AURGHYA MAITI
Ph.D. in Computer Science

✉ am5887@columbia.edu
📞 +1 (646) 217-2540
in linkedin.com/in/aurghya/

🎓 Google Scholar Profile
🌐 https://aurghya.github.io
⌥ github.com/aurghya

RESEARCH INTERESTS

Causality, Decision-Making, Multi-Armed Bandits, Reinforcement Learning, Game Theory: I explore how causal reasoning enhances decision-making, especially in complex multi-agent systems.

ACADEMIC DETAILS

Columbia University
PhD in Computer Science   *Sep'22-Present*
Advisor: Prof. Elias Bareinboim

Indian Institute of Technology Kharagpur
B.Tech. (Hons.) in Computer Science and Engineering   *Jul'16-Jul'20*
*CGPA: **9.79**/10 (Department Rank 2 and Institute Rank 3)*

EXPERIENCE

Research Associate, Adobe Research India   *Aug'20-Aug'22*
- Explored problems in *Causality, Bandits and Reinforcement Learning* and their potential applications in Business Analytics, Decision Making and Marketing
- Worked on *discovering insights from data* and *recommendation of insights* using bandits

Undergraduate Research Assistant, CNERG Lab, IIT Kharagpur   *Aug'19-Jul'20*
Guide: Prof. Niloy Ganguly and Prof. Sourangshu Bhattacharya
- Explored problems in *Multi-Agent Reinforcement Learning*.
- Proposed algorithms for *identification of role* and *designing incentives* for the teams in a mixed game.

Research Intern, Adobe Research India   *May'19-Jul'19*
Mentor: Dr. Gaurav Sinha
- Explored and implemented algorithms for the generation of Bayesian Networks from big data
- Designed and implemented efficient algorithms for the identification and localization of interventions in a Causal Bayesian Network

RESEARCH PAPERS

- **Maiti, A.**, Jain, P., Bareinboim, E. **Counterfactual Rationality: A Causal Approach to Game Theory.** *Under Review*. [Paper]

- **Maiti, A.**, Jain, P. **Estimating Causal Effects in Gaussian Linear SCMs with Finite Data.** *ICML 2025 Workshop on Scaling Up Intervention Models*. [PDF]

- **Maiti, A.**, Plecko, D., Bareinboim, E. **Counterfactual Identification Under Monotonicity Constraints.** *The 39th Annual AAAI Conference on Artificial Intelligence (AAAI 2025)*. **(Oral Presentation)** [PDF] [Blog]

- Madhavan, R., **Maiti, A.**, Sinha, G., Barman, S. **Causal Contextual Bandits with Adaptive Context.** *Reinforcement Learning Conference (RLC 2024)*. [PDF]

- Sinha, A. R., Chopra, H., **Maiti, A.**, Ganesh, A., Kapoor, S., Myana, S., Mahapatra, S. **The Role of Unattributed Behavior Logs in Predictive User Segmentation.** *32nd ACM International Conference on Information and Knowledge Management (CIKM 2023)*. [PDF]

- Chopra, H., Sinha, A. R., Choudhary, S., Rossi, R. A., Indela, P. K., Parwatala, V. P., Paul, S., **Maiti, A. Delivery optimized discovery in behavioral user segmentation under budget constraint.** *32nd ACM International Conference on Information and Knowledge Management (CIKM 2023)*. [PDF]

- **Maiti, A.**, Nair, V., Sinha, G. **A causal bandit approach to learning good atomic interventions in presence of unobserved confounders.** *UAI 2022*. [PDF]

- Koley, P., **Maiti, A.**, Bhattacharya, S., Ganguly, N. **Offsetting Unequal Competition Through RL-Assisted Incentive Schemes.** *IEEE Transactions on Computational Social Systems, 2022*. [PDF]

- Sinha, G., Chauhan, A., **Maiti, A.**, Poddar, N., Goel, P. (2020). **Dis-entangling Mixture of Interventions on a Causal Bayesian Network Using Aggregate Observations.** *Ninth International Workshop on Statistical Relational AI at the 34th AAAI Conference on Artificial Intelligence (AAAI) 2020*. [PDF]

PATENTS

- Sinha, A. R., Rossi, R. A., Choudhary, S., Chopra, H., Indela, P. K., Parwatala, V. P., Paul, S., Mahapatra, S., **Maiti, A.**. **Delivery aware audience segmentation.** *US 2025/0061488 A1*. [PDF]

- Sinha, A. R., **Maiti, A.**, Ganesh, A., Myana, S., Chopra, H., Kapoor, S., Mahapatra, S. **Systems and methods for content customization.** *US 12,206,925 B2*. [PDF]

- Porwal, V., Chauhan, A., **Maiti, A.**, Sinha, G., Pandya, R. S. **Systems for estimating terminal event likelihood.** *US 12,154,042 B2*. [PDF]

- **Maiti, A.**, Burhanuddin, I. A., Sinha, A. R., Mahapatra, S., Du, F. **Systems and methods for indicator identification.** *US 2024/0232702 A1*. [PDF]

- Goel, P., Poddar, N., Sinha, G., Chauhan, A., **Maiti, A.**. **Determining feature contributions to data metrics utilizing a causal dependency model.** *US 2024/0061830 A1*. [PDF]

- **Maiti, A.**, Sinha, A. R., Chopra, H., Kapoor, S., Ganesh, A., Myana, S., Mahapatra, S. **Generating segments of users based on unobserved behaviors.** *US 2023/0342799 A1*. [PDF]

- Sinha, A. R., Kilaru, M., Burhanuddin, I. A., Shetty, A., Chakraborty, T., Bansal, R., Chandra, T. S., Du, F., **Maiti, A.**, Mahapatra, S. **Leading indicators and monitor business KPIs and metrics for preemptive action.** *US 11,769,100 B2*. [PDF]

- Sinha, G., **Maiti, A.**. **Treatment effect estimation using observational and interventional samples.** *US 2023/0144357 A1*. [PDF]

SCHOLASTIC ACHIEVEMENTS

- Recipient of **Columbia-Dream Sports AI Ph.D. Fellowship**
- Selected as a speaker at **Adobe Tech Summit 2022**
- Recipient of **Batch of '85 Scholarship** from IIT Kharagpur for academic excellence
- **ACM-ICPC** Asia Amritapuri Onsite Regionals 2018
- **Kishore Vaigyanik Protsahan Yojana (KVPY) Scholarship**, a competitive fellowship awarded by the Department of Science and Technology, Government of India
- **Indian National Physics Olympiad**, 2016 and top 1% in National Standard Examination in Physics
- Rank 6 and **District rank 1** in Class X Board Examination (West Bengal Board of Secondary Education) out of nearly 1 million students

VOLUNTARY SERVICES

- **Reviewer:** AISTATS 2022, CoDS-COMAD 2022
- **National Service Scheme (NSS):** Voluntary teaching to underprivileged children