

# Debmalya MANDAL

TITLE: Columbia Data Science Institute Postdoctoral Fellow  
ADDRESS: The Interchurch Center, Room 320  
475 Riverside Drive, NY-10025  
PHONE: +1 (857) 500 0718  
EMAIL: [dm3557@columbia.edu](mailto:dm3557@columbia.edu)  
HOMEPAGE: <http://www.columbia.edu/~dm3557/>

## RESEARCH INTERESTS

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Online Learning, Game Theory, Crowdsourcing, Voting, Causal Inference, Algorithmic Fairness.

## EDUCATION

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- Aug 2014 - May 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 Technology  
**Bengal Engineering and Science University**, Shibpur, India  
GPA: 89% (First Class with Honors)

## APPOINTMENTS

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- Jul 2019 - Present    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  
Worked on measuring the causal impact of chatbots on text and call rates  
of [support.microsoft.com](https://support.microsoft.com)
- Aug 2013 - Jun 2014    Project Associate at  
**Indian Institute of Science**, Bangalore, India  
Worked on designing algorithms for crowdsourcing

## TEACHING

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- 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

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- 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).
- Top-Reviewer Award for a PC member (ICML-2020).

## PUBLICATIONS

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16. 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.
15. 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.
14. Nick Bishop, Hau Chan, Debmalya Mandal, and Long Tran-Thanh. **Adversarial Blocking Bandits**. Thirty-Fourth Conference on Neural Information Processing Systems (NeurIPS), 2020.
13. 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**.
12. 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.
11. 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)**.
10. Debmalya Mandal, and David Parkes. **Weighted Tensor Completion for Time-Series Causal Inference**. (under submission), preliminary version appeared in NeurIPS Workshop on Causal Learning, 2018.
9. 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)
8. 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**.

7. 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.
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

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2. Debmalya Mandal, Sourav Medya, Brian Uzzi, and Charu Aggarwal. **Meta-Learning with Graph Neural Networks: Methods and Applications**.
1. Samuel Deng, Yilin Guo, Daniel Hsu, and Debmalya Mandal. **Learning Tensor Representations for Meta-Learning**.

## TALKS

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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

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- **Program Committee / Reviewing**, ICML 2019, 2020, NeurIPS 2019, 2020, AAAI 2020, 2021, IJCAI 2020, EC 2020, ICLR 2021, AAMAS 2021, AISTATS 2021, COLT 2021.
- **Journal Reviewing**, Journal of Artificial Intelligence Research (JAIR).
- **Seminar Coordinator**, EconCS group, Harvard University, Fall 2016 and Spring 2017.

## MENTORING EXPERIENCE

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- Samuel Deng, Masters Student, Columbia University. **Fairness Checking**, Fall 2019.
- Kevin Chen, Undergraduate 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.

## REFERENCES

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**Prof. David C. Parkes**

George F. Colony Professor of Computer Science  
Co-Director, Harvard Data Science Initiative  
John A. Paulson School of Engineering and Applied Sciences,  
Harvard University  
[parkes@eecs.harvard.edu](mailto:parkes@eecs.harvard.edu)

**Prof. Daniel Hsu**

Associate Professor of Computer Science  
Member of the Data Science Institute  
Columbia University  
[djhsu@cs.columbia.edu](mailto:djhsu@cs.columbia.edu)

**Prof. Nisarg Shah**

Assistant Professor  
Department of Computer Science  
University of Toronto  
[nisarg@cs.toronto.edu](mailto:nisarg@cs.toronto.edu)

**Prof. Jeannette M. Wing**

Avanessians Director of Data Science, Data Science Institute  
Professor of Computer Science, Department of Computer Science  
Columbia University  
[wing@columbia.edu](mailto:wing@columbia.edu)

**Prof. José Zubizarreta**

Associate Professor  
Department of Health Care Policy, Harvard Medical School  
Department of Biostatistics, Harvard School of Public Health  
Harvard University  
[zubizarreta@hcp.med.harvard.edu](mailto:zubizarreta@hcp.med.harvard.edu)