MohammadTaghi Hajiaghayi
Curriculum Vitæ

Please visit my website at *http://www.cs.umd.edu/~hajiagha/index.html* and my **Google Scholar Page**
which contain *updated* Curriculum Vitae and Publications with links to download and to citations.
citations: 16051, *h*-**index**:71, *i*10-**index**:235 (according to ***Google Scholar***)
Email is the fastest and the most reliable way of contacting me. (including brief descriptions of
most of them)"

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EDUCATIONAL BACKGROUND

Doctor of Philosophy	Massachusetts Institute of Technology, September 2001 – May 2005. Ph.D. in Applied Mathematics (Computer Science), Thesis Title:"The Bidimensionality Theory and Its Algorithmic Applications", Advisors: Erik D. Demaine and Tom Leighton
Master of Mathematics	University of Waterloo, September 2000– September 2001. M.Math. in Computer Science, Thesis Title:"Algorithms for Graphs of (Locally) Bounded Treewidth", Advisor: Naomi Nishimura
Bachelor of Science	Sharif University of Technology, September 1997– September 2000. B.Sc. in Computer Engineering, Thesis Title:"Pseudo-Matching and Multicasting", Advisor: Mohammad Ghodsi

APPOINTMENTS

Jack and Rita G. Minker Professor in Computer Science Department and University of Maryland Institute for Advanced Computer Studies (UMIACS), University of Maryland (April 2016– Present)

Affiliate Professor in the Decision, Operations, and Information Technologies Area of the University of Maryland Robert H. Smith School of Business (August 2016– Present)

Affiliate Professor in the Applied Mathematics & Statistics, and Scientific Computation (AMSC) Program, University of Maryland, College Park (September 2022– Present)

Algorithms Fellow at **Overstock**, Algorithms and Machine Learning Group, (Aug 2021– September 2022)

Amazon Scholar at **Amazon**, Sponsored & Display Advertising Group and Machine Learning & Optimization Group, (January 2019– Aug 2021)

Research Scientist in Market Algorithms & Advertisement Auction Group at **Google** Research, New York City, (January 2017– January 2018)

Visiting Scientist in the Simons Institute for the Theory of Computing at University of California, Berkeley (August 2016– December 2016, January 2018– December 2018)

Research Consultant in **Microsoft** Research at New England (October 2016– December 2016)

Jack and Rita G. Minker Associate Professor (with tenure) in Computer Science Department and University of Maryland Institute for Advanced Computer Studies (UMIACS), University of Maryland (July 2012– April 2016)

Jack and Rita G. Minker Assistant Professor in Computer Science Department and University of Maryland Institute for Advanced Computer Studies (UMIACS), University of Maryland (Aug 2010– June 2012)

Research Consultant in **Microsoft** Research at New York City (April 2016–August 2016)

Senior Researcher in **AT&T** Labs – Research (June 2007–July 2013)

Research Affiliate in Computer Science and Artificial Intelligence Laboratory, Massachusetts Institute of Technology (June 2007– Present)

Permanent Member in Center for Discrete Mathematics and Theoretical Computer Science (**DIMACS**), Rutgers University (June 2007– Present)

Postdoctoral Fellow in School of Computer Science, Carnegie Mellon University (January 2006– January 2007)

Postdoctoral Associate in Computer Science and Artificial Intelligence Laboratory, Massachusetts Institute of Technology (June 2005– December 2005 & February 2007– May 2007)

Research Intern in Theory Group, **Microsoft** Research, Summer 2004
Research Intern in Department of Mathematical Sciences, **IBM** T.J. Watson Research Center, Summer 2002

STARTUP COMPANIES FOUNDED

Hajiaghayi Educational Science and Technology Live Shows at YouTube, Instagram, Linkedin, Twitter, and Facebook, https://www.youtube.com/user/hajiaghayi (Founded in 2022)
Predictaa (formerly SmartStock), FinTech Company for Stock and Cryptocurrency Price Predictions, (Founded in 2019)
Adoo, Digital Out-Of-Home (DOOH) Advertisement Company, (Founded in 2017)
Innoovoo, E-commerce Company for Selling Digital Goods and Ideas, (Founded in 2015, Acqui-hired by Google in 2017)

AWARDS/HONOURS

1. **Washington Academy of Science Distinguished Career Award** in Applied Mathematics, 2023.
2. **Fellow of American Association for the Advancement of Science (AAAS)**, 2023, for distinguished contributions to the theory of computer science and design of algorithms.
3. University of Waterloo **Alumni Achievement Medal**, 2022.
4. **Editor-in-Chief of Algorithmia** (the oldest existing journal dedicated to algorithms), 2022.
5. **Fellow of Asia-Pacific Artificial Intelligence Association (AAIA)**, 2021.
6. **Fellow of European Association for Theoretical Computer Science (EATCS)**, 2020, for fundamental contributions to the theory of algorithms, in particular algorithmic graph theory, game theory, and distributed computing.
7. **Fellow of Institute of Electrical and Electronics Engineers (IEEE)**, 2020, for fundamental contributions to algorithmic graph theory and to algorithmic game theory.
8. **Blavatnik National Award for Young Scientists Honoree**, 2020.
9. **Guggenheim Fellow**, 2019, *one out of 13* in ALL *Natural Sciences*.
10. **Fellow of Association for Computing Machinery (ACM)**, 2018, the *youngest* (at age 39) among the class 2018 fellows for fundamental contributions to the fields of algorithmic graph theory and algorithmic game theory.
11. Our STOC'19 paper "Lower bounds for external memory sorting via network coding" is selected for publication as **Research Highlights in the Communications of the ACM (CACM)**, 2019. According to CACM, the section is devoted to the most important results published in Computer Science along the lines of magazines such as Science and Nature.
12. **Northrop Grumman Faculty Research Award**, 2018.
13. **ACM International Collegiate Programming Contest (ICPC) Coach Award**, 2017 (for advancing University of Maryland programming teams FIVE times to World Finals).
14. **Chair of Program Committee**, the 29th Annual ACM Symposium on Parallel Algorithms and Architectures, (SPAA), Washington, DC, 2017. Also **Member of Steering Committee**, ACM Symposium on Parallel Algorithms and Architectures, 20172020.
15. European Association for Theoretical Computer Science (**EATCS**) **Nerode Prize**, 2015 (for our outstanding paper on **Bidimensionality Theory**).
16. The University of Maryland **Graduate Faculty Mentor of the Year Award**, 2015.
17. **Google Faculty Research Award**, 2014.
18. Office of Naval Research (**ONR**) **Young Investigator Award**, 2011 (*one out 22* in all areas of science and engineering; *one out of two* in computer science).
19. University of Maryland **Research and Scholarship Award** (RASA), 2011.
20. **NSF CAREER Award**, 2010.
21. **Google Faculty Research Award**, 2010.
22. Jack and Rita G. Minker Chair, 2010.
23. Winner of **Best Paper Award** in the 22nd ACM Symposium on Parallelism in Algorithms and Architectures (SPAA), 2010.
24. Selection of our paper "Hat Guessing Games" published in SIAM Journal on Discrete Mathematics as an **Exceptional Paper Published in SIAM's Specialized Journals** for the *SIGEST section of SIAM Review*. According to SIGEST, the paper has been selected for "the importance of its contributions and topic, its clear writing style, and its broad interest for the SIAM community."
25. Winner of **Best Paper Award** in the 17th International Symposium on Algorithms and Computation (ISAAC), 2006.

26. **ALADDIN Postdoctoral Fellowship** from Carnegie Mellon University, 2005.
27. **Microsoft Ph.D. Fellowship** Finalist, 2003, 2004.
28. Winner of **Best Engineering Challenge Paper Award** in Robocup, 2001.
29. **Third** rank in the **Middle Size League in World RoboCup Championship 2000** in Melbourne (see http://www.robocup.org).
30. **First** rank in the **Middle Size League in European RoboCup Championship 2000** in Amsterdam (see http://www.robocup.org).
31. Awarded the **Best Undergraduate Prize of Sharif University of Technology in Computer Engineering** in 2000 for the **First** who has finished his B.S. degree in Computer Engineering Department in three years with highest GPA ever until the date of the graduation.
32. Scholarship from **Canadian International Graduate Student**, 2000.
33. Scholarship from **Communications and Information Technology Ontario**, 2000.
34. **Second** rank in the **ACM-ICPC Regional Contest**, Tehran, Iran, 1999.
35. **Fourth** rank in the **ACM-ICPC Regional Contest**, Kanpur, India, 1999.
36. **Silver Medal** in the **9th International Olympiad in Informatics (IOI'97)**, South Africa, 1997.
37. **Gold Medal** in **6th Iranian Informatics Olympiad**, 1996.
38. **Erdos number 2**! (via collaborating with Noga Alon who is a co-author of Erdos)

