Sujoy Kumar Sikdar

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Binghamton University,
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Research Interests

Artificial Intelligence, Computational Social Choice, Mechanism Design, Algorithm Design, Machine Learning, Computational Social Science.

Education

Doctor of Philosophy, Computer Science, 2012 - 2018
Rensselaer Polytechnic Institute, Troy, NY, USA.
Dissertation: Optimal Multi-Attribute Decision Making in Social Choice Problems.
Institute Nominee for the Joint AAAI/ACM SIGAI Doctoral Dissertation Award.
Supervisors: Prof. Lirong Xia, Prof. Sibel Adalı.

Master of Science, Computer Science, 2012 - 2015
Rensselaer Polytechnic Institute, Troy, NY, USA.
Thesis: Towards an Understanding of Information Credibility on Online Social Networks.
Supervisor: Prof. Sibel Adalı.

Bachelor of Engineering, Information Technology, 2005 - 2009
Manipal Institute of Technology, Manipal, KA, India.

Professional Experience

Assistant Professor, 2020 - Present
Department of Computer Science,
Thomas J. Watson College of Engineering and Applied Science,
Binghamton University, Binghamton, NY, USA.

Postdoctoral Research Associate, 2019 - 2020
Washington University in St. Louis, St. Louis, MO, USA.
Adviser: Prof. Sanmay Das.

Graduate Research Assistant, 2012 - 2018
Rensselaer Polytechnic Institute, Troy, NY, USA.
Research adviser: Prof. Sibel Adalı (2012-2016), Prof. Lirong Xia (2016-2018).

Software Developer II, 2009 - 2011
Juniper Networks, Bangalore, KA, India.

Software Intern, 2008 - 2009
Juniper Networks, Bangalore, KA, India.

Awards

Best Paper Award, 2013 International Conference on Social Computing (**SocialCom**).

Journal Publications

1. Xiaoxi Guo, Sujoy Sikdar, Lirong Xia, Yongzhi Cao, and Hanpin Wang. *Favoring Eagerness for Remaining Items: Designing Efficient, Fair, and Strategyproof Mechanisms.* Journal of Artificial Intelligence Research, 2023.
2. Haibin Wang, Sujoy Sikdar, Xiaoxi Guo, Lirong Xia, Yongzhi Cao, and Hanpin Wang. *Multi Resource Allocation with Partial Preferences.* Artificial Intelligence, 2023.
3. Xiaoxi Guo, Sujoy Sikdar, Haibin Wang, Lirong Xia, Yongzhi Cao, and Hanpin Wang. *Probabilistic Serial Mechanism for Multi-Type Resource Allocation.* Journal of Autonomous Agents and Multi-Agent Systems, 2021.

4. Ge Wang, Mengzhou Li, Lei Luo, Sujoy Sikdar, Navid Ibtehaj Nizam, Shan Gao, Hongming Shan, Melanie Kruger, Uwe Kruger, Hisham Mohamed, and Lirong Xia. *Optimized Collusion Prevention for Online Exams during Social Distancing.* npj Science of Learning, 2021.
5. Sujoy Sikdar, Byungkyu Kang, John O'Donovan, Tobias Hollerer, Sibel Adalı. *Cutting Through the Noise: Defining Ground Truth in Information Credibility on Twitter.* ASE HUMAN Journal.

