision in Mathematics of Operations Research.
- On the Linear and Super-Linear Convergence of Natural Policy Gradient Algorithm**
Authors: Sajad Khodadadian, Prakirt Jhunjunwala, Sushil Mahavir Varma, Siva Theja Maguluri
Conference: 2021 60th IEEE Conference on Decision and Control (CDC)
Journal: Systems & Control Letters, Volume 164 (2022)
- Low-Complexity Switch Scheduling Algorithms: Delay Optimality in Heavy Traffic**
Authors: Prakirt Raj Jhunjunwala, Siva Theja Maguluri
Journal: IEEE/ACM Transactions on Networking, Volume 30.1 (2021)

7. **Optimal AoI-Aware Scheduling and Cycles in Graphs**
Authors: Prakirt Raj Jhunjunwala, Sombabu Bejjipuram, and Sharayu Moharir
Journal: IEEE Transactions on Communications, Volume 68.3 (2019)
8. **Age-of-Information Aware Scheduling**
Authors: Prakirt Raj Jhunjunwala, and Sharayu Moharir
Conference: IEEE SPCOM Conference 2018
Award: Receptient of **Best Paper Award** at IEEE SPCOM Conference 2018
9. **On a Class of Restless Multi-armed Bandits with Deterministic Policies**
Authors: Prakirt Raj Jhunjunwala, Sharayu Moharir, D. Manjunath, and Aditya Gopalan
Conference: IEEE SPCOM Conference 2018

Awards & Achievements

- 2023 Honorable Mention for **2023 SIGMETRICS Doctoral Dissertation Award**
- 2023 Certificate of **Recognition for Ph.D. Mentorship efforts** from ISyE, Georgia Institute of Technology
- 2022 Recipient of **Ed Iacobucci Research Excellence award** from H. Milton Stewart School of Industrial and Systems Engineering, Georgia Institute of Technology
- 2022 Recipient of Student Travel Grant for Stochastic Networks Conference 2022
- 2021 Recipient of the **Phillip J. and Delores A. Scott Graduate Student Health and Wellness Award** for organizing physical activities to address mental health
- 2019 Received the **CIRTL Associate Level certificate** given to aspiring course instructors for completing the Tech to Teaching program
- 2018 Nominated for **Best TA award** by Prof. Seong Hee Kim for the course ISyE 3232
- 2018 **Best Paper Award** in SPCOM 2018 for paper titled "Age-of-Information aware scheduling"
- 2018 Awarded with **Undergraduate Research Award I** and **Undergraduate Research Award II** by IIT, Bombay for the project *Age-of-Information aware scheduling*
- 2017 Awarded an **Honorarium** as a recognition of my team's achievement on the project *Non-Linear Junction Detector* during undergraduate in IIT Bombay
- 2014 Secured **All India Rank 449** in Joint Entrance Exam (Advanced) taken by 150,000 candidates
- 2013 Selected for prestigious **KVPY (Kishore Vaigyanik Protsahan Yojana) scholarship** by Government of India

Talks & Presentations

- **Exponential Tail Bounds on Queues: A Confluence of Non-Asymptotic Heavy Traffic and Large Deviations** | *Paper Presentation*
 IFIP Performance Conference 2023
- **Heavy Traffic Joint Queue Length Distribution without Resource Pooling** | *Paper Presentation*
 IFIP Performance Conference 2023
- **Exponential Tail Bounds on Queues** | *Invited talk*
 INFORMS Annual Meeting 2023
- **Heavy Traffic Joint Queue Length Distribution without Resource Pooling** | *Invited talk*
 INFORMS Applied Probability Society Conference 2023
- **Rate of Convergence of Tail Probabilities to Heavy Traffic** | *Invited talk*
 INFORMS Applied Probability Society Conference 2023