Media Recognition

1. New Algorithm for "Envy-Free" Task Division http://www.umiacs.umd.edu/about-us/news/umd-team-led-hajiaghayi-designs-new-algorithm-envy-free-task-division
2. After Nearly a Century, Colonel Blotto Game Theory Scenario Solved, Feb 2016, see, e.g.,:
   - http://www.businessinsider.com.au/scientists-say-they-can-predict-two-party-outcomes-after-solving-the-95-year-old-colonel-blotto-game-theory-problem-2016-2
   - http://www.europapress.es/ciencia/laboratorio/noticia-juego-coronel-blotto-algoritmo-indica-mejor-estrategia-20160216145829.html
   - http://russia.timesofnews.com/well-known-game-theory-scenario-solved/
   - https://arizonadailyindependent.com/2016/02/13/colonel-blotto-findings-to-be-revealed-in-phoenix/
   - http://www.tivi.fi/Kaikki_uutiset/kenesta-presidentti-tietokone-tietaa-6303496
   - http://www.scientificcomputing.com/news/2016/02/after-nearly-century-colonel-blotto-game-theory-scenario-solved
   - http://www.dbknews.com/2016/03/03/algorithm-solves-colonel-blotto-game-theory-umd/
   - http://forskning.no/2016/02/algoritme-vil-spa-hvem-som-blir-usas-neste-president
   - http://digit.mandiner.hu/cikk/20160218_jatekelmelettel_nyerjen_elnokvalasztast
   - http://www.mylder.no/tips/21610955/Forskere+vil+regne+ut+hvem+som+blir+USAs+neste+president
   - http://www.itbiz.cz/clanky/problem-plukovnika-blotta-vyresen
   - http://pc-huolto.com/index.php?page=news
   - http://umdrightnow.umd.edu/news/umd-led-team-first-solve-well-known-game-theory-scenario
   - https://cmns.umd.edu/news-events/features/3426
   - http://myinforms.com/en-au/a/24189185-scientists-say-they-can-predict-two-party-outcomes-after-solving-a-95-year-old-game-theory-problem/
   - http://www.datacentremanagement.org/2016/02/after-nearly-a-century-colonel-blotto-game-theory-scenario-solved/
   - http://technews.acm.org/
   - http://www.forwardgeek.com/article/UMD-led-Team-First-to-Solve-Well-known-Game-Theory-Scenario-Study-20160215-page2
   - http://www.prweb.com/releases/2016/02/prweb13217111.htm
   - http://www.virtual-strategy.com/2016/02/15/umd-led-team-first-solve-well-known-game-theory-scenario-study?page=0,1#axzz40PAuhIlb
   - http://www.scientificcomputing.com/news/2016/02/after-nearly-century-colonel-blotto-game-theory-scenario-solved
   - http://www.engadget.com/2016/02/12/game-theory-algorithm/
   - http://www.eurekalert.org/pub_releases/2016-02/uom-utf021116.php
   - http://phys.org/news/2016-02-team-well-known-game-theory-scenario.html
   - https://scifeeds.com/news/team-first-to-solve-well-known-game-theory-scenario/
   - http://campaignmode.com/StrategyDefined/2016/02/12/colonel-blotto-defeated/
   - http://www.sciencenewsline.com/summary/2016021212280019.html

- http://trendson.top/umd-led-team-first-to-solve-well-known-colonel-blotto-game-theory-scenario/
- https://www.sciencedaily.com/releases/2016/02/160211190010.htm?utm_source=feedburner&
  utm_medium=feed&utm_campaign=Feed%3A+sciencedaily%2Fcomputers_math%2Fcomputer_science+
  %28Computer+Science+News+--+ScienceDaily%29&utm_content=Google+Feedfetcher
- http://www.mathesia.com/community/a-new-algorithm-is-capable-of-solving-colonel-blotto-game-
  theory-scenario/
- http://climateerinvest.blogspot.com/2016/02/game-theorys-colonel-blotto-scenario.html
- https://plus.google.com/+CiroVilla/posts/9a4JofH4XTF
- https://www.facebook.com/DARPA/posts/10154134868827150

3. Study Ranks UC San Diego #5 Among Theoretical Computer Science Programs Nationwide, 2014, http://www.cse.ucsd.edu/node/2652
4. Incentive-aware Algorithm Design, Terp Magazine (Winter 2013, Vol 10, No 2)

STUDENT AWARDS

1. Mahsa Derakhshan's Ph.D. thesis "Algorithms for Markets: Matching and Pricing" received **Honorable Mention of SIGecom Doctoral Dissertation Award** (2021).
2. Soheil Behnezhad's Ph.D. thesis "Modern Large-Scale Algorithms for Classical Graph Problems" is awarded **Charles A. Caramello Award for Best Thesis in Math, Physical Sciences, and Engineering at UMD** (2021) (*the only thesis from CS department that ever got this award*) as well as **Larry S. Davis Award for Best PhD Thesis in CS at UMD** (2021).
3. Max Springer received **NSF Graduate Research Fellowship** for research on *Game Theory and Learning* (2022).
4. Marina Knittel became finalist for **Meta (Facebook) Fellowship**, in *Economics and Computation* (2022)
5. Marina Knittel received **Ann G. Wylie Dissertation Fellowship**, University of Maryland, (2021)
6. Marina Knittel received **ARCS Endowment Award** (2021)
7. Alireza Farhadi received **Facebook Fellowship**, in *Economics and Computation* (2020)
8. Mahsa Derakhshan received **Google US/Canada PhD Fellowship**, in *Market Algorithms* (2020)
9. Soheil Behnezhad received **Google US/Canada PhD Fellowship**, in *Market Algorithms* (2019)
10. Saeed Seddighin won **Larry S. Davis Best Computer Science Ph.D. Dissertation Award** for PhD thesis from University of Maryland. Also his thesis is *nominated for ACM Doctoral Dissertation Award as well as EATCS Distinguished Dissertation Award* (2019).
11. Alireza Farhadi received **Ann G. Wylie Dissertation Fellowship**, University of Maryland, (2019)
12. Mahsa Derakhshan received **Ann G. Wylie Dissertation Fellowship**, University of Maryland, (2019)
13. Saeed Seddighin received **Ann G. Wylie Dissertation Fellowship**, University of Maryland, (2018)
14. Amin Ghiasi, Ramasai Tadepalli, and Jason Zou as our UMD ACM-ICPC team (with me as the coach) from the ACM ICPC Mid-Atlantic Regional contest **advanced to ACM-ICPC World Finals** (2017)
15. Soheil Ehsani received *one of twenty-one* **World Quantitative and Science Scholarship** (2017)
16. Mahsa Derakhshan, John Tan, and Hadi Yami as our UMD ACM-ICPC team (with me as the coach) from the ACM ICPC Mid-Atlantic Regional contest **advanced to ACM-ICPC World Finals** (2016)
17. Hossein Esfandiari received **Google US/Canada PhD Fellowship**, in *Market Algorithms* (2016)
18. Hossein Esfandiari received **Ann G. Wylie Dissertation Fellowship**, University of Maryland, (2015)
19. Reza Khani received **Outstanding Graduate Assistant Award** (2015)
20. Vahid Liaghat received **Google US/Canada PhD Fellowship**, in *Market Algorithms* (*one of only fourteen* recipients from the United States and Canada and the *only one* awardee in Market Algorithms in 2013-2014) (2014)
21. Hossein Esfandiari received *one of twenty-one* **World Quantitative and Science Scholarship** (2014)
22. Hossein Esfandiari and Reza Khani *selected* for **Future Faculty Scholarship and Program** (2014)
23. Vahid Liaghat received **Ann G. Wylie Dissertation Fellowship**, University of Maryland, (2014)
24. Hossein Esfandiari received **Distinguished Graduate Student Teaching Award**, University of Maryland (2013)
25. Rajesh Chitnis won **Larry S. Davis Best Computer Science Ph.D. Dissertation Award** for PhD thesis from University of Maryland. Also his thesis is *nominated for ACM Doctoral Dissertation Award as well as EATCS Distinguished Dissertation Award* (2014).
26. Rajesh Chitnis received College of Computer, Mathematical, & Natural Sciences (CMNS) **Board of Visitor's Award for Outstanding Graduate Student** at the University of Maryland (Awarded to 2 students out of the 10 departments in the college) (2014)

27. Sina Dehghani, Soheil Ehsani, and Xi Yi as our UMD ACM-ICPC team (with me as the coach) from the ACM ICPC Mid-Atlantic Regional contest **advanced to the ACM-ICPC World Finals** (2014)
28. Rajesh Chitnis received *one of the seven* **Simons Awards for Graduate Students in Theoretical Computer Science** (2013)
29. Rajesh Chitnis won **Best Paper Award in European Symposium on Algorithms (ESA)** (2013)
30. Rajesh Chitnis received **Gannon Award for Outstanding Graduate Students** by University of Maryland (2013)
31. Scott DellaTorre, Dylan Ladwig, and Rizeng Zheng as our UMD ACM-ICPC team (with me as the coach) from the ACM ICPC Mid-Atlantic Regional contest **advanced to ACM-ICPC World Finals** (2013)
32. Hossein Esfandiari, Ang Li, and Shangfu Peng as our UMD ACM-ICPC team (with me as the coach) won **the "First to Solve Problem J Award" in ACM-ICPC World Finals**, as one of the only two awards given to ANY North American team this year (2013)
33. Rajesh Chitnis received **International Research Fellowship** by University of Maryland (2012)
34. Hossein Esfandiari, Ang Li, and Shangfu Peng as our UMD ACM-ICPC team (with me as the coach) **won the ACM ICPC Mid-Atlantic Regional contest** (ranked first) and thus **advanced to ACM-ICPC World Finals** (2012)
35. Catalin-Stefan Tiseanu received **International Fulbright Science & Technology Award** (2011)
36. Anu Bandi, Holman Gao, and Scott Zimmermann as our UMD ACM-ICPC team (with me as the coach) from the ACM ICPC Mid-Atlantic Regional contest **advanced to ACM-ICPC World Finals** (2010)
37. Hossein Bateni received **Charlotte Elizabeth Proctor Fellowship** (2010)

Student Industrial Research Internships

1. Marina Knittel: Google Research (2022)
2. Hamed Saleh: Microsoft Ads (2022)
3. Max Springer: Bell Labs (2022)
4. Alireza Farhadi: Adobe Research (2021)
5. Marina Knittel: TTIC (2021)
6. Hamed Saleh: TTIC (2021)
7. Alireza Farhadi: Google Research (2020)
8. Marina Knittel: Amazon (2020)
9. Soheil Behnezhad: Toyota Technological Institute at Chicago (2020)
10. Mahsa Derakhshan: Toyota Technological Institute at Chicago (2020)
11. Mahsa Derakhshan: Microsoft Research (2019)
12. Soheil Behnezhad: Google Research (2019)
13. Alireza Farhadi: Adobe Research Labs (2019)
14. Marina Knittel: Google Reseach (2019)
15. Hadi Yami: Microsoft Bing Advertisements (2019)
16. Mahsa Derakhshan: Google Research (2017, 2018)
17. Soheil Behnezhad: Upwork (2017, 2018)
18. Hadi Yami: Adobe Research Labs (2018)
19. Saeed Seddighin: Toyota Technological Institute at Chicago (2018)
20. Hadi Yami: Microsoft Research (2018)
21. Hossein Esfandiari: Google Research (2014, 2015, 2016)
22. Soheil Ehsani: Google Research (2016)
23. Sina Dehghani: Google Research (2016)
24. Saeed Seddighin: Google Research (2016)
25. Melika Abolhassani: Google Research (2016)
26. Sina Dehghani: Microsoft Research, UK (2015)
27. Soheil Ehsani: RocketFuel (2015)
28. Melika Abolhassani: e-Bay Research (2014)
29. Reza Khani: Google Research (2012, 2013, 2014), Microsoft Research, UK(2014)
30. Catalin-Stefan Tiseanu: Twitter (2012)
31. Vahid Liaghat: AT&T Labs Research (2011), Bell Labs (2012), Microsoft Research, Redmond (2013)
32. Rajesh Chitnis: Toyota Technological Institute at Chicago (2013)
33. Hossein Bateni: AT&T Labs Research (2008), Toyota Technological Institute at Chicago (2009), Microsoft Research, Cambridge (2010)