Archival Conference Publications

1. Xiaoxi Guo, Sujoy Sikdar, Lirong Xia, Yongzhi Cao, and Hanpin Wang. *First-Choice Maximality Meets Ex-ante and Ex-post Fairness.* (To Appear) In the 32nd International Joint Conference on Artificial Intelligence (**IJCAI-23**). Acceptance rate 15%. Full oral presentation.
2. Hadi Hosseini, Sujoy Sikdar, Rohit Vaish, and Lirong Xia. *Fairly Dividing Mixtures of Goods and Chores under Lexicographic Preferences.* (To Appear) In the 22nd International Conference on Autonomous Agents and Multiagent Systems (**AAMAS-23**). Acceptance rate 23.3%. Full oral presentation.
3. Xiaoxi Guo, Sujoy Sikdar, Haibin Wang, Lirong Xia, Yongzhi Cao, and Hanpin Wang. *Designing Efficient and Fair Mechanisms for Multi-Type Resource Allocation.* In the 21st International Conference on Autonomous Agents and Multiagent Systems (**AAMAS-22**, JAAMAS track). Full oral presentation.
4. Sujoy Sikdar, Sikai Ruan, Qishen Han, Paween Pitimanaaree, Jeremy Blackthorne, Bulent Yener and Lirong Xia. *Anti-Malware Sandbox Games.* In the 21st International Conference on Autonomous Agents and Multiagent Systems (**AAMAS-22**). Acceptance rate 26%. Full oral presentation.
5. Sujoy Sikdar, Xiaoxi Guo, Haibin Wang, Lirong Xia, and Yongzhi Cao. *Sequential Mechanisms for Multi-type Resource Allocation.* In the 20th International Conference on Autonomous Agents and Multiagent Systems (**AAMAS-21**). Acceptance rate 25%. Full oral presentation.
6. Hadi Hosseini, Sujoy Sikdar, Rohit Vaish, and Lirong Xia. *Fair and Efficient Allocations under Lexicographic Preferences.* In the Thirty-Fifth AAAI Conference on Artificial Intelligence (**AAAI-21**). Acceptance rate 21%. Full oral presentation.
7. Hadi Hosseini, Vijay Menon, Nisarg Shah, and Sujoy Sikdar. *Necessarily Optimal Matchings.* In the Thirty-Fifth AAAI Conference on Artificial Intelligence (**AAAI-21**). Acceptance rate 21%. Full oral presentation.
8. Rupert Freeman, Sujoy Sikdar, Rohit Vaish, and Lirong Xia. *Equitable Allocations of Indivisible Chores.* In the 19th International Conference on Autonomous Agents and Multiagent Systems (**AAMAS-20**). Acceptance rate 23%. Full oral presentation.
9. Tao Xiao, and Sujoy Sikdar. *Size-Relaxed Committee Selection under the Chamberlin-Courant Rule.* In the 19th International Conference on Autonomous Agents and Multiagent Systems (**AAMAS-20**). Acceptance rate 23%. Full oral presentation.
10. Hadi Hosseini, Sujoy Sikdar, Rohit Vaish, Jun Wang, and Lirong Xia. *Fair Division Through Information Withholding.* In the Thirty-Fourth AAAI Conference on Artificial Intelligence (**AAAI-20**). Acceptance rate 20.6%. Full oral presentation.
11. Haibin Wang, Sujoy Sikdar, Xiaoxi Guo, Lirong Xia, Yongzhi Cao, and Hanpin Wang. *Multi-type Resource Allocation with Partial Preferences.* In the Thirty-Fourth AAAI Conference on Artificial Intelligence (**AAAI-20**). Acceptance rate 20.6%. Full oral presentation.

12. Haoming Li, Sujoy Sikdar, Rohit Vaish, Junming Wang, Lirong Xia, and Chaonan Ye. *Minimizing Time-to-Rank: A Learning and Recommendation Approach.* In Proceedings of the 28th International Joint Conference on Artificial Intelligence (**IJCAI-19**). Acceptance rate 17.9%.
13. Rupert Freeman, Sujoy Sikdar, Rohit Vaish, and Lirong Xia. *Equitable Allocations of Indivisible Goods.* In Proceedings of the 28th International Joint Conference on Artificial Intelligence (**IJCAI-19**). Acceptance rate 17.9%.
14. Sujoy Sikdar, Sibel Adalı, and Lirong Xia. *Mechanism Design for Multi-type Housing Markets with Acceptable Bundles.* In Proceedings of the Thirty-Third AAAI Conference on Artificial Intelligence (**AAAI-19**). Acceptance rate 16.2%.
15. Hejun Wang, Sujoy Sikdar, Tyler Shepherd, Zhibing Zhao, Chunheng Jiang, and Lirong Xia. *Practical Algorithms for Multi-Stage Voting Rules with Parallel Universes Tiebreaking.* In Proceedings of the Thirty-Third AAAI Conference on Artificial Intelligence (**AAAI-19**). Acceptance rate 16.2%. Full oral presentation.
16. Shreyas Sekar, Sujoy Sikdar, and Lirong Xia. *Condorcet Consistent Bundling with Social Choice.* In Proceedings of the 16th International Conference on Autonomous Agents and Multiagent Systems (**AAMAS-17**). Acceptance rate 25.6%. Full oral presentation.
17. Sujoy Sikdar, Sibel Adalı, Lirong Xia. *Optimal Decision Making with CP-nets and PCP-nets.* (Short Paper) In Proceedings of the 16th International Conference on Autonomous Agents and Multiagent Systems (**AAMAS-17**). Acceptance rate 25.6%.
18. Sujoy Sikdar, Sibel Adalı, Lirong Xia. *Mechanism Design for Multi-Type Housing Markets.* In Proceedings of the 31st AAAI Conference on Artificial Intelligence (**AAAI-17**). Acceptance rate 24.6%.
19. Benjamin Horne, Sibel Adalı, Sujoy Sikdar. *Identifying the Social Signals that Drive Online Discussions: A Case Study of Reddit Communities.* The 26th International Conference on Computer Communications and Networks (**ICCCN 2017**). IEEE, 2017. Acceptance rate 25%. Full oral presentation.
20. Sujoy Sikdar, Sibel Adalı, Md Tanvir Amin, Tarek Abdelzaher, Kevin Chan, Jin-Hee Cho, Byungkyu Kang, John O'Donovan. *Finding True and Credible Information on Twitter.* 17th International Conference of Information Fusion (**FUSION-14**). Full oral presentation.
21. Sujoy Sikdar, Byungkyu Kang, John O'Donovan, Tobias Hollerer, Sibel Adalı. *Understanding Information Credibility on Twitter.* 2013 International Conference on Social Computing (**SocialCom-13**). Acceptance rate 9.9%. Full oral presentation.
Received the **Best Paper Award.**

Doctoral Consortium

- Sujoy Sikdar. *Optimal Multi-Attribute Decision Making in Social Choice Problems.* (Doctoral Consortium) In Proceedings of the 27th International Joint Conference on Artificial Intelligence (**IJCAI-18**).