- **Join-the-Shortest Queue with Abandonment** | *Invited talk*
INFORMS Applied Probability Society Conference 2023
- **On Rate of Convergence of Tail Probabilities to Heavy Traffic** | *Short paper presentation*
MAMA Workshop at ACM Sigmetrics 2023
- **Input-Queued Switch: Joint Distribution under Heavy Traffic** | *Invited talk*
INFORMS Annual Meeting 2022
- **Single Server Queue: Heavy Traffic under Abandonment** | *Tutorial*
ISyE Student Seminar, Georgia Tech
- **Heavy Traffic Queue Length Distribution in an Input-Queued Switch** | *Poster*
Stochastic Networks Conference 2022
- **Heavy Traffic Queue Length Distribution in an Input-Queued Switch** | *Short paper presentation*
MAMA Workshop at ACM Sigmetrics 2022
- **Low Complexity Switch Scheduling Algorithms for Large Scale Switches** | *Invited talk*
INFORMS Annual Meeting 2021
- **Heavy Traffic Performance of Low Complexity Switch Scheduling Algorithms** | *Invited talk*
INFORMS Annual Meeting 2020
- **Simulation Optimization via Random Search Technique** | *Invited talk*
First year PhD seminar at ISyE, Georgia Tech
- **Age-of-Information aware Scheduling** | *Paper presentation*
IEEE SPCOM Conference 2018

Teaching & Mentorship

- Mentor** Mentored several undergraduate student to help them gain research experience:
- Christopher Michel from Florida International University under SURE research program for undergrad students (Summer 2023)
 - Lakshya Jagadish from Indian Institute of Technology, Madras (Spring 2022)
 - Ruitao Jiang from Georgia Institute of Technology (Fall 2021)
 - Hyen Jay Lee from Georgia Institute of Technology under NSF-REU program (meant to provide research experience to undergrad students) (Summer 2021)
 - David Li from University of Michigan under NSF-REU program (meant to provide research experience to undergrad students) (Summer 2020)
- Learning to teach** Completed the course ISyE 8802 : Fundamentals of teaching and learning in higher education to enhance my teaching skills.
- T2T** Attended several workshops and completed Lynda courses organised under Tech-to-Teaching (T2T) program to expand my professional development in teaching.
- Teaching Assistant** Helped student with their coursework by holding office hours and review sessions for following courses:
- ISyE 6230 Economic Decision Analysis, Instructor: Anton Kleywegt (Spring 2022)
 - ISyE 2027 Probability with Applications, Instructor: Hayriye Ayhan (Summer 2021)
 - ISyE 3044 Simulation, Instructor: Christos Alexopoulos (Summer 2020)
 - ISyE 3044 Simulation, Instructor: Seong-Hee Kim (Spring 2019 and Summer 2019)
 - ISyE 3232 Stochastic Manufacturing & Service Systems, Instructor: Seong-Hee Kim (Fall 2018)

Professional Service

2022-23 Webmaster for SNAPP (Stochastic Networks, Applied Probability, and Performance) Seminar Series
2021-22 Organizing weekly ISyE Ph.D. Student Seminar series
2020-23 Reviewed Journal papers for several journals as listed below:

- INFORMS Stochastic Systems
- INFORMS Operations Research Journal
- IEEE/ACM Transactions on Networking
- IEEE Transactions on Communications
- IEEE JSAC-Aol (Journal on Selected Areas in Communication, Age of Information in Real-time Systems and Networks)
- PEVA (Performance Evaluation), Elsevier
- Operations Research Letters, Elsevier

2021-22 Reviewer for President's Undergraduate Research Award (PURA) Applications in Spring and Fall 2021 and 2022

Relevant Coursework

Math Real Analysis, Probability, Stochastic Processes, Stochastic Calculus, Probabilistic Combinatorics
Optimization Linear Optimization, Non-Linear Optimization, Discrete Optimization, Game Theory
ML Computational Data Analysis, Reinforcement Learning (RL), Reading Group on RL (3 semesters)