CURRENT PH.D. STUDENTS

1. Marina Knittel (co-advised with Prof. J. Dickerson, *done with her Thesis Proposal on Dec 2020*)
2. Jacob Gilbert
3. Max Springer
4. Jan Olkowski
5. Kiarash Banihashem
6. Peyman Jabarzade
7. Samira Goudarzi
8. Sohu Shin
9. Ali Ahmadi
10. Keivan Rezaei (co-advised with Prof. S. Feizi)
11. Mohammad Mahdavi
12. Iman Gholami

PAST PH.D. STUDENTS

1. Hamed Saleh (with Ph.D. thesis entitled "Parallel Algorithms for Processing Massive Texts and Graphs", 2022, now an *Applied Scientist at Microsoft*)
2. Alireza Farhadi (with Ph.D. thesis entitled "Memory-Restricted and Secure Algorithms for Large Datasets", 2022, now a *post-doc at Carnegie Mellon University*)
3. Soheil Behnezhad (with Ph.D. thesis entitled "Modern Large-Scale Algorithms for Classical Graph Problems", 2021, a Motwani Postdoc at Stanford University, now an Assistant Professor at Northeastern University)
4. Mahsa Derakhshan (with Ph.D. thesis entitled "Algorithms for Markets: Matching and Pricing", 2021, a Postdoc at Princeton University and UC Berkeley, now an Assistant Professor at Northeastern University)
5. Hadi Yami (with Ph.D. thesis entitled "Fairness Guarantees in Allocation Problems", 2019, now an *Applied Scientist at Microsoft*)
6. Saeed Seddighin (with Ph.D. thesis entitled "Campaigning via LPs: Solving Blotto and Beyond", 2019, now a *post-doc at Harvard*)
7. Soheil Ehsani (with Ph.D. thesis entitled "Online Decision-making via Prophet Setting", before at *Uber*, now an *Applied Scientist at Amazon*), 2017.
8. Hossein Esfandiari (with Ph.D. thesis entitled "Allocations in Large Markets", 2017, a *post-doc at Harvard*, now at *Google Research*)
9. Sina Dehghani, (with Ph.D. thesis entitled "Network Design and Resource Management under Uncertainty", 2017, joining as a *Research Scientist at Facebook*)
10. Melika Abolhassani (with Ph.D. thesis entitled "Allocation in Networks with Economic Applications", 2016, now at *Google*)
11. Vahid Liaghat, (with Ph.D. thesis entitled "Primal-dual Techniques for Online Algorithms and Mechanisms", 2015, a *post-doc at Stanford University*, and now a *Research Scientist at Facebook*)
12. Reza Khani, (with Ph.D. thesis entitled "Revenue Efficient Mechanisms for Online Advertising", 2015, before at *Microsoft*, now an *Applied Scientist at Amazon*)
13. Anshul Sawant (co-advised with Prof. V. S. Subrahmanian with Ph.D. thesis entitled "Computational Analysis of Intelligent Agents: Social and Strategic Settings", 2015, now at *Google*).
14. Rajesh Chitnis, (with Ph.D. thesis entitled "Directed Graphs: Fixed-Parameter Tractability and Beyond", 2014, *a post-doc at Weizmann Institute of Science and at University of Warwick*, now *an Assistant professor at University of Birmingham, UK*)
15. MohammadHossein Bateni (Ph.D. student at Princeton University that I mentored his thesis titled "A Primal-Dual Clustering Technique with Applications in Network Design", 2011, now at *Google Research*)

PAST POST-DOCS

1. Elif Tan (Oct 2015-Oct 2016, now an *Associate Professor at Ankara University*)
2. Hamid Mahini (Jul 2012-Mar 2015, now an *Assistant Professor at University of Tehran*)
3. David Malec (Jan 2013-Jun 2014, now a *Postdoc at Department of Economics, University of Maryland*)
4. Morteza Monemizadeh (Jan 2013-Mar 2013& Feb 2014-Aug 2014, now an *Assistant Professor at Eindhoven University of Technology, Netherlands*)
5. Marek Cygan (Jul 2011-Dec 2011, now an *Assistant Professor at University of Warsaw, Poland*)

PAST MASTER STUDENTS

1. AmirMohsen Ahanchi (with Master paper titled "Massively Parallel Tree Embeddings for High Dimensional Spaces", 2022)
2. Hamid Kazemi (with Master paper titled "Approximation for Competitive Equilibria With Indivisible Goods and Generic Budgets", 2021)
3. Amin Ghiasi (with Master paper titled "On the Efficiency and Equilibria of Rich Ads", 2019)
4. Kevin Engel (with Master paper titled "Learning a Reversi Board Evaluator with Minimax", 2015, now at *Google*)
5. Catalin Stefan Tiseanu (with Master thesis titled "Promised Streaming Problems and Finding Pseudo-Repetitions", 2013, now at *Coinbase*)

LONG-TERM SUPPORTED PH.D. STUDENTS

1. Saeed Alaei (Aug 2011- Jan 2012, *a post-doc at Cornell University* and now at *Google Research*)

UNDERGRADUATE STUDENTS

- **Faculty mentor in Gemstone Honors Program https://gemstone.umd.edu/:** Advising 9 undergrads as part of UMD Gemstone program, a unique multidisciplinary four-year research program for selected undergraduate honors students of all majors.

- **Undergraduate at UMD:** Geoffrey Martin-Noble (UMD REU program mentee), Duncan Wilson (UMD REU program mentee), Anirudh Agarwal, Omar Ahsan, Anu Bandi (*now at Google*), Scott DellaTorre, Holman Gao, Steven Hill, Dylan Ladwig (*now at Facebook*), Rizeng Zheng (*now at Facebook*), and Scott Zimmermann.

- **Undergraduate at Sharif University:** Morteza Zadimoghaddam (became a Ph.D. student at MIT, *now at Google Research*), Shayan Oveisgharan (became a Ph.D. Student at Stanford, *now an Assistant Professor at University of Washington*), Mohammad Moharrami (became a Ph.D. student at University of Washington, *now at Facebook*), Amin S. Sayedi-Roshkhar (became a Ph.D. student at Carnegie Mellon University, *now an Assistant Professor at University of North Carolina at Chapel Hill*), Hamid Mahini (became a Ph.D. student at Sharif University, *now a Research Associate at University of Maryland*), and Nima Haghpanah (became a Ph.D. student at Northwestern University).

SUMMER STUDENTS AT AT&T:

Ankur Moitra (a Ph.D. student at MIT, *now an Assistant Professor at MIT*), and Sina Jafarpour (a Ph.D. student at Princeton).

PH.D. THESIS AND PROPOSAL COMMITTEE

1. Barna Saha (both)
2. Jian Li (both)
3. Saeed Alaei (both)
4. Qi Hu (proposal)
5. Ranjit Kumaresan (thesis)
6. Ryan Carr (thesis)
7. Patrick Roos (thesis)
8. Kanthi Kiran Sarpatwar (both)
9. Manish Purohit (both)
10. Rui Zhang (both; *Business School*)
11. David Harris (thesis; *Mathematics Department*)
12. Eric Raboin (thesis)
13. Ali Shafahi (proposal; *Civil Engineering*)
14. Utgoff, Naomi(thesis; *Economics Department*)
15. Chanhyun Kang (thesis)
16. Faezeh Dorri (proposal)
17. Srijan Kumar (proposal)
18. Mustafa Sahin (both; *Business School*)
19. Haomin Yan (thesis; *Economics Department*)
20. Tzu-Yao Lin (thesis; *Economics Department*)

