Debmalya Mandal

Title:	Postdoctoral Researcher
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Research Interests

Computational Social Choice, Algorithmic Fairness, Multi-Agent Systems, Reinforcement Learning.

Education

Aug 2014 - Jun 2019	PhD in Computer Science John A. Paulson School of Engineering and Applied Sciences **Harvard University**, Cambridge, MA, USA Thesis: "Decision Making with Heterogeneous Agents: Elicitation, Aggregation, and Causal Effects" Advisor: Prof. David C. Parkes Committee: Profs. Yiling Chen, Francesca Dominici, Kosuke Imai, Madhu Sudan, and Jose Zubizarreta GPA: 3.9/4.0
Aug 2011 - Jul 2013	Master of Engineering Dept. of Computer Science and Automation **Indian Institute of Science**, Bangalore, India Thesis: "Allocation Rules for Multi-Slot Sponsored Search Auctions" Advisor: Prof. Y. Narahari Gpa: 7.6/8.0 (First Class with Distinction)
Jul 2007 - Jun 2011	Bachelor of Engineering Dept. of Computer Science and Techonology **Bengal Engineering and Science University**, Shibpur, India Gpa: 89% (First Class with Honors)

Appointments

Oct 2021 - Present	Postdoctoral Researcher at **Max Planck Institute for Software Systems** **Mentor**: Dr. Goran Radanovic
Aug 2019 - July 2021	Postdoctoral Fellow at **Data Science Institute** **Columbia University** in the city of New York, NY, USA **Mentors**: Profs. Daniel Hsu and Shipra Agarwal
Jun 2017 - Aug 2017	Research Intern at **Microsoft Research**, Redmond, WA, USA **Mentors**: Dr. Jacob LaRiviere and Dr. Matt Taddy Worked on measuring the causal impact of chatbots on text and call rates of support.microsoft.com
Aug 2013 - Jun 2014	Project Associate at **Indian Institute of Science**, Bangalore, India Worked on designing algorithms for crowdsourcing

Teaching

Spring 2018	Teaching Fellow for Human and Machine Predictions, in Societal Context (CS 236) Harvard University Received a *Certificate of Distinction in Teaching*
Spring 2016	Teaching Fellow for Economics and Computation (CS 136) Harvard University
Spring 2013	Teaching Assistant for Game Theory and Mechanism Design (E1 254) Indian Institute of Science
Fall 2012	Teaching Assistant for Algorithms and Programming (ESc-101) Indian Institute of Science

Honors

- Certificate of Distinction in Teaching, Spring 2018, Harvard University.
- NeurIPS'19 Oral Presentation, "Efficient and Thrifty Voting by Any Means Necessary", D. Mandal, A. Procaccia, N. Shah, and D. Woodruff.
- Columbia Data Science Institute (DSI) Post-Doctoral Fellowship, 2019-2021.
- Top-Reviewer Award for a PC member (NeurIPS-2019, 2021, 2022, and ICML-2020).

Publications

Most of my papers are alphabetically ordered (denoted by ⋆).