Workshop Papers and Conference Abstracts

- Jingwen Qian, Sujoy Sikdar, Junming Wang, Mengzhou Li, Ge Wang, and Lirong Xia. *Anti-collusion distanced online testing.* (Abstract) In European Conference on Academic Integrity and Plagiarism 2021 (ECAIP 2021). Conference proceedings, peer reviewed.
- Hadi Hosseini, Sujoy Sikdar, Rohit Vaish, Jun Wang, and Lirong Xia. *Fair Division Through Information Withholding.* In AI4SG: AI for Social Good at IJCAI 2019. Peer reviewed.
- Haibin Wang, Sujoy Sikdar, Xiaoxi Guo, Lirong Xia, Yongzhi Cao, and Hanpin Wang. *Multi-type Resource Allocation with Partial Preferences.* In AI4SG: AI for Social Good at IJCAI 2019. Peer reviewed.

- Sujoy Sikdar, Sibel Adalı, and Lirong Xia. *Mechanism Design for Multi-type Housing Markets with Acceptable Bundles.* In AI[3] 2018: AAMAS-IJCAI Workshop on Agents & Incentives in Artificial Intelligence. Peer reviewed.
- Hejun Wang, Sujoy Sikdar, Tyler Shepherd, Zhibing Zhao, Chunheng Jiang, and Lirong Xia. *Practical Algorithms for Multi-Stage Voting Rules with Parallel Universes Tiebreaking.* In WADE-2018: The First Workshop on Opinion Aggregation, Dynamics, and Elicitation. Peer reviewed.
- Sujoy Sikdar, Sibel Adalı, and Lirong Xia. *Mechanism Design for Multi-type Housing Markets with Acceptable Bundles.* In MPREF-18: The 11th Multidisciplinary Workshop on Advances in Preference Handling. Peer reviewed.
- Hejun Wang, Sujoy Sikdar, Tyler Shepherd, Zhibing Zhao, Chunheng Jiang, and Lirong Xia. *Practical Algorithms for Multi-Stage Voting Rules with Parallel Universes Tiebreaking.* In EXPLORE-2017: The 4th Workshop on Exploring Beyond the Worst Case in Computational Social Choice. Peer reviewed.
- Sujoy Sikdar, Sibel Adalı, Lirong Xia. *Optimal Decision Making with CP-nets and PCP-nets.* In EXPLORE-2017: The 4th Workshop on Exploring Beyond the Worst Case in Computational Social Choice. Peer reviewed.
- Sujoy Sikdar, Sibel Adalı, Lirong Xia. *Mechanism Design for Multi-Type Housing Markets.* In MATCH-UP 2017: The Fourth Workshop on Matching Under Preferences. Peer reviewed.

Invited Talks

- Chunheng Jiang, Sujoy Sikdar, Hejun Wang, Lirong Xia, and Zhibing Zhao. *Practical Algorithms for Computing STV and Other Multi-Round Voting Rules.* Dagstuhl Seminar 17261, Voting: Beyond Simple Majorities and Single-Winner Elections. 2017.

Professional Service

- Senior Program Committee member: IJCAI (2021).
- Program Committee member: AAAI (2019-23), AAMAS (2023), IJCAI (2016, 18, 22-23), WINE (2021-22), WWW (2015), ICML (2023).
  - **Distinguished program committee member** (top 3%), IJCAI 2022.
- Reviewer for Journals: Artificial Intelligence Journal, Journal of Autonomous Agents and Multi-Agent Systems, Journal of Artificial Intelligence Research, Computational Intelligence, IEEE Transactions on Artificial Intelligence, Journal of Supercomputing, ACM Transactions on Knowledge Discovery from Data, IEEE Transactions on Knowledge and Data Engineering, Transactions on the Web.
- Reviewer for Conferences: AAAI, AAMAS, AISTAT, ADT, EC, ICWSM, IJCAI, NeurIPS, WINE.
- Reviewer for the National Science Foundation (NSF).

Teaching

- **Fall 2021, Spring 2022**: CS 436/536 *Introduction to Machine Learning.* At Binghamton University.
- **Fall 2020, 2021**: CS 375 *Design & Analysis of Algorithms.* At Binghamton University.
- **Spring 2021, Fall 2022**: CS 575 *Design & Analysis of Computer Algorithms.* At Binghamton University.

Data Science

Machine learning and Statistics packages: PyTorch, Keras, scikit-learn, scipy, Tensorflow, Weka.

Optimization packages: AMPL/Cplex, Gurobi.

Social network APIs, and analytics on large scale social network datasets and large crowd-sourced experiments conducted on Amazon Mechanical Turk.

Skills

Languages:	Python, MATLAB, C, C++, HTML, Javascript.
Version control:	Perforce, SVN, Git.