21. Ahmed Abdelkader (thesis)
22. Ankit Mondal (thesis; *ECE Department*)
23. Alejandro Flores Velazco (proposal)

TEACHING

Fall	2022	University of Maryland Graduate Course CMSC-858F, **Algorithmic Lower Bounds: Fun with Hardness Proofs**. Rated **3.45/4.00**. Number of Students: 14. All course materials are available at http://www.cs.umd.edu/~hajiagha/ALB19/ALB19.html.
Fall	2022	University of Maryland Under-graduate Course CMSC-351H, **Introduction to Algorithms (Honor course)**. Rated **4.00/4.00**. Number of Students: 15. All course materials are available at http://www.cs.umd.edu/~hamed/cmsc351H/index.html.
Fall	2022	University of Maryland Graduate Course CMSC DATA/MSML602, **Principles of Data Science** (TWO SECTIONS). Number of Students: 74. All course materials are available at https://sites.google.com/umd.edu/data602/home.
Spring 2022		University of Maryland Graduate Course CMSC-858F, **Algorithmic Lower Bounds: Fun with Hardness Proofs**. Rated **3.33/4.00**. Number of Students: 21. All course materials are available at http://www.cs.umd.edu/~hajiagha/ALB19/ALB19.html.
Spring 2021		University of Maryland Graduate Course CMSC-858F, **Algorithmic Lower Bounds: Fun with Hardness Proofs**. Rated **3.20/4.00**. Number of Students: 16. All course materials are available at http://www.cs.umd.edu/~hajiagha/ALB19/ALB19.html.
Spring 2019		University of Maryland Graduate Course CMSC-858F, **Algorithmic Lower Bounds: Fun with Hardness Proofs**. Rated **3.24/4.00**. Number of Students: 26. All course materials are available at http://www.cs.umd.edu/~hajiagha/ALB19/ALB19.html.
Spring 2019		University of Maryland Under-graduate Course CMSC-351H, **Introduction to Algorithms (Honor course)**. Rated **3.29/4.00**. Number of Students: 28. All course materials are available at http://www.cs.umd.edu/~hamed/cmsc351H/index.html.
Spring 2019		University of Maryland Under-graduate Course CMSC-474, **Introduction to Computational Game Theory**. Rated **3.16/4.00**. Number of Students: 36. All course materials are available at https://sites.google.com/view/cmsc474-spring19/home.
Fall	2017	University of Maryland Under-graduate Course CMSC-351, **Introduction to Algorithms**. Rated **3.02/4.00**. Number of Students: 125. All course materials are available at http://www.cs.umd.edu/~soheil/cmsc351/.
Fall	2017	University of Maryland Under-graduate Course CMSC-474, **Introduction to Computational Game Theory**. Rated **2.94/4.00**. Number of Students: 36. All course materials are available at http://www.cs.umd.edu/~hajiagha/474GT17/GT17.html.
Fall	2015	University of Maryland Graduate Course CMSC-858F, **Network Design Foundation**. Rated **3.80/4.00**. Number of Students: 12. All course materials are available at http://www.cs.umd.edu/~hajiagha/NetDsgn11/courseNetworkDesign.html.
Spring 2015		University of Maryland Under-graduate Course CMSC-474, **Introduction to Computational Game Theory**. Rated **3.52/4.00**. Number of Students: 45. All course materials are available at http://www.cs.umd.edu/~hajiagha/474GT13/GT13.html.
Fall	2014	[***New developed course***] University of Maryland Graduate Course CMSC-858F, **Algorithmic Lower Bounds: Fun with Hardness Proofs**. Rated **3.83/4.00**. Number of Students: 14. All course materials are available at http://www.cs.umd.edu/~hajiagha/ALB14/ALB14.html.
Spring 2014		University of Maryland Graduate Course CMSC-858F, **Algorithmic Game Theory**. Rated **3.68/4.00**. Number of Students: 22. All course materials are

		available at http://www.cs.umd.edu/~hajiagha/AGT10/AGT14.html.
Fall	2013	[***New developed course***] University of Maryland Under-graduate Course CMSC-474, **Introduction to Computational Game Theory**. Rated **2.93/4.00**. Number of Students: 44. All course materials are available at http://www.cs.umd.edu/~hajiagha/474GT13/GT13.html.
Spring	2012	University of Maryland Under-graduate Course CMSC-351, **Introduction to Algorithms**. Rated **3.13/4.00**. Number of Students: 86. All course materials are available at http://www.cs.umd.edu/~vliaghat/cmsc351/.
Fall	2011	University of Maryland Graduate Course CMSC-858F, **Network Design Foundation**. Rated **3.72/4.00** (**Highest in CS Dep. in the semester**). Number of Students: 14. All course materials are available at http://www.cs.umd.edu/~hajiagha/NetDsgn11/courseNetworkDesign.html.
Spring	2011	[***Updated course materials and created lecture notes***] University of Maryland Under-graduate Course CMSC-351, **Introduction to Algorithms**. Rated **3.09/4.00**. Number of Students: 60. All course materials are available at http://www.cs.umd.edu/~vliaghat/cmsc351/.
Fall	2010	[***New developed course***] University of Maryland Graduate Course CMSC-858F, **Algorithmic Game Theory**. Rated **3.49/4.00**. Number of Students: 17. All course materials are available at http://www.cs.umd.edu/~hajiagha/AGT10.html.
Spring	2009	Rutgers University Graduate Course CS-514, **Advanced Algorithms: Topics in Game Theory**, with Muthu Muthukrishnan and Aaron Jaggard. Rated **5.00/5.00**. Number of Students: 14. All course materials are available at http://paul.rutgers.edu/~mangesh/cs514.html.
Spring	2008	[***New developed course***] Rutgers University Graduate Course CS-673, **Network Design and Game Theory**. Rated **4.86/5.00**. Number of Students: 7. All course materials are available at http://www.mit.edu/~hajiagha/courseNetworkDesign.html.

Books

1. "Computational Intractability: A Guide to Algorithmic Lower Bounds", co-authored with Erik D. Demaine and William Gasarch, MIT Press, 2024.

Research Interests and Publication Domains

- **NetDsgn**: Network Design Algorithms
- **ML&BIGData**: Machine Learning and BIG Data
- **Game**: Game Theory and Auction Design
- **PlanarNet**: Planar Networks and Bidimensionality Theory
- **Wireless**: Wireless and Sensor Networks
- **Routing**: Routing and Networking
- **Robotics**: Robotics and Robot Algorithms
- **Misc**: Miscellaneous papers including Bioinformatics, Random Structures, Metric Embedding, Scheduling, and Graph Theory.

Publications

I. Journal papers are specified by Ji *at the beginning.*
II. As it is conventional in CS theory, authors are in alphabetical order in our publications.
III. Each paper is listed once, even if it appears in multiple versions.
IV. Some papers are directly available online from http://www.mit.edu/~hajiagha/index.html.

1. {**ML&BIGData**} "Dynamic algorithms for constrained submodular optimization with polylogarithmic update time" (joint work with Kiarash Banihashem, Leyla Biabani, Samira Goudarzi, Peyman Jabbarzade, and Morteza Monemizadeh), in *Proceedings of the 40th International Conference on Machine Learning (***ICML***)*, Honolulu, HI, July 2023, to appear.

2. {**ML&BIGData**} "Generalized deductions: making any hierarchical clustering fair and balanced with low cost" (joint work with John P. Dickerson, Marina Knittel, and Max Springer), in *Proceedings of the 40th International Conference on Machine Learning (***ICML***)*, Honolulu, HI, July 2023, to appear.

3. {**ML&BIGData**} " Improved consensus in quantum networks", (joint work with Dariusz Kowalski and Jan Olkowski), in *Proceedings of the 42nd ACM Symposium on Principles of Distributed Computing (***PODC***)*, Orlando, FL, June 2023, brief announcement, to appear.

4. {**ML&BIGData**} "Massively parallel tree embeddings for high dimensional spaces" (joint work with AmirMohsen Ahanchi, Alexandr Andoni, Marina Knittel, and Peilin Zhong), in *Proceedings of the 35th Annual ACM Symposium on Parallelism in Algorithms and Architectures,(***SPAA***)*, Orlando, FL, June 2023, to appear.

5. {**ML&BIGData**} "Location-sensitive string problems in MPC" (joint work with Jacob Gilbert, Hamed Saleh, and Saeed Seddighin), in *Proceedings of the 35th Annual ACM Symposium on Parallelism in Algorithms and Architectures (***SPAA***)*, Orlando, FL, June 2023, to appear.

6. {**ML&BIGData**} "Regular and Dyck languages in MPC" (joint work with Jacob Gilbert), in *Proceedings of the 35th Annual ACM Symposium on Parallelism in Algorithms and Architectures (***SPAA***)*, Orlando, FL, June 2023, brief announcement, to appear.

7. {**ML&BIGData**} "Weighted edit distance computation: strings, trees, and dyck" (joint work with Debarati Das, Jacob Gilbert, Tomasz Kociumaka, and Barna Saha), in *Proceedings of the 55st Annual ACM Symposium on Theory of Computing (***STOC***)*, Orlando, FL, June 2023, to appear.

8. {**Game**} "Analysis of a learning based algorithm for budget pacing" (joint work with Max Springer), in *Proceedings of the 22nd International Conference on Autonomous Agents and Multiagent Systems (***AAMAS***)*, London, UK, May 2023, short paper, to appear.

9. {**ML&BIGData**} "Optimal sparse recovery with decision stumps", (joint work with Kiarash Banihashem and Max Springer), in *Proceedings of the 37th AAAI Conference on Artificial Intelligence (***AAAI***)*, Washington, DC, February 2023, to appear.

10. {**Game**,**ML&BIGData**} "Online algorithms for the Santa Claus problem", (joint work with MohammadReza Khani, Debmalya Panigrahi, and Max Springer), in *Proceedings of the 36th Conference on Neural Information Processing Systems (***NeuIPS***)*, New Orleans, LA, Nov 2022, to appear.

11. {**ML&BIGData**} "$\tilde{O}(n + poly(k))$-time algorithm for distance k tree edit distance" (joint work with Debarati Das, Jacob Gilbert, Tomasz Kociumaka, Barna Saha, and Hamed Saleh), in *Proceedings of the 63rd Annual IEEE Symposium on Foundations of Computer Science (***FOCS***)*, Denver, CO, November 2022, to appear.

12. {**Game**} "Improved communication complexity of fault-tolerant consensus", (joint work with Jan Olkowski and Dariusz R. Kowalski), in *Proceedings of the 54st Annual ACM Symposium on Theory of Computing (***STOC***)*, Rome, Italy, June 2022, to appear.

13. {**ML&BIGData**} "Two is better than one: dual embeddings for complementary product recommendations", (joint work with Giorgi Kvernadze, Putu Ayu Sudyanti, and Nishan Subedi), in *Proceedings of the the 13th IEEE International Conference on Knowledge Graph (***ICKG***)*, Virtual Conference, Worldwide (due to COVID-19), Nov 2022, to appear.

14. {**ML&BIGData**} "Adaptive massively parallel algorithms for cut problems" (joint work with Marina Knittel, Jan Olkowski, and Hamed Saleh), in *Proceedings of the 34th Annual ACM Symposium on Parallelism in Algorithms and Architectures, (***SPAA***)*, Philadelphia, PA, July 2022, to appear.

15. {**ML&BIGData**} "Adaptive massively parallel constant-round tree contraction", (joint work with Marina Knittel, Hamed Saleh, and Hsin-Hao Su), in *Proceedings of the 13th Innovations in Theoretical Computer Science (***ITCS***)*, Berkeley, CA, Feb 2022, to appear.

