SAFWAN HOSSAIN

617 653 2804 ◇ shossain@g.harvard.edu ◇ https://safwanhossain.github.io

EDUCATION

Harvard University September 2022 - *Present*
Ph.D. in Computer Science cGPA: 4.0/4.0
Advisor: Dr. Yiling Chen (EconCS group)

University of Toronto September 2018 - May 2020
MSc. in Computer Science
Advisor: Dr. Nisarg Shah (CS Theory group)

University of Toronto September 2013 - May 2018
B.A.S.c in Electrical and Computer Engineering - High Honours cGPA: 3.95/4.00

RESEARCH INTERESTS

Economics and Computation: Algorithmic Game Theory, Information Design, Mechanism Design.
Machine Learning: Online Learning, Learning with Strategic Agents, Multi-Agent Systems.

RECENT INDUSTRY EXPERIENCE

Morgan Stanley - *Machine Learning Research Intern* May 2025 - August 2025

Working in the Machine Learning Research Team with Yuriy Nevmyvaka to investigate a research problem on online resource allocation under market dynamics and strategic interactions.

Google Research - *Student Researcher* March 2025 - May 2025

Working in the Market Algorithms Research group with Renato Paes-Leme and Song Zuo to investigate novel auction and mechanism design problems posed by the widespread adoption of LLMs.

Cerebras Systems - *Machine Learning Engineer* July 2020 - August 2022

Member of the ML Frameworks team. Projects included building a custom Tensorflow XLA backend, a distributed training pipeline, and exploring sparse training algorithms - all for our custom chip.

Intel - *Compiler Engineer* May 2016 - August 2017

Member of the FPGA compiler team. I led a project that remodeled clock placement to minimize clock skew, increasing the operating frequency of the Stratix 10 FPGA by 1.5%.

PUBLICATIONS

1. **Safwan Hossain**, Tao Lin, Sai Ravindranath, Paul Duetting, Renato Paes Leme, Haifeng Xu, Song Zuo. *Framing and Signaling: LLM-Based Approach to Information Design.* Under Review.
2. **Safwan Hossain**, Evi Micha, Yiling Chen, Ariel Procaccia. *Strategic Classification With Externalities.* 13$^{\text{th}}$ International Conference on Learning Representations **(ICLR 2025)**.
3. Daniel Halpern, **Safwan Hossain**, Jamie Tucker-Foltz. *Computing Voting Rules with Elicited Incomplete Votes.* 24$^{\text{th}}$ ACM Conference on Economics and Computation **(EC 2024)**.
4. **Safwan Hossain**, Tao Lin, Tonghan Wang, David C. Parkes, Yiling Chen, Haifeng Xu. *Multi-Sender Persuasion - A Computational Perspective.* 41$^{\text{st}}$ International Conference on Machine Learning **(ICML 2024)**.

5. **Safwan Hossain**, Andjela Mladenovic, Yiling Chen, Gauthier Gidel. *A Persuasive Approach to Combating Misinformation.* 41st International Conference on Machine Learning **(ICML 2024)**.
6. **Safwan Hossain**, Yiling Chen. *Equilibrium and Learning in Fixed-Price Data Markets with Externality.* 41st International Conference on Machine Learning **(ICML 2024)**.
7. Edwin Zhang, Sadie Zhao, Tonghan Wang, **Safwan Hossain**, Henry Gasztowtt, Stephan Zhang, David C. Parkes, Milind Tambe, Yiling Chen. *Social Environment Design.* 41st International Conference on Machine Learning **(ICML 2024)**.
8. Siddhartha Banerjee, Vasilis Gkatzelis, **Safwan Hossain**, Billy Jin, Evi Micha, Nisarg Shah. *Proportionally Fair Online Allocation of Public Goods with Predictions.* 33rd International Joint Conference on Artificial Intelligence **(IJCAI 2023)**.
9. **Safwan Hossain**, Evi Micha, and Nisarg Shah. *Fair Algorithms for Multi-Agent Multi-Armed Bandits.* 35th Conference on Neural Information Processing Systems **(NeurIPS 2021)**.
10. **Safwan Hossain** and Nisarg Shah. *The Effect of Strategic Noise on Linear Regression.* 19th International Conference on Autonomous Agents and Multiagent Systems **(AAMAS 2020)**.
11. **Safwan Hossain**, Andjela Mladenovic, and Nisarg Shah. *Designing Fairly Fair Classifiers via Economic Fairness Notions.* 29th International World Wide Web Conference **(WWW 2020)**.
12. **Safwan Hossain**, Evi Micha, and Nisarg Shah. *The Surprising Power of Hiding Information in Facility Location.* 34th AAAI Conference on Artificial Intelligence **(AAAI 2020).**
13. John Chen, Ian Berlot-Atwell, **Safwan Hossain**, Xindi Wang, Frank Rudzicz. *Analyzing Text Specific vs Blackbox Fairness Algorithms in Multimodal Clinical NLP.* 3rd Clinical Natural Language Processing Workshop at EMNLP 2020. **Best Paper Award**.
14. **Safwan Hossain** and Jonathan Lorraine. *JacNet: Learning Functions with Structured Jacobians.* Workshop on Invertible Neural Nets and Normalizing Flows at ICML 2019

AWARDS AND DISTINCTIONS

- ◇ Recipient of the Ontario Provincial Graduate Scholarship — June 2019
- ◇ Recipient of the Vector Institute Scholarship in Artificial Intelligence — November 2018
- ◇ Recipient of the Governor General's Bronze Medal — June 2013
- ◇ Ranked in the Top 20 graduating students in British Columbia — June 2013

SERVICE

- ◇ Served as a Reviewer for NeurIPS, EC, ICLR, WebConf (WWW), and ICML.
- ◇ Invited talk at 2025 SIGecom Winter Meeting
- ◇ Invited talks at the 2024 and 2025 INFORMS Annual Meeting
- ◇ Talk at Econometric Society Interdisciplinary Frontiers (ESIF) 2024
- ◇ Talk at Harvard EconCS Seminar

TEACHING

- ◇ CS126 Computational Fairness and Privacy (Harvard) - *Teaching Fellow* — Fall 2024
- ◇ CS257 Semidefinite Optimization (Harvard) - *Teaching Fellow* — Spring 2024
- ◇ CS236 Economics and Computation (Harvard) - *Teaching Fellow* — Fall 2023
- ◇ CS373 Algorithms and Data Structures (UToronto) - *Teaching Fellow* — Fall 2018

TECHNICAL SKILLS

- ◇ **Modeling/Simulations:** MATLAB, Mathematica
- ◇ **Programming Languages/Frameworks:** Python, C/C++, PyTorch, TensorFlow, cvxpy