

DR. RAJNI DABAS

Visiting Assistant Professor

McCormick School of Engineering, Northwestern University

(Assistant Professor, P.G.D.A.V. College, University of Delhi)

@ rajni.dabas1@northwestern.edu, rajni.dabas@pgdav.du.ac.in

☎ (+1)-773 410 3287

📍 Evanston, Illinois

My broad area of research interest is Theoretical Computer Science, specifically Approximation Algorithms. I have worked majorly on clustering and facility location problems in the presence of constraints like capacities and outliers. Currently, I am working on fairness in clustering and facility location and the use of graphs to improve efficiency in interacting with Large Language Models.

JOURNAL PUBLICATIONS

- Neelima Gupta, Sapna Grover, and Rajni Dabas. "Respecting Lower Bounds in Uniform Lower and Upper Bounded Facility Location Problem". In Journal of Theoretical Computer Science, 115803. 2026.
- Rajni Dabas, Neelima Gupta, Rudra Bhardwaj, and Sapna Grover. "EL-Clustering: Combining Upper- and Lower-Bounded Clusterings for Equitable Load Constraints". In Journal of Transactions on Machine Learning Research (TMLR), 2835-8856. 2025.
- Rajni Dabas, Naveen Garg and Neelima Gupta. "Capacitated Facility Location with Outliers and Uniform Facility Costs". In Journal of Mathematical Programming. 2025.
- Nikhil Ayyadevara, Rajni Dabas, Arindam Khan, and K. V. N. Sreenivas. "Near-Optimal Algorithms for Stochastic Online Bin Packing". In ACM Journal of Transactions on Algorithms (TALG), 21(2). 2025.
- Rajni Dabas and Neelima Gupta. "Uniform Capacitated Facility Location with Outliers/Penalties". In Journal of Discrete Optimization, 55:100878. 2025.
- Rajni Dabas, Neelima Gupta and Tanmay Inamdar. "FPT Approximations for Capacitated/Fair Clustering with Outliers". In Journal of Theoretical Computer Science, 1027:115026. 2025.

CONFERENCE PUBLICATIONS

- Rajni Dabas, Naveen Garg and Neelima Gupta. "Capacitated Facility Location with Outliers and Uniform Facility Costs". In Proceedings of 25th Conference on Integer Programming and Combinatorial Optimization, IPCO, July 3-5, 2024, volume 14679 of Lecture Notes in Computer Science, pages 85–98. Springer, 2024.
- Rajni Dabas and Neelima Gupta. "Capacitated Facility Location with Outliers/Penalties". In Proceedings of 28th International Conference of Computing and Combinatorics, COCOON, October 22-24, 2022, volume 13595 of Lecture Notes in Computer Science, pages 549–560. Springer, 2022.
- Rajni Dabas, Naveen Garg, Neelima Gupta, and Dilpreet Kaur. "Locating Service and Charging Stations". In Proceedings of 20th International Workshop on Approximation and Online Algorithms, WAOA, September 8-9, 2022, volume 13538 of Lecture Notes in Computer Science, pages 1–19. Springer, 2022.
- Nikhil Ayyadevara, Rajni Dabas, Arindam Khan, and K. V. N. Sreenivas. "Near-Optimal Algorithms for Stochastic Online Bin Packing". In Proceedings of 49th International Colloquium on Automata, Languages, and Programming, ICALP, July 4-8, 2022, volume 229 of LIPIcs, pages 12:1–12:20. Schloss Dagstuhl - Leibniz-Zentrum für Informatik, 2022.
- Neelima Gupta, Sapna Grover, and Rajni Dabas. "Respecting Lower Bounds in Uniform Lower and Upper Bounded Facility Location Problem". In Proceedings of 27th International Conference on Computing and Combinatorics, COCOON, October 24-26, 2021, volume 13025 of Lecture Notes in Computer Science, pages 463–475. Springer, 2021.

UNDER REVIEW

- Rajni Dabas, Samir Khuller, and Emilie Rivkin. "Capacitated Partition Vertex Cover and Partition Edge Cover". arXiv preprint <https://arxiv.org/abs/2512.17844>. 2026.
- Rajni Dabas, Samir Khuller, and Emilie Rivkin. "Facility Location and k -Median with Fair Outliers". arXiv preprint arXiv:2508.02572. 2025.

EXPERIENCE

Visiting Assistant Professor

McCormick School of Engineering, Northwestern University

(August 2024-July 2026)

Research collaboration with Prof. Samir Khuller

Assistant Professor

P.G.D.A.V. College, University of Delhi

(May 2023-Present: on lien)

Teaching Track: Design and Analysis of Algorithms, Discrete Mathematics, Programming using Python, Object Oriented Programming using C++.

Teaching Assistant as Ph.D. Scholar

Department of Computer Science, University of Delhi

(November 2019 - April 2023)

Design and Analysis of Algorithms, Data Structures

EDUCATION

Ph.D. (Nov 2019 - May 2025)

Department of Computer Science, University of Delhi.

Coursework aggregate: 87.67

Thesis Title: Approximation Algorithms for Capacitated Facility Location with Outliers

M.Sc. Computer Science (2017-2019)

Department of Computer Science, University of Delhi.

Aggregate Percentage: 86.50

Master's Thesis: Facility Location Problem with penalties/outliers, 2019

B.Sc. (Hons) Computer Science (2014-2017)

Shyama Prasad Mukerjee College, University of Delhi.

Aggregate Percentage: 94.75

DU Innovation Project'16: Humsafar, A public pooling application for women safety.

EXTRA CURRICULAR

- Member of Organizing Committee
Workshop on Foundations of Fairness and Accountability IDEAL and EnCORE
- Secretary, Alumni Association
Department of Computer Science.
- Member of Organizing Committee
COMPUTE 2021.

ACHIEVEMENTS



ACM India Anveshan Setu Fellowship

Received the fellowship in both 2021 and 2022



UGC NET, Nov/Dec 2018

All India Rank 1



GATE

Qualified in 2019



Outstanding Student of the Year Award Winner

Received the award from the batch 2014-2017



Overall 8th rank in University and 1st rank in College

College topper in B.Sc. (Hons) Computer Science (2014-2017)

EVENTS ATTENDED

- Adobe Visit to NU (October 2025) - Presenter
- IDEAL Annual Meeting 2025 - Presenter
- Simons Foundation Annual Meeting 2025.
- FOCS 2024.
- IPCO 2024.
- FSTTCS 2023.
- COCOON 2022.
- WAOA 2022.
- ACM Winter School 2022. (Algorithms and Lower Bounds)
- ACM Winter School 2021. (Algorithms on Big Data and ML)
- vGHCI, 2021.
- HALG, 2021.
- ESA 2021.
- Annual ACM event 2020.
- IRISS 2020.
- Indo-German Spring School 2020.

LANGUAGES

English

Hindi