16. {**Game**} "Generalized stochastic matching", (joint work with Alireza Farhadi and Jacob Gilbert), in *Proceedings of the 36th AAAI Conference on Artificial Intelligence (***AAAI***)*, Virtual Conference, Worldwide (due to COVID-19), February 2022, to appear.

17. {**ML&BIGData**} "Differentially private densest subgraph", (joint work with Alireza Farhadi and Elaine Shi), in *Proceedings of the 25th International Conference on Artificial Intelligence and Statistics (***AISTATS***)*, Virtual Conference, Worldwide (due to COVID-19), March 2022, to appear.

18. **J1**{**Game**} "Fair allocation of indivisible goods: Beyond additive valuations", (joint work with Mohammad Ghodsi, Masood Seddighin, Saeed Seddighin, and Hadi Yami), **Artificial Intelligence**, 303: 103633. 2022.

19. **J2**{**ML&BIGData**} "Approximating edit distance in truly subquadratic time: Quantum and MapReduce." (joint work with Mahdi Boroujeni, Soheil Ehsani, Mohammad Ghodsi, and Saeed Seddighin), **Journal of the ACM**, 68(3): 19:1–19:41, 2021. A preliminary version appeared in *Proceedings of*

*the 29th Annual ACM-SIAM Symposium on Discrete Algorithms (***SODA***)*, New Orleans, LA, January 2018, pages 1170-1189.

20. **J3**{**Game**} "Fair allocation of indivisible goods: improvements and generalizations", (joint work with Mohammad Ghodsi, Masood Seddighin, Saeed Seddighin, and Hadi Yami), **Mathematics of Operations Research**, 46(3): 1038-1053. 2021. A preliminary version appeared in *Proceedings of the 19th ACM Conference on Economics and Computation (***EC***)*, Ithaca, NY, June 2018, pages 539-556.

21. {**Game**} "Almost envy-freeness, envy-rank, and Nash social welfare matchings", (joint work with Alireza Farhadi, Mohammad Latifian, Masoud Seddighin, and Hadi Yami), in *Proceedings of the 35th AAAI Conference on Artificial Intelligence (***AAAI***)*, Virtual Conference, Worldwide (due to COVID-19), February 2021, pages 5355-5362.

22. {**Game**,**ML&BIGData**} "Scalable equilibrium computation in multi-agent influence games on networks", (joint work with Fotini Christia, Michael Curry, Constantinos Daskalakis, Erik Demaine, John Dickerson, Adam Hesterberg, Marina Knittel, and Aidan Milliff), in *Proceedings of the 35th AAAI Conference on Artificial Intelligence (***AAAI***)*, Virtual Conference, Worldwide (due to COVID-19), February 2021, pages 5277-5285.

23. {**ML&BIGData**}"Streaming and Small Space Approximation Algorithms for Edit Distance and Longest Common Subsequence" (joint work with Kuan Cheng, Alireza Farhadi, Zhengzhong Jin, Xin Li, Aviad Rubinstein, Saeed Seddighin, and Yu Zheng), in *Proceedings of the 48th International Colloquium on Automata, Languages and Programming (***ICALP***)*, Glasgow, Scotland, July 2021, pages 54:1-54:20.

24. {**ML&BIGData**}"String matching with wildcards in the massively parallel computation" (joint work with Hamed Saleh, Saeed Seddighin, and Xiaorui Sun), in *Proceedings of the 33rd Annual ACM Symposium on Parallelism in Algorithms and Architectures, (***SPAA***)*, Virtual Conference, Worldwide (due to COVID-19), July 2021, pages 275-284.

25. {**Game**,**ML&BIGData**} "Stochastic matching with few queries: $(1\text{-}\epsilon)$ approximation", (joint work with Soheil Behnezhad and Mahsa Derakhshan), in *Proceedings of the 52st Annual ACM Symposium on Theory of Computing (***STOC***)*, Chicago, IL, June 2020, pages 1111-1124.

26. {**ML&BIGData**}"Approximate maximum matching in random streams" (joint work with Alireza Farhadi, Tung Mai, Anup B. Rao, and Ryan A. Rossi), in *Proceedings of the 31th Annual ACM-SIAM Symposium on Discrete Algorithms (***SODA***)*, Salt Lake City, UT, January 2020, pages 1773-1785.

27. {**Game**,**ML&BIGData**} "Online Pandora's boxes and bandits", (joint work with Hossein Esfandiari, Brendan Lucier, and Michael Mitzenmacher), in *Proceedings of the 23rd International Conference on Artificial Intelligence and Statistics (***AISTATS***)*, Palermo, Sicily, Italy, June 2020, pages 3717-3727.

28. {**ML&BIGData**}"Matching affinity clustering: improved hierarchical clustering at scale with guarantees" (joint work with Marina Knittel), in *Proceedings of the 19th International Conference on Autonomous Agents and Multiagent Systems (***AAMAS***)*, Auckland, New Zealand, May 2020, short paper, pages 1864-1866.

29. **J4**{**NetDsgn**} "Tight bounds for planar strongly connected Steiner subgraph with fixed number of terminals (and extensions)" (joint work Rajesh Chitnis, Andreas Emil Feldmann, and Daniel Marx), **SIAM Journal on Computing**, 49(2): 318-364, 2020.

30. **J5**{**NetDsgn**}"Near-optimal disjoint-path facility location through set cover by pairs" (joint work with Lee Breslau, Ilias Diakonikolas, Nick Duffield, Yu Gu, David S. Johnson, Howard Karloff, Mauricio G. C. Resende, and Subhabrata Sen), **Operations Research**, 68(3): 896-926, 2020.

31. **J6**{**ML&BIGData**} "Inverse Feature Learning: Feature Learning Based on Representation Learning of Error" (joint work with Behzad Ghazanfari and Fatemeh Afghah), **IEEE Access**, 8: 132937-132949, 2020.

32. **J7**{**Game**,**ML&BIGData**} "PIE: A data-driven payoff inference engine for strategic security applications" (joint work with Haipeng Chen, Sarit Kraus, Anshul Sawant, Edoardo Serra, V.S. Subrahmanian, and Yanhai Xiong), **IEEE Transactions on Computational Social Systems**, 7(1): 42-57, 2020.

33. **J8**{**NetDsgn**} "Approximation algorithms for connected maximum cut and related problems" (joint work with Guy Kortsarz, Robert MacDavid, Manish Purohit, and Kanthi K. Sarpatwar), **Theoretical Computer Science**, 814: 74-85, 2020. A preliminary version appeared in *Proceedings of the 23rd Annual European Symposium on Algorithms (***ESA***)*, Patras, Greece, September 2015, pages 693–704.

34. **J9**{**Game**} "From duels to battlefields: computing equilibria of blotto and other games" (joint work with Amirmahdi Ahmadi, Sina Dehghani, Brendan Lucier, Hamid Mahini, and Saeedreza Seddighin), **Mathematics of Operations Research**, 44(4): 1145-1509, 2019. A preliminary version appeared in *Proceedings of the 30th AAAI Conference on Artificial Intelligence (***AAAI***)*, San Francisco, CA,

February 2016, pages 376–382.

35. {**ML&BIGData**} "Exponentially faster massively parallel maximal matching" (joint work with Soheil Behnezhad and David G. Harris), in *Proceedings of the 60th Annual IEEE Symposium on Foundations of Computer Science (***FOCS***)*, Baltimore, MD, October 2019, pages 1637-1649.

36. {**ML&BIGData**} "Fully dynamic maximal independent set with polylogarithmic update time" (joint work with Soheil Behnezhad, Mahsa Derakhshan, Cliff Stein, and Madhu Sudan), in *Proceedings of the 60th Annual IEEE Symposium on Foundations of Computer Science (***FOCS***)*, Baltimore, Md, October 2019, pages 382-405.

37. {**ML&BIGData**} "Lower bounds for external memory sorting via network coding", (joint work with Alireza Farhadi, Kasper Green Larsen, and Elaine Shi), in *Proceedings of the 51st Annual ACM Symposium on Theory of Computing (***STOC***)*, Phoenix, AZ, June 2019, pages 997-1008. Journal version invited to **SIAM Journal on Computing** *special issue* for selected papers from STOC 2019. The paper has also been selected for publication as **Research Highlights in the Communications of the ACM (CACM) 63(10): 97-105, 2020**.

38. {**ML&BIGData**} "$1 + \epsilon$-approximation of tree edit distance in quadratic time", (joint work with Mahdi Boroujeni, Mohammad Ghodsi, and Saeed Seddighin), in *Proceedings of the 51st Annual ACM Symposium on Theory of Computing (***STOC***)*, Phoenix, AZ, June 2019, pages 709-720.

39. {**ML&BIGData**} "Massively Parallel Approximation Algorithms for Edit Distance and Longest Common Subsequence" (joint work with Saeed Seddighin and Xiaorui Sun), in *Proceedings of the 30th Annual ACM-SIAM Symposium on Discrete Algorithms (***SODA***)*, San Diego, CA, January 2019, pages 1654-1672.

40. {**Game**} "Stochastic matching with few queries: new algorithms and tools" (joint work with Soheil Behnezhad, Alireza Farhadi, and Nima Reyhani), in *Proceedings of the 30th Annual ACM-SIAM Symposium on Discrete Algorithms (***SODA***)*, San Diego, CA, January 2019, pages 2855-2874.

41. {**PlanarNet**,**NetDsgn**} "Polynomial-time approximation scheme for minimum k-cut in planar and minor-free graphs" (joint work with MohammadHossein Bateni and Alireza Farhadi), in *Proceedings of the 30th Annual ACM-SIAM Symposium on Discrete Algorithms (***SODA***)*, San Diego, CA, January 2019, pages 1055-1068.

42. {**ML&BIGData**} "Approximating LCS in linear time: beating the $\sqrt{n}$ barrier" (joint work with Masoud Seddighin, Saeed Seddighin, and Xiaorui Sun), in *Proceedings of the 30th Annual ACM-SIAM Symposium on Discrete Algorithms (***SODA***)*, San Diego, CA, January 2019, pages 1181-1200.

