Algorithmic Game Theory, Spring 2022
List of Suggested Papers

Instructions

- The format to be used is LLNCS. You can find the package's class(.cls) file as well as an example template here.
- The report should start with a title, author names, and the abstract. The page limit is 8 pages excluding references. More material should go in the appendix. Do not change the margins or font size (11pt). Reports that deviate too much from the specified format may lose points.
- Grading for the projects will be based on *sincerity* with which the project was written and how much useful *information* I can get from.

Nash Equilibrium

1. Daskalakis, Constantinos, Paul W. Goldberg, and Christos H. Papadimitriou. "The Complexity of Computing a Nash Equilibrium." SIAM Journal on Computing 39, no. 1 (2009): 195-259.
2. Chen, Xi, and Xiaotie Deng. "Settling the complexity of two-player Nash equilibrium." In 2006 47th Annual IEEE Symposium on Foundations of Computer Science (FOCS'06), pp. 261-272. IEEE Computer Society, 2006.
3. Chen, Xi, Xiaotie Deng, and Shang-Hua Teng. "Computing Nash equilibria: Approximation and smoothed complexity." In 2006 47th Annual IEEE Symposium on Foundations of Computer Science (FOCS'06), pp. 603-612. IEEE, 2006.
4. Chen, Xi, David Durfee, and Anthi Orfanou. "On the complexity of nash equilibria in anonymous games." In Proceedings of the forty-seventh annual ACM symposium on Theory of computing, pp. 381-390. 2015.
5. Daskalakis, Constantinos. "An efficient PTAS for two-strategy anonymous games." In Internet and Network Economics: 4th International Workshop, WINE 2008, Shanghai, China, December 17-20, 2008. Proceedings 4, pp. 186-197. Springer Berlin Heidelberg, 2008.
6. Daskalakis, Constantinos, and Christos H. Papadimitriou. "On oblivious PTAS's for Nash equilibrium." In Proceedings of the forty-first annual ACM symposium on Theory of computing, pp. 75-84. 2009.
7. Chen, Xi, Shang-Hua Teng, and Paul Valiant. "The approximation complexity of win-lose games." In SODA, vol. 7, pp. 159-168. 2007.
8. Adsul, Bharat, Jugal Garg, Ruta Mehta, and Milind Sohoni. "Rank-1 bimatrix games: a homeomorphism and a polynomial time algorithm." In Proceedings of the forty-third annual ACM symposium on Theory of computing, pp. 195-204. 2011.
9. Mehta, Ruta. "Constant rank bimatrix games are PPAD-hard." In Proceedings of the forty-sixth annual ACM symposium on Theory of computing, pp. 545-554. 2014.
10. Cai, Yang, Ozan Candogan, Constantinos Daskalakis, and Christos Papadimitriou. "Zero-sum polymatrix games: A generalization of minmax." Mathematics of Operations Research 41, no. 2 (2016): 648-655.
11. Deligkas, Argyrios, Michail Fasoulakis, and Evangelos Markakis. "A polynomial-time algorithm for 1/2-well-supported nash equilibria in bimatrix games." In Proceedings of the 2023 Annual ACM-SIAM Symposium on Discrete Algorithms (SODA), pp. 3777-3787. Society for Industrial and Applied Mathematics, 2023.
12. Deligkas, Argyrios, Michail Fasoulakis, and Evangelos Markakis. "A Polynomial-Time Algorithm for 1/3-Approximate Nash Equilibria in Bimatrix Games." In 30th Annual European Symposium on Algorithms (ESA 2022). Schloss Dagstuhl-Leibniz-Zentrum für Informatik, 2022.