20. Debmalya Mandal, Goran Radanovic, Jiarui Gan, Adish Singla, and Rupak Majumdar. **Online Reinforcement Learning with Uncertain Episode Lengths**. In the 37th AAAI Conference on Artificial Intelligence (**AAAI**), 2023.
19. Jiarui Gan, Annika Hennes, Rupak Majumdar, Debmalya Mandal, and Goran Radanovic. **Markov Decision Processes with Time-Varying Geometric Discounting**. In the 37th AAAI Conference on Artificial Intelligence (**AAAI**), 2023. [⋆]
18. Samuel Deng, Yilin Guo, Daniel Hsu, and Debmalya Mandal. **Learning Tensor Representations for Meta-Learning**. In the 25th International Conference on Artificial Intelligence and Statistics (**AISTATS**), 2022. [⋆]
17. Nick Bishop, Hau Chan, Debmalya Mandal, and Long Tran-Thanh. **Sequential Blocked Matching**. In the 36th AAAI Conference on Artificial Intelligence (**AAAI**), 2022. [⋆]
16. Debmalya Mandal, Sourav Medya, Brian Uzzi, and Charu Aggarwal. **Meta-Learning with Graph Neural Networks: Methods and Applications**. In the ACM SIGKDD Explorations Newsletter (**SIGKDD**), 2021.
15. Hadi Hosseini, Debmalya Mandal, Nisarg Shah, and Kevin Shi. **Surprisingly Popular Voting Recovers Rankings, Surprisingly!**. The 30th International Joint Conference on Artificial Intelligence (**IJCAI**), 2021. [⋆]
14. Debmalya Mandal, Samuel Deng, Suman Jana, Jeannette M. Wing, and Daniel Hsu. **Ensuring Fairness Beyond the Training Data**. Thirty-Fourth Conference on Neural Information Processing Systems (**NeurIPS**), 2020.
13. Nick Bishop, Hau Chan, Debmalya Mandal, and Long Tran-Thanh. **Adversarial Blocking Bandits**. Thirty-Fourth Conference on Neural Information Processing Systems (**NeurIPS**), 2020. [⋆]
12. Debmalya Mandal, Goran Radanovic, and David C. Parkes. **The Effectiveness of Peer Prediction in Long-Term Forecasting**. Thirty-Fourth AAAI Conference on Artificial Intelligence (**AAAI**), pp. 2160-2167, 2020. Selected for **Poster Spotlight**.
11. Debmalya Mandal, Nisarg Shah, and David Woodruff. **Optimal Communication-Distortion Tradeoff in Voting**. Twenty-First ACM Conference on Economics and Computation (**EC**), pp. 795-813, 2020. [⋆]

10. Arpit Agarwal, Debmalya Mandal, David C. Parkes, and Nisarg Shah. **Peer Prediction with Heterogeneous Users**. ACM Transactions on Economics and Computation, vol. 8, no. 1, pp. 1-34, 2020. [⋆]

9. Debmalya Mandal, Ariel Procaccia, Nisarg Shah, and David Woodruff. **Efficient and Thrifty Voting by Any Means Necessary**. Thirty-third Conference on Neural Information Processing Systems (**NeurIPS**), pp. 7178-7189, 2019, Selected for **Oral Presentation (One of 36 Out of 1428 Accepted Papers)**. [⋆]

8. Yang Liu, Goran Radanovic, Christos Dimitrakakis, Debmalya Mandal, and David Parkes. **Calibrated Fairness in Bandits**. Fourth Workshop on Fairness, Accountability and Transparency in Machine Learning (**FAT/ML**), 2017. (Also at the Conference on Digital Experimentation (CODE), 2017)

7. Arpit Agarwal, Debmalya Mandal, David Parkes, and Nisarg Shah. **Peer Prediction with Heterogeneous Users**. Proc. of 18th ACM Conference on Economics and Computation (**EC**), pp. 81-98, 2017. Invited for **Special Issue on Selected Papers from EC-2017**. [⋆]

6. Debmalya Mandal, and David Parkes. **Correlated Voting**. Proc. of 25th International Joint Conference on Artificial Intelligence (**IJCAI**), pp. 366-372, 2016.

5. Arpita Biswas, Shweta Jain, Debmalya Mandal, and Yadati Narahari. **A Truthful Budget Feasible Multi-Armed Bandit Mechanism for Crowdsourcing Time Critical Tasks**. Proc. of the 14th International Conference on Autonomous Agents and Multiagent Systems (**AAMAS**), pp. 1101-1109, 2015.

4. Arupratan Ray, Debmalya Mandal, and Yadati Narahari. **Profit Maximizing Prior-free Multi-unit Procurement Auctions with Capacitated Sellers (Extended Abstract)**. Proc. of the 14th International Conference on Autonomous Agents and Multiagent Systems (**AAMAS**), pp. 1753-1754, 2015.

3. Rohith D. Vallam, Priyanka Bhatt, Debmalya Mandal, and Y. Narahari. **A Stackelberg Game Approach for Incentivizing Participation in Online Educational Forums with Heterogeneous Student Population**. Proc. of the 29th AAAI Conference on Artificial Intelligence (**AAAI**), pp. 1043-1049, 2015.

2. Praphul Chandra, Yadati Narahari, Debmalya Mandal, and Prasenjit Dey. **Novel Mechanisms for Online Crowdsourcing with Unreliable, Strategic Agents**. Proc. of the 29th AAAI Conference on Artificial Intelligence (**AAAI**), pp. 1256-1262, 2015.