43. {**Game**} "Optimal strategies of Blotto games: Beyond convexity", (joint work with Soheil Behnezhad, Avrim Blum, Mahsa Derakhshan, Christos H. Papadimitriou, and Saeed Seddighin), in *Proceedings of the 20th ACM Conference on Economics and Computation (***EC***)*, Phoenix, AZ, June 2019, pages 597-616.

44. {**Game**} "Online Pandora's boxes and bandits", (joint work with Hossein Esfandiari, Brendan Lucier, and Michael Mitzenmacher), in *Proceedings of the 33rd AAAI Conference on Artificial Intelligence (***AAAI***)*, Honolulu, HI, January 2019, pages 1885-1892.

45. {**Game**} "On the efficiency and equilibria of rich Ads", (joint work with Amin Ghiasi, Sebastien Lahaie, and Hadi Yami), in *Proceedings of the 28th International Joint Conference on Artificial Intelligence (***IJCAI***)*, Macau, China, August 2019, pages 301-307.

46. {**Game**} "Computing Stackelberg equilibria of large general-sum games" (joint work with Avrim Blum, Nika Haghtalab, and Saeed Seddighin), in *Proceedings of the 12th International Symposium on Algorithmic Game Theory (***SAGT***)*, Athens, Greece, October 2019, pages 168-182.

47. {**Game**} "Stochastic matching on uniformly sparse graphs" (joint work with Soheil Behnezhad, Mahsa Derakhshan, Alireza Farhadi, and Nima Reyhani), in *Proceedings of the 12th International Symposium on Algorithmic Game Theory (***SAGT***)*, Athens, Greece, October 2019, pages 357-373.

48. {**ML&BIGData**} "Streaming and massively parallel algorithms for edge coloring", (joint work with Soheil Behnezhad, Mahsa Derakhshan, Marina Knittel, and Hamed Saleh), in *Proceedings of the 27th Annual European Symposium on Algorithms (***ESA***)*, Munich/Garching, Germany, September 2019, pages 15:1-15:14. A short version also appeared in *Proceedings of the 33rd International Symposium on Distributed Computing (***DISC***)*, October 2019, Budapest, Hungary, pages 36:1-36:3.

49. {**ML&BIGData**} "Massively parallel computation of matching and MIS in sparse graphs", (joint work with Sebastian Brandt, Soheil Behnezhad, Manuela Fischer, Richard Karp, and Jara Uitto), in *Proceedings of the 38th ACM Symposium on Principles of Distributed Computing (***PODC***)*, Toronto, Canada, August 2019, pages 481-490.

50. **J10**{**Game**} "Fair allocation of indivisible goods to asymmetric agents", (joint work with Alireza

Farhadi, Mohammad Ghodsi, Sebastien Lahaie, David M. Pennock, Masoud Seddighin, Saeed Seddighin, and Hadi Yami), **Journal of Artificial Intelligence Research**, 64: 1-20, 2019. A preliminary version appeared in *Proceedings of the 16th International Conference on Autonomous Agents and Multiagent Systems (***AAMAS***)*, Sao Paulo, Brazil, May 2017, pages 1535–1537.

51. {**ML&BIGData**} "Fast algorithms for knapsack via convolution and prediction", (joint work MohammadHossein Bateni, Saeed Seddighin, and Cliff Stein), in *Proceedings of the 50th Annual ACM Symposium on Theory of Computing (***STOC***)*, Los Angeles, CA, June 2018, pages 1269-1282. **This paper got invited to Highlights of Algorithms (HALG 2019)**.

52. {**Game**}" Prophet secretary for combinatorial auctions and matroids" (joint work with Soheil Ehsani, Thomas Kesselheim, and Sahil Singla), in *Proceedings of the 29th Annual ACM-SIAM Symposium on Discrete Algorithms (***SODA***)*, New Orleans, LA, January 2018, pages 700–714.

53. {**Game**}"Envy-free chore division for an arbitrary number of agents" (joint work with Sina Dehghani, Alireza Farhadi, and Hadi Yami), in *Proceedings of the 29th Annual ACM-SIAM Symposium on Discrete Algorithms (***SODA***)*, New Orleans, LA, January 2018, pages 2564-2583.

54. {**Game**}" From battlefields to presidential elections: winning strategies of blotto and auditing games" (joint work with Soheil Behnezhad, Avrim Blum, Mahsa Derakhshan, Mohammad Mahdian, Christos H. Papadimitriou, Ronald L. Rivest, Saeed Seddighin, and Philip B. Stark), in *Proceedings of the 29th Annual ACM-SIAM Symposium on Discrete Algorithms (***SODA***)*, New Orleans, LA, January 2018, pages 2291–2310.

55. {**Game**} "Spatio-temporal security games beyond one dimension", (joint work with Soheil Behnezhad, Mahsa Derakhshan, and Saeed Seddighin), in *Proceedings of the 19th ACM Conference on Economics and Computation (***EC***)*, Ithaca, NY, June 2018, pages 411-428.

56. {**Game**} "Frugal Auction Design for Set Systems: Vertex Cover and Knapsack", (joint work with MohammadReza Khani and Saeed Seddighin), in *Proceedings of the 19th ACM Conference on Economics and Computation (***EC***)*, Ithaca, NY, June 2018, pages 645-662.

57. {**NetDsgn**}"Greedy algorithms for online survivable network design?" (joint work with Sina Dehghani, Soheil Ehsani, Vahid Liaghat, and Saeed Seddighin), in *Proceedings of the 45th International Colloquium on Automata, Languages and Programming (***ICALP***)*, Prague, Czech Republic, July 2018, pages 152:1-152:14.

58. {**ML&BIGData**}"MapReduce algorithms for massive trees" (joint work with MohammadHossein Bateni, Soheil Behnezhad, Mahsa Derakhshan, and Vahab Mirrokni), in *Proceedings of the 45th International Colloquium on Automata, Languages and Programming (***ICALP***)*, Prague, Czech Republic, July 2018, pages 162:1-162:4.

59. {**Game**} "On the complexity of chore division", (joint work with Alireza Farhadi), in *Proceedings of the 27th International Joint Conference on Artificial Intelligence (***IJCAI***)*, Stockholm, Sweden, July 2018, pages 226-232.

60. **J11**{**NetDsgn**}"Improved approximation algorithms for (budgeted) node-weighted Steiner problems" (joint work with MohammadHossein Bateni and Vahid Liaghat), **SIAM Journal on Computing**, 47(4): 1275–1293 (2018). A preliminary version appeared in *Proceedings of the 40th International Colloquium on Automata, Languages and Programming (***ICALP***)*, Riga, Latvia, July 2013, pages 81–92.

61. {**ML&BIGData**,**NetDsgn**}"Streaming algorithms for estimating the matching size in planar graphs and beyond" (joint work with Hossein Esfandiari, Vahid Liaghat, Morteza Monemizadeh and Krzysztof Onak), **ACM Transactions on Algorithms**, 14(4): 48:1–48:23 (2018). A preliminary version appeared in *Proceedings of the 26th Annual ACM-SIAM Symposium on Discrete Algorithms (***SODA***)*, San Diego, CA, January 2015, pages 1217–1233.

62. **J12**{**NetDsgn**} "On maximum leaf trees and connections to connected maximum cut problems" (joint work with Rajiv Gandhi, Guy Kortsarz, Manish Purohit, Kanthi K. Sarpatwar), **Information Processing Letters**, 129: 31–34 (2018).

63. {**ML&BIGData**} "Affinity clustering: hierarchical clustering at scale", (joint work MohammadHossein Bateni, Soheil Behnezhad, Mahsa Derakhshan, Raimondas Kiveris, Silvio Lattanzi, and Vahab Mirrokni), in *Proceedings of 31st Annual Conference on Neural Information Processing Systems (***NIPS***)*, Long Beach, CA, December 2017, pages 6867–6877.

64. {**Game**} "Beating 1-1/e for ordered prophets", (joint work Melika Abolhassani, Soheil Ehsani, Hossein Esfandiari, Robert D. Kleinberg, and Brendan Lucier), in *Proceedings of the 49th Annual ACM Symposium on Theory of Computing (***STOC***)*, Montreal, Canada, June 2017, pages 61–71.

65. {**Game**} "A polynomial time algorithm for spatio-temporal security games", (joint work with Soheil

Behnezhad, Mahsa Derakhshan, and Aleksandrs Slivkins), in *Proceedings of the 18th ACM Conference on Economics and Computation (***EC***)*, Cambridge, MA, June 2017, pages 694–714.

66. {**Game**}"Stochastic k-server: how should Uber work?" (joint work with Sina Dehghani, Soheil Ehsani, Vahid Liaghat, and Saeed Seddighin), in *Proceedings of the 44th International Colloquium on Automata, Languages and Programming (***ICALP***)*, Warsaw, Poland, July 2017, pages 126:1–126:14.

67. {**Game**} "Faster and simpler algorithm for optimal strategies of Blotto game", (joint work with Soheil Behnezhad, Sina Dehghani, Mahsa Derakhshan, and Saeedreza Seddighin), in *Proceedings of the 31st AAAI Conference on Artificial Intelligence (***AAAI***)*, San Francisco, CA, February 2017, pages 369–375.