Market Equilibrium

1. Codenotti, Bruno, Sriram V. Pemmaraju, and Kasturi R. Varadarajan. "On the polynomial time computation of equilibria for certain exchange economies." In SODA, vol. 5, pp. 72-81. 2005.
2. Garg, Jugal, Ruta Mehta, Milind Sohoni, and Vijay V. Vazirani. "A complementary pivot algorithm for market equilibrium under separable, piecewise-linear concave utilities." SIAM Journal on Computing 44, no. 6 (2015): 1820-1847.
3. Devanur, Nikhil R., Christos H. Papadimitriou, Amin Saberi, and Vijay V. Vazirani. "Market equilibrium via a primal--dual algorithm for a convex program." Journal of the ACM (JACM) 55, no. 5 (2008): 1-18.
4. Jain, Kamal. "A polynomial time algorithm for computing an Arrow–Debreu market equilibrium for linear utilities." SIAM Journal on Computing 37, no. 1 (2007): 303-318.
5. Garg, Jugal, Ruta Mehta, Vijay V. Vazirani, and Sadra Yazdanbod. "Settling the complexity of Leontief and PLC exchange markets under exact and approximate equilibria." In Proceedings of the 49th Annual ACM SIGACT Symposium on Theory of Computing, pp. 890-901. 2017.
6. Chen, Xi, Decheng Dai, Ye Du, and Shang-Hua Teng. "Settling the complexity of Arrow-Debreu equilibria in markets with additively separable utilities." In 2009 50th Annual IEEE Symposium on Foundations of Computer Science, pp. 273-282. IEEE, 2009.
7. Vazirani, Vijay V., and Mihalis Yannakakis. "Market equilibrium under separable, piecewise-linear, concave utilities." Journal of the ACM (JACM) 58, no. 3 (2011): 1-25.
8. Chen, Xi, Dimitris Paparas, and Mihalis Yannakakis. "The complexity of non-monotone markets." Journal of the ACM (JACM) 64, no. 3 (2017): 1-56.
9. Duan, Ran, and Kurt Mehlhorn. "A combinatorial polynomial algorithm for the linear Arrow-Debreu market." In Automata, Languages, and Programming: 40th International Colloquium, ICALP 2013, Riga, Latvia, July 8-12, 2013, Proceedings, Part I 40, pp. 425-436. Springer Berlin Heidelberg, 2013.
10. Chaudhury, Bhaskar Ray, Jugal Garg, Peter McGlaughlin, and Ruta Mehta. "Competitive equilibrium with chores: Combinatorial algorithm and hardness." In Proceedings of the 23rd ACM Conference on Economics and Computation, pp. 1106-1107. 2022.

Fair Division

1. Barman, Siddharth, Sanath Kumar Krishnamurthy, and Rohit Vaish. "Finding fair and efficient allocations." In Proceedings of the 2018 ACM Conference on Economics and Computation, pp. 557-574. 2018.
2. Caragiannis, Ioannis, David Kurokawa, Hervé Moulin, Ariel D. Procaccia, Nisarg Shah, and Junxing Wang. "The unreasonable fairness of maximum Nash welfare." ACM Transactions on Economics and Computation (TEAC) 7, no. 3 (2019): 1-32.
3. Chaudhury, Bhaskar Ray, Jugal Garg, and Kurt Mehlhorn. "EFX exists for three agents." In Proceedings of the 21st ACM Conference on Economics and Computation, pp. 1-19. 2020.
4. Chaudhury, Bhaskar Ray, Telikepalli Kavitha, Kurt Mehlhorn, and Alkmini Sgouritsa. "A little charity guarantees almost envy-freeness." SIAM Journal on Computing 50, no. 4 (2021): 1336-1358.
5. Garg, Jugal, Edin Husić, Wenzheng Li, László A. Végh, and Jan Vondrák. "Approximating Nash Social Welfare by Matching and Local Search." arXiv preprint arXiv:2211.03883 (2022).

Paper Rubric*

*Borrowed from https://cs.stanford.edu/~rishig/courses/s16.html

The written report has two purposes:

- Convince the teaching staff that you understand the technical aspects of the paper.
- Provide some value to someone who has already done a quick pass of the paper.

The main audience for the written report is the teaching staff. Feel free to assume we know things you think we know, but don't assume we have read the papers as carefully as you have.