Soroush Ebadian

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Education

- **Ph.D. in Computer Science** — Sep. 2020 – Present
  University of Toronto, Toronto, Canada — GPA: 4+/4
  Advisor: Prof. Nisarg Shah
- **B.Sc. in Computer Engineering** — Sep. 2015 – Aug. 2020
  Sharif University of Technology, Tehran, Iran — GPA: 18.68/20
  Honors: Magna Cum Laude

Experience

- **Research Assistant, University of Toronto**, Toronto, ON, USA — Sep. 2020 – Present
  Presented my work in top tier AI and Econ-CS conferences such as EC, NeurIPS, IJCAI, AAMAS.
- **Visiting Researcher, Harvard University**, Boston, MA, USA — Sep. – Dec. 2023
  Worked on various problems in the area of computational social choice. Host: Prof. Ariel D. Procaccia.
- **Research Intern,** IST Austria, Austria — Jul. – Sep. 2019
  Worked on concurrent program verification. Host: Prof. Thomas A. Henzinger.
- **Technical Manager,** CafeBazaar, Tehran, Iran — Jan. 2017 – Sep. 2020
  - *CafeBazaar Cloud*: Led 10-20 software engineers in 3 teams developing 6 cloud infrastructure services – providing storage, database, and big data management services to tech companies with tens of millions of users.
  - *Divar*: Released a multi-device buyer-seller chat on three platforms for Divar online classified ads with 16M users.
- **Software Engineer,** CafeBazaar, Tehran, Iran — Apr. 2015 – Jan. 2017
  - Developed a buyer-seller messaging feature on iOS client of Divar with 2M+ iOS users.
  - Redesigned architecture and scaled a large scale system with 100M+ requests per day from 25M.

Honors and Awards

- **Gold medal** in the **National Olympiad in Informatics**, Iran. — 2014
- **2nd place** in the **ACM-ICPC** West Asia Regional Contest, Tehran, Iran. — 2015
- **Ontario Graduate Scholarship** (C$15000) — 2023
  Government of Ontario and University of Toronto
- Alfred B. Lehman Graduate Scholarship in Computer Science (C$5000) — 2023
  Dept. of Computer Science, University of Toronto
- Computer Science 50th Anniversary Graduate Scholarship (C$2000) — 2022
  Dept. of Computer Science, University of Toronto
- Hong Kong PhD Fellowship Scheme (Declined) — 2020
  Hong Kong RGC and Hong Kong Baptist University, ∼US$246,000 for four years of PhD studies
- **4th place** in the **National Scientific Olympiad in Computer Science and Engineering**, Iran — 2019
- Research Scholarship from the Austrian Agency for International Cooperation in Education and Research (OeAD-GmbH) (€3000) — Summer 2019

Peer-reviewed Conference Publications

C9. **S. Ebadian**, A. Filos-Ratsikas, M. Latifian, N. Shah, "Computational Aspects of Distortion," *in Proc. of 23rd Int. Conf. on Autonomous Agents and MultiAgent Systems* (**AAMAS'24**), 2024. Forthcoming.

C8. **S. Ebadian**, A. Filos-Ratsikas, M. Latifian, N. Shah, "Explainable and Efficient Randomized Voting Rules," *in Proc. of 37th Annual Conf. on Neural Information Processing Systems* (**NeurIPS'23**), 2023. Forthcoming.

C7. **S. Ebadian**, M. Latifian, N. Shah, "The Distortion of Approval Voting with Runoff," *in Proc. of 22nd International Conf. on Autonomous Agents and MultiAgent Systems* (**AAMAS'23**), pp. 1752–1760, 2023.

C6. **S. Ebadian**, G. Kehne, E. Micha, A. D. Procaccia, and N. Shah, "Is Sortition Both Representative and Fair?," *in Proc. of 36th Annual Conf. on Neural Information Processing Systems* (**NeurIPS'22**), pp. 3431–3443, 2022.

C5. **S. Ebadian**, A. Kahng, D. Peters, and N. Shah, "Optimized Distortion and Proportional Fairness in Voting," *in Proc. of 23rd ACM Conf. on Economics and Computation* (**EC'22**), pp. 563–600, 2022.

C4. **S. Ebadian**, R. Freemen, and N. Shah, "Efficient Resource Allocation with Secretive Agents," *in Proc. of 31st International Joint Conf. on Artificial Intelligence* (**IJCAI'22**), pp. 272–278, 2022.