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PATENTS

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   US Patent 8,316,106 granted Nov 20, 2012, Co-inventor(s): MohammadHossein Bateni.
3. **Network aware forward caching II**,
   US Patent 8,671,197 granted Mar 11, 2014, Co-inventor(s): Jeffrey Erman, Alexandre Gerber, Dan Pei, and Oliver Spatscheckwith.
4. **Designing minimum total cost networks using iterative rounding approximation methods**,
   US Patent 8,238,251 granted Aug 7, 2012.
5. **Methods and apparatus to implement scalable routing in network communication systems**,
   US Patent 8,218,454 granted Jul 10, 2011, Co-inventor(s): MohammadHossein Bateni, Alexandre Gerber, and Subhabrata Sen.
6. **Network aware forward caching I**,
   US Patent 8,312,141 granted Nov 13, 2012, Co-inventor(s): Jeffrey Erman, Alexandre Gerber, Dan Pei, and Oliver Spatscheckwith.
7. **Approximating node-weighted Steiner network of terminals**,
   US Patent 7,933,224 granted Apr 26, 2011, Co-inventor(s): Erik D. Demaine and Philip Klein.
8. **Scalable multiprotocol label switching based on virtual private networks and methods to implement the same**,
   US Patent 7,796,607 granted Sep 14, 2010, Co-inventor(s): Alexandre Gerber, Changhoon Kim, Carsten Lund, Dan Pei, and Subhabrata Sen.
9. **Wireless LAN cell breathing**,
   US Patent 7,715,353 granted May 11, 2010, Co-inventor(s): Paramvir Bahl, Kamal Jain, Vahab S. Mirrokni, Lili Qui, and Amin Saberi.
10. **Mechanism which allows trading digital goods with no incentive for buyers to sell the good for their own profit or reshare it**,
    Provisional US Patent 62/215,157, granted Sep 7, 2015, Co-inventor(s): Melika Abolhassani.
11. **News posting by strategic users in a social network**,
    Pending patent with application number 12/636,237, Filed December 2009, Co-inventor(s): Mangesh Gupte, Lu Han, Liviu Iftode, Pravin Shankar, and Raluca Ursu.
12. **Generalized deadlock resolution in databases**,
    Pending patent with application number 11/271,130, Filed November 2005, Co-inventor(s): Kamal Jain and Kunal Talwar.
13. **Optimal social network Ad allocation using hyperbolic embedding**,

Pending patent with application number A1/20170352061, Filed December 2017, Co-inventor(s): John S. Baras, Peixin Gao, and Hui Miao.

INVITED TALKS AT RESEARCH INSTITUTIONS AND UNIVERSITIES (85 TALKS)

Feb.	2023	"Massively Parallel Algorithms for Maximal Matching and Edit Distance", Georgetown University, Washington, DC.
Jun.	2022	"Massively Parallel Algorithms for Maximal Matching and Edit Distance", Institute for Mathematical Sciences (IMS), National University of Singapore, Singapore.
May.	2022	"Massively Parallel Algorithms for Maximal Matching and Edit Distance", University of Warsaw, Poland.
Feb.	2019	"Online Decision-making and Auctions: Prophets & Secretaries", Google Market Algorithms Workshop, Mountain View, CA.
Oct.	2018	" Prophet-Inequality Setting with Applications to Ad Allocation", Amazon, Seattle, CA.
May.	2018	"Online Decision-making: Prophets & Secretaries", Flexible Network Design Workshop, College Park, MD.
Apr.	2018	"Online Decision-making: Prophets & Secretaries", Airbnb, San Francisco, CA.
Jan.	2018	"Online Decision-making: Prophets & Secretaries", Amazon, Seattle, CA.
Dec.	2017	"Online Decision-making: Prophets & Secretaries", Dynamic Pricing Workshop, Santiago de Chile, Chile.
Dec.	2017	"Online Decision-making: Prophets & Secretaries", Simons Institute for the Theory of Computing, Berkeley, CA.
Dec.	2017	"Online Decision-making: Prophets & Secretaries", Simons Institute for the Theory of Computing, Berkeley, CA.
Jun.	2017	"Algorithm Design and Learning for Real-world", Uber, Pittsburgh, PA.
Jun.	2017	"Parameterized and Promised Streaming: Making Big Data More Accessible", NII Shonan Center, Japan.
May.	2017	"From Presidential Elections to Battlefields: Computing Optimal Strategies in Blotto, Security, and Other Games", Google Research, Mountain View, CA.
Mar.	2017	"From Presidential Elections to Battlefields: Computing Optimal Strategies in Blotto, Security, and Other Games", Columbia Computer Science Department, New York City, NY.
Oct.	2016	"From Presidential Elections to Battlefields: Computing Equilibria of Blotto and Other Games", UC Berkeley Industrial Engineering and Operations Research Department, Berkeley, CA.
Sep.	2016	"Algorithm Design with Knowledge: Secretaries and Prophets", Distinguished talk at Computer Engineering's 30th Anniversary and Sharif University's 50th Anniversary, Sharif University of Technology, Tehran.
Jul.	2016	"From Duels to Battefields: Computing Equilibria of Blotto and Other Games", Flexible Network Design Workshop, Amsterdam, Netherlands.
May.	2016	"From Duels to Battefields: Computing Equilibria of Blotto and Other Games", Johns Hopkins University, Baltimore, MD.
Dec.	2015	"Parameterized and Promised Streaming: Making Big Data More Accessible", Microsoft Research, New York City, NY.
Dec.	2015	"Parameterized and Promised Streaming: Making Big Data More Accessible", Microsoft Research, New York City, NY.
Nov.	2015	"Approximability and Fixed-Parameter Tractability: Survey of Connections", Banff International Research Station, Alberta, Canada.
Nov.	2015	"Parameterized and Promised Streaming: Making Big Data More Accessible", Simons Institute for the Theory of Computing, Berkeley, CA.
Oct.	2015	"Parameterized and Promised Streaming: Making Big Data More Accessible", Charles University, Prague, Czech Republic.
Oct.	2015	"Parameterized and Promised Streaming: Making Big Data More Accessible", University of Maryland, College Park, MD.
Sep.	2015	"Parameterized and Promised Streaming: Making Big Data More Accessible", Google Research, New York City, NY.
Jun.	2015	"The Price of Anarchy in Basic Network Creation Games", ACM EC'15 Tutorial, Portland, OR.
Apr.	2015	"Parameterized and Promised Streaming: Matching and Vertex Cover", Johns Hopkins University, Baltimore, MD.
Nov.	2014	"Parameterized and Promised Streaming: Matching and Vertex Cover", University of Pennsylvania, Philadelphia, PA.

Nov. 2014   "Parameterized Streaming: Matching and Vertex Cover", Optimality and Tight Results in Parameterized Complexity Workshop, Dagstuhl, Germany.

Jul. 2014   "Near-optimal Online Algorithms for Prize-Collecting Steiner Problems", Flexible Network Design Workshop, Lugano, Switzerland.

May 2014   "Fixed-Parameter and Approximation Algorithms: A New Look", Workshop on Frontiers and Connections between Parametrization and Approximation, Bertinoro, Italy.

Nov. 2013   "Contraction and Minor Graph Decomposition and Their Algorithmic Applications", IBM T.J. Watson Research Center, Yorktown, NY.

Nov. 2013   "Contraction and Minor Graph Decomposition and Their Algorithmic Applications", Microsoft Research, Redmond, WA.

Oct. 2013   "Contraction and Minor Graph Decomposition and Their Algorithmic Applications", **FOCS 2013 Tutorial on THE THEORY THAT I FOUNDED IN MY PH.D. THESIS, namely Bidimensional Structures: Algorithms and Combinatorics**, Berkeley, CA.

Oct. 2013   "Online Node-weighted Steiner Forest in Planar Graphs and Extensions", Algorithms for Optimization Problems in Planar Graphs, Dagstuhl, Germany.

Jul. 2013   "Online Node-Weighted Steiner Forest and Extensions via Disk Paintings", Flexible Network Design Workshop, Fields Institute, Toronto, Canada.

Oct. 2012   "Minimizing Movement", Wayne State University, Detroit, MI.

Oct. 2012   "Minimizing Movement: Approximability and Fixed Parameter Tractability", Maryland Theory Day, MD.

Jul. 2012   "Prophet-Inequality Setting with Applications to Ad Allocation", Flexible Network Design Workshop, Warsaw, Poland.

May 2012   "Prophet-Inequality Setting with Applications to Ad Allocation", Lorentz International Center for workshops in the Sciences, Netherlands.

Aug. 2011   "Prophet-Inequality Setting with Applications to Ad Allocation", University of Toronto, Canada.

Jul. 2011   "Prophet-Inequality Setting with Applications to Ad Allocation", Google Research, New York City, NY.

Jun. 2011   "Prize-collecting Frameworks", Workshop on Approximation Algorithms: The Last Decade and the Next, Princeton, NJ.

Feb. 2011   "Prize-collecting Clustering and Algorithmic Applications", NII Shonan Center, Japan.

Mar. 2010   "Minimizing Movement", Computer Science Department, Brown University.

Nov. 2009   "Online Auctions for Dynamic Environments", Computer Science Department, University of Maryland.

Oct. 2009   "Improved approximation algorithms for prize-collecting Steiner tree and TSP", Microsoft Research, Redmond.

Aug. 2009   "Node-weighted Steiner Tree and Group Steiner Tree in Planar Graphs", Meeting of the International Symposium for Mathematical Programming, Chicago, IL.

Oct. 2008   "Network Creation Games", INFORMS Annual Meeting 2008, Washington, DC.

Feb. 2008   "Approximation Algorithms for Non-Uniform Buy-at-Bulk Network Design and Related Problems", Computer Science and Engineering Department, Pennsylvania State University.

Dec. 2007   "Algorithms for Wireless Networks", Institut fr Informatik, Universitt Freiburg, Freiburg, Germany.

Nov. 2007   "Approximation Algorithms for Non-Uniform Buy-at-Bulk Network Design and Related Problems", AT&T Labs - Research.

Oct. 2007   "Algorithmic Graph Minor Theory", Fall School on Algorithmic Graph Structure Theory, Berlin, Germany.

Apr. 2007   "Plane Embeddings of Planar Graph Metric", School of Computer Science, McGill Univresity, Montreal, Canada.

Apr. 2007   "Algorithms for Wireless Network Design", College of Computer Science, Northeastern University.

Dec. 2006   "Algorithms for Wireless Networks", INRIA, Nice, France.

Dec. 2006   "Approximation Algorithms for Non-Uniform Buy-at-Bulk Network Design", INRIA, Nice, France.

Nov. 2006   "Algorithms for Wireless Network Design", Department of Computer Science, University of Pittsburgh.

