

# PRIYANK AGRAWAL

Seeley W. Mudd Building, 500 W. 120th Street, New York, NY 10027  
pa2608@columbia.edu; Website: AgPriyank.github.io; Google Scholar: link

## RESEARCH FOCUS

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Keywords: Sequential decision making; modeling strategic behavior: pricing, mechanism design; Design of Agentic reinforcement learning agents and RL for LLMs

## EDUCATION

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**Columbia University, New York, USA** *Sep 2021 - May 2026 (expected)*  
Doctor of Philosophy, Industrial Engineering and Operations Research. Advisor: Prof. Shipra Agrawal.

**University of Illinois, Urbana-Champaign, USA** *Aug 2019 - Aug 2021*  
Master of Science, Computer Science. Advisor: Prof. Nan Jiang.

**Indian Institute of Technology , Kharagpur, India** *July 2011 - June 2016*  
Bachelor and Master of Technology in Electronics and Electrical Communication Engineering.

## PROFESSIONAL EXPERIENCE

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**Senior Analyst**, Goldman Sachs India. *Jun 2016 - Aug 2018*  
Building software for implementing mathematical models.

## WORKING PAPERS

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**Complexity of Learning Algorithms via In-context-learning for trained Sequence Models**  
Priyank Agrawal, Naimeng Ye and Hongseok Namkoong.

*Goal:* Understanding what kind of algorithms can be learned via “In-context-learning(ICL)” by establishing notions that quantify learnability of an algorithm.

**Efficiently Balancing Monte Carlo Tree Search with Reinforcement Learning** Priyank Agrawal and Shipra Agrawal.

*Goal:* Deriving and analyzing algorithms for Reinforcement Learning at scale that uses Monte Carlo Tree Search (MTCS)

## PAPERS

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### UNDER REVIEW

**Q-learning with Posterior Sampling** Priyank Agrawal, Shipra Agrawal and Azmat Azati. arXiv:2506.00917 (Under review)

### JOURNALS

**Learning-Augmented Mechanism Design: Leveraging Predictions for Facility Location** Priyank Agrawal, Eric Balkanski, Vasilis Gkatzelis, Tingting Ou, and Xizhi Tan, Mathematics of Operations Research (MOR) 2023 (subsumes the EC 2022 paper).

**A Tractable Online Learning Algorithm for the Multinomial Logit Contextual Bandit** Priyank Agrawal, Theja Tulabandhula, and Vashist Avadhanula, in European Journal of Operational Research (EJOR) 2023.

## CONFERENCES

**On the Convergence of Single-Timescale Actor-Critic** Navdeep Kumar, Priyank Agrawal, Giorgia Ramponi, Kfir Yehuda Levy and Shie Mannor arXiv:2410.08868 NeurIPS 2025.

**Optimistic Q-learning for average reward and episodic reinforcement learning** Priyank Agrawal and Shipra Agrawal. arXiv:2407.13743 Conference on Learning Theory 2025, Journal version underway.

**Policy Gradient with Tree Search (PGTS) in Reinforcement Learning Evades Local Maxima** Navdeep Kumar, Priyank Agrawal, Kfir Yehuda Levy and Shie Mannor, in The Twelfth International Conference on Learning Representations-Tiny Paper track.

**Learning-Augmented Mechanism Design: Leveraging Predictions for Facility Location** Priyank Agrawal, Eric Balkanski, Vasilis Gkatzelis, Tingting Ou, and Xizhi Tan, The 23rd ACM Conference on Economics and Computation (EC 2022) (subsumed by MOR 2023 paper).

**[C] Improved Worst-Case Regret Bounds for Randomized Least-Squares Value Iteration** Priyank Agrawal, Jinglin Chen and Nan Jiang, in The 35th AAAI Conference on Artificial Intelligence (AAAI 2021).

**Learning by Repetition: Stochastic Multi-armed Bandits under Priming Effect** Priyank Agrawal and Theja Tulabandhula, in The 36th Conference on Uncertainty in Artificial Intelligence (UAI 2020).

**Incentivising Exploration and Recommendations for Contextual Bandits with Payments** Priyank Agrawal and Theja Tulabandhula, in the 17th European Conference on Multi-Agent Systems (EUMAS 2020).

## SELECTED AWARDS AND FELLOWSHIPS

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1. Fellow of Tang Family Fellowship Fund at Columbia Engineering(2021).
2. Cheung-Kong Innovation Fellowship, awarded by Cheung Kong Innovation Institute and sponsored by Cheung Kong Graduate School of Business (CKGSB) and Columbia Engineering(2024-2025).
3. Columbia-Dream Sports AI PhD Fellowship, awarded by Columbia-Dream Sports AI Innovation Center(2024-2025, declined).
4. NeurIPS travel award 2022,2023.

## TEACHING AND ACADEMIC SERVICE

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**Teaching Assistant** (*\*Ranked as a Excellent TA by the students*)

*At the University of Illinois, Urbana Champaign*

CS101 “Introduction to programming for engineers and scientists” in Fall 2019, Spring 2020\* and Fall 2020, Course Instructor: Prof. Neal E. Davis.

CS446 “Machine learning” in Spring 2021, Course Instructors: Prof. Matus Telgarsky & Alexander Schwing.

*At Columbia University*

IEOR4524 “Analytics in practice” in Spring 2022 and Spring 2023, Course Instructor: Prof. Hardeep Johar.

IEOR6614 “Optimization II” in Spring 2024, Course Instructors: Prof. Shipra Agrawal.

**Reviewing:** 25+ ICLR 2025, Book Review(Now Publisher) 2024, NeurIPS 2024, AISTATS 2021,2024,2025.