1. Debmalya Mandal, and Yadati Narahari. **A Novel Ex-Post Truthful Mechanism for Multi-Slot Sponsored Search Auctions (Extended Abstract)**. Proc. of the 13th International Conference on Autonomous Agents and Multiagent Systems (**AAMAS**), pp. 1555-1556, 2014.

Working Papers

5. Andi Nika, Debmalya Mandal, Adish Singla, and Goran Radanovic. **Corruption Robust Offline Two-player Zero-sum Markov Games**, 2022.

4. Debmalya Mandal, Stelios Triantafyllou, and Goran Radanovic. **Performative Reinforcement Learning**. ArXiv preprint arXiv:2207.00046, 2022.

3. Debmalya Mandal, and Jiarui Gan. **Socially Fair Reinforcement Learning**. ArXiv preprint arXiv:2208.12584, 2022.

2. Mohammad Mohammadi, Jonathan Nöther, Debmalya Mandal, Adish Singla, and Goran Radanovic. **Implicit Poisoning Attacks in Two-Agent Reinforcement Learning: Adversarial Policies for Training-Time Attacks**. 2022.

1. Debjyoti Kar, Sourav Medya, Debmalya Mandal, Arlei Silva, Palash Dey, and Swagato Sanyal. **Feature-Based Individual Fairness in k-Clustering**. 2021.

Papers at Peer-Reviewd Workshops

2. Debmalya Mandal, and David Parkes. **Weighted Tensor Completion for Time-Series Causal Inference**. (under submission), preliminary version appeared in NeurIPS Workhop on Causal

Learning, 2018.

1. Debmalya Mandal, Matthew Leifer, David Parkes, Galen Pickard, and Victor Shnayder. **Peer Prediction with Heterogeneous Tasks**. NIPS Workshop on Crowdsourcing and Machine Learning (CrowdML-NIPS), 2016.

Talks

9. **Surprisingly Popular Voting Recovers Rankings, Surprisingly!**, 30th International Joint Conference on Artificial Intelligence, Virtual, Jul-2021.
8. **Ensuring Fairness Beyond the Training Data**, Columbia University Data Science Day, Apr-2021.
7. **Efficient and Thrifty Voting**, Google Research, Mar-2021.
6. **Optimal Communication-Distortion Trade-off in Voting**, 21st ACM Conference on Economics and Computation (EC), Virtual, Jul-2020.
5. **The Effectiveness of Peer Prediction in Long-Term Forecasting**, 34th AAAI Conference on Artificial Intelligence (AAAI), New York, USA, Feb-2020.
4. **Efficient and Thrifty Voting by Any Means Necessary**, 33rd Conference on Neural Information Processing Systems (NeurIPS), Vancouver, Canada, Dec-2019.
3. **Correlated Voting**, 25th International Joint Conference on Artificial Intelligence (IJCAI), New York, July-2016.
2. **Peer Prediction with Heterogeneous Users**, 18th ACM Conference on Economics and Computation (EC), Cambridge, MA, Jun-2017.
1. **Peer Prediction with Heterogeneous Users**, Bayesian Crowd Workshop, Rotterdam, Netherlands, Jul-2017.

Service

- **Program Committee / Reviewing**, ICML 2019-2023, NeurIPS 2019-2022 AAAI 2020-2023 IJCAI 2020, EC 2020, ICLR 2021-2023, AAMAS 2021, 2023 AISTATS 2021, COLT 2021, 2022.
- **Journal Reviewing**, Journal of Artificial Intelligence Research (JAIR), Journal of Machine Learning Research (JMLR), Journal of Autonomous Agents and Multi-Agent Systems (JAAMAS).
- **Seminar Coordinator**, EconCS group, Harvard University, Fall 2016 and Spring 2017.

Mentoring Experience

- Ben Rank, Research Intern, Max Planck Institute for Software Systems. **Stateful Performative Reinforcement Learning**, Summer 2022.
- Samuel Deng, Masters Student, Columbia University. **Fairness Checking**, Fall 2019.
- Kevin Chen, Undergrduate Student, Harvard University. **Causal Inference for Matching Markets**, Fall 2018.
- Kojin Oshiba, Undergraduate Student, Harvard University. **Robust Counterfactual Fairness**, Spring 2018.
- Matthew Leifer, Undergraduate Student, Harvard University. **Peer Prediction with Heterogeneous Tasks**, Summer 2016.