Nov. 2006   "Approximation Algorithms for Non-Uniform Buy-at-Bulk Network Design and Related Prob-

lems", Theory Lunch, Carnegie Mellon University.

Oct. 2006 "Bidimensionality Theory and Algorithmic Graph Minor Theory", BIRS Workshop on Topological Graph Theory and Crossing Numbers, Banff, Canada.

Oct. 2006 "Approximation Algorithms for Non-Uniform Buy-at-Bulk Network Design and Related Problems", Workshop on Flexible Network Design, Bertinoro, Italy.

Aug. 2006 "Auctions for dynamic environments: WiFi, last-minute tickets and grid computing", Workshop on Network Design: Optimization and Algorithmic Game Theory, Montreal, Canada.

Apr. 2006 "Auctions for dynamic environments: WiFi, last-minute tickets and grid computing", The Joint ALADDIN/Theory/Operations Research Seminar, Carnegie Mellon University.

Apr. 2006 "(Graph) Algorithms for Wireless Networks", AT&T Labs - Research.

Mar. 2006 "Plane Embeddings of Planar Graph Metric", Theory Seminar, Carnegie Mellon University.

Mar. 2006 "Fast Algorithms for Hard Graph Problems: Bidimensionality, Minors, and (Local) Treewidth", Theory Seminar, University of Waterloo.

Oct. 2005 "(Graph) Algorithms for Wireless Networks", Flexible Network Design Workshop, Princeton University.

Apr. 2005 "(Graph) Algorithms for Wireless Networks", Computer Science Seminar, University of Southern California.

Apr. 2005 "(Graph) Algorithms for Wireless Networks", Computer Science Seminar, University of California at San Diego.

Feb. 2005 "Fast Algorithms for Hard Graph Problems: Bidimensionality, Minors, and (Local) Treewidth", Theory Seminar, Cornell University.

Jan. 2005 "Fast Algorithms for Hard Graph Problems: Bidimensionality, Minors, and (Local) Treewidth", The Joint ALADDIN/Theory/Operations Research Seminar, Carnegie Mellon University.

Jan. 2005 "Fast Algorithms for Hard Graph Problems: Bidimensionality, Minors, and (Local) Treewidth", Theory Seminar, University of Washington.

Dec. 2004 "Fast Algorithms for Hard Graph Problems: Bidimensionality, Minors, and (Local) Treewidth", Department of Mathematical Sciences, IBM T.J. Watson Research Center.

Nov. 2004 "Fast Algorithms for Hard Graph Problems: Bidimensionality, Minors, and (Local) Treewidth", Theory Seminar, University of California, Berkeley.

Nov. 2004 "Fast Algorithms for Hard Graph Problems: Bidimensionality, Minors, and (Local) Treewidth", Algorithms Seminar, Stanford University.

Jul. 2004 "Online Auctions, Strategyproofness and Random Valuations", Theory Group, Microsoft Research.

Nov. 2002 "Approximation and fixed parameter algorithms for generalizations of planar graphs", CS Principles and Methodologies Group, IBM Almaden Research Center.

Aug. 2002 "Approximation and fixed parameter algorithms for generalizations of planar graphs", Department of Mathematical Sciences, IBM T.J. Watson Research Center.

Editorial Work

1. Editor-in-Chief, **Algorithmica**, 2022–present.
2. Editor, **Journal of Computer and System Sciences**, 2020–present.
3. Editor, **SIAM Journal on Discrete Mathematics**, 2016–present.
4. Editor, **Algorithmica**, 2014–present.
5. Editor, **Networks**, 2016–present.
6. Editor, **Algorithms**, 2008–present.
7. Editor, **Encyclopedia of Algorithms**, 2013–2016.
8. Editor, **ISRN Discrete Mathematics**, 2013–2014
9. Guest editor, Special Issue of Selected Papers from ESA 2013, **Algorithmica**.
10. Guest editor, Special Issue of Selected Papers from SODA 2008, **ACM Transactions on Algorithms (TALG)**.
11. Guest editor, Special Issues of Selected Papers from SPAA 2017, **ACM Transactions on Parallel Computing (TOPC)**.

Conference and Workshop Committees

1. Senior program committee, the 36rd AAAI Conference on Artificial Intelligence (AAAI), Washington, DC, February 2023.
2. Senior program committee, the 16th ACM International Conference on Web Search and Data Mining(WSDM), Singapore, February 2023.

3. Program committee, the 36th International Symposium on Distributed Computing (DISC), Virtual Conference (due to COVID-19), October 2022.
4. Organizing committee, SIAM Conference on Discrete Mathematics (DM), Pittsburgh, PA, June 13-16, 2022.
5. Program committee, the 31st Web Conference (WWW), Lyon, France, April 2022.
6. Program committee, the 29st European Symposium on Algorithms (ESA), Lisbon, Portugal, September 2021.
7. **Steering committee**, ACM Symposium on Parallel Algorithms and Architectures, 2017–2020.
8. Program committee, the 33rd AAAI Conference on Artificial Intelligence (AAAI), New York, February 2020.
9. Program committee, the 27th International Joint Conference on Artificial Intelligence (IJCAI), Stockholm, Sweden, July 2018.
10. Program committee, the 29th International Symposium on Algorithms and Computation (ISAAC), Jiaoxi, Taiwan, December 2018.
11. Program committee, the 24th International Computing and Combinatorics Conference (COCOON), Qingdao, China, July 2018.
12. Technical program committee, the 36th Annual IEEE International Conference on Computer Communications (INFOCOM), Honolulu, HI, April 2018.
13. Co-organizer, the 9th Workshop on Flexible Network Design, College Park, MD, May 2018.
14. **Chair of program committee**, the 29th Annual ACM Symposium on Parallel Algorithms and Architectures, (SPAA), Washington, DC, July 2017.
15. Program committee, the 28th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA), Barcelona, Spain, January 2017.
16. Program committee, the 31st IEEE International Parallel and Distributed Computing Conference (IPDPS), Orlando, FL, June 2017.
17. Technical program committee, the 36th Annual IEEE International Conference on Computer Communications (INFOCOM), Atlanta, GA, May 2017.
18. Program committee, the 2nd International Conference on Topics in Theoretical Computer Science (TTCS), Tehran, August 2017.
19. Program committee, the 22nd Annual International Computing and Combinatorics Conference (COCOON), Ho Chi Minh, Vietnam, August 2016.
20. Program committee, the 10th International Conference on Language and Automata Theory (LATA), Prague, Czech, March 2016.
21. Technical program committee, the 35th Annual IEEE International Conference on Computer Communications (INFOCOM), San Francisco, CA, April 2016.
22. Co-organizer, Capital Area Theory Day, Baltimore, MD, May 2016.
23. Co-organizer: ACM Conference in Economics and Computation (EC) 2015 Tutorial on "Network Creation Games: How Does the Internet Form?", Portland, OR, June 2015.
24. Program committee, the 27th Annual ACM Symposium on Parallel Algorithms and Architectures, (SPAA), Portland, OR, 2015.
25. Program committee, the 42nd International Colloquium on Automata, Languages and Programming (ICALP), Kyoto, Japan, July 2015.
26. Technical program committee, the 34th Annual IEEE International Conference on Computer Communications (INFOCOM), Hong Kong, April 2015.
27. **Co-chair of program committee**, The First International Conference on Topics in Theoretical Computer Science (TTCS), Tehran, August 2015.
28. Program committee, the 9th International Workshop on Algorithms and Computation (WALCOM), Bangladesh, February 2015.
29. Program committee, the 15th ACM Conference on Economics and Computation (ACM EC), Palo Alto, CA, June 2014.
30. Technical program committee, the 33rd Annual IEEE International Conference on Computer Communications, (INFOCOM), Toronto, Canada, April 2014.
31. Co-organizer, FOCS 2013 Workshop on Bidimensional Structures: Algorithms and Combinatorics, Berkeley, CA, October 2013.
32. Program committee, the 45th ACM Symposium on Theory of Computing, (STOC), Stanford, CA, June 2013.
33. Program committee, the 21st European Symposium on Algorithms (ESA), Sophia Antipolis, France,

September 2013.

34. Program committee, the 16th International Workshop on Approximation Algorithms for Combinatorial Optimization Problems (APPROX), Berkeley, CA, August 2013.
35. Technical program committee, the 32nd Annual IEEE International Conference on Computer Communications, (INFOCOM), Turin, Italy, April 2013.
36. Program committee, the 2nd International Conference on Advances in Computing, Communications, and Informatics (ICACCI), Chennai, India, August 2013.
37. Program committee, the 8th Workshop on Internet & Network Economics, (WINE), Liverpool, UK, December 2012.
38. Co-organizer, Seminar on Bidimensional Structures: Algorithms, Combinatorics and Logic, Schloss Dagstuhl, Germany, March 2013.
39. Technical program committee, the 31th Annual IEEE International Conference on Computer Communications, (INFOCOM), Orlando, FL, April 2012.
40. Program committee, the 23st Annual ACM Symposium on Parallel Algorithms and Architectures, (SPAA), San Jose, CA, June 2011.
41. Co-organizer, Workshop on Approximation Algorithms: The Last Decade and the Next, Princeton, NJ, June 2011.
42. Program committee, the 16th Annual International Computing and Combinatorics Conference (CO-COON), Nha Trang, Vietnam, July 2010.
43. Co-organizer, Seminar on Fixed-Parameter and Approximation Algorithms, Schloss Dagstuhl, Germany, December 2009.
44. Organizing Network Design and Algorithms Session, INFORMS, San Diego, CA, October 2009.
45. Program committee, the 19th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA), San Francisco, CA, January 2008.
46. Program committee, International Workshop on Parameterized and Exact Computation (IWPEC), Victoria, Canada, May 2008.
47. Organizing Network Design Session, INFORMS, Washington, DC, October 2008.
48. Program committee, International Conference on Wireless Algorithms (WASA), Dallas, TX, USA, October 2008.
49. Organizing Optimization in Wireless Networks Session, INFORMS, Pittsburgh, PA, November 2006.
50. Program committee, the 2nd ACIS International Workshop on Self-Assembling Wireless Networks (SAWN), Las