C3. **S. Ebadian**, D. Peters, and N. Shah, "How to Fairly Allocate Easy and Difficult Chores," *in Proc. of 21st International Conf. on Autonomous Agents and MultiAgent Systems* (**AAMAS'22**), pp. 372–380, 2022.

C2. **S. Ebadian** and X. Huang, "Fast Algorithm for k-Truss Discovery on Public-Private Graphs," *in Proc. of 28th International Joint Conf. on Artificial Intelligence* (**IJCAI'19**), pp. 2258–2264, 2019.

C1. **S. Ebadian** and H. Zarrabi-Zadeh, "A Simple Randomized Algorithm for All Nearest Neighbors," *in Proc. of 31st Canadian Conf. on Computational Geometry* (**CCCG'19**), pp. 94–98, 2019.
Invited to the special issue of the journal of Computational Geometry.

Journal Publication

J1. **S. Ebadian**, A. Kahng, D. Peters, and N. Shah, "Optimized Distortion and Proportional Fairness in Voting," *in ACM Transactions on Economics and Computation,* (**TEAC**), 2024. (*Accepted. To appear.*)

Preprints Under Review

W2. **S. Ebadian** and E. Micha, "Boosting Sortition via Proportional Representation", 2023.

W1. **S. Ebadian**, D. Halpern, E. Micha, "Metric Distortion with Elicited Pairwise Comparisons", 2024.

Professional Service

- **PC Member:** AAAI 2024, AIES 2023, AAAI 2023
- **Reviewer (Journal)**: Journal of Artificial Intelligence (AIJ), ACM Transactions on Economics and Computation (TEAC), SIAM Journal on Discrete Mathematics (SIDMA), Journal of Mathematical Social Sciences (JMSS)
- **Reviewer (Conference):** SODA 2024, SAGT 2021

Technical Skills

- **Programming Languages**: Python, C/C++, Java, Swift, C#, Bash
- **Technologies:** PyTorch, Redis NoSQL, PostgreSQL, Django, Scikit-learn, Pandas, NumPy

Teaching Experience

- **Teaching Assistant,** CS Department, University of Toronto
  - CSC2421 Mathematical Foundations of algorithmic fairness — Winter 2024
  - CSC473 Advanced Algorithm Design — Winter 2024
  - CSC2412 Algorithms for Private Data Analysis — Winter 2023
  - CSC373 Algorithm Design, Analysis and Complexity — Fall 2021, Summer 2022, Fall 2023
  - CSC303 Social and Economics Networks — Winter 2021, Winter 2023
  - CSC304 Algorithmic Game Theory and Mechanism Design — Fall 2022
  - CSC2556 Algorithms for Collective Decision Making — Winter 2022
  - CSC263 Data Structures and Analysis — Summer 2021

- **Teaching Assistant,** CE Department, Sharif University of Technology
  - Design and Analysis of Algorithms — Fall 2017, 2018, 2019
  - Discrete Structures — Spring 2019
  - Algorithmic Game Theory — Spring 2019
  - System Analysis and Design — Fall 2018, Spring 2019
  - Data Structures and Algorithms — Spring 2016
- **Instructor**, INOI Summer Camp — 2016, 2017, and 2020
  Taught advanced topics in Algorithms, Data Structures, and Algorithmic Graph Theory to students preparing for IOI.
- **Lecturer**, Allameh Helli High-School — 2015 – 2016, Fall 2019
  Taught Algorithms and Data Structures to students preparing for the Iranian National Olympiad in Informatics (INOI).

Other Activities

- **Task Preparation System** for **IOI 2017** [Technical Report, GitHub] — 2016 – 2017
  Developed a system for preparing IOI tasks by Scientific Committee. Used at IOI 2017 and 2019.
- **Member of the Scientific Committee** of National Programming Contests
  Designed programming contests and authored problems with an algorithmic theme.
  - West Asia ACM ICPC Regional Contest — 2018 – 2019
  - Iran's IOI Team Selection Exams — 2016 – 2019
  - INOI Summer Camp Programming Exams — 2015 – 2017
- **Executive Director** of the **3rd Winter Seminar Series (WSS)** at Sharif University of Tech. — Fall 2017
  A four-day event including 28 talks and 7 workshops in computer science and engineering with near 400 participants.
  - Raised $25,000 funding through sponsorship. Led 50 volunteer staffs in about 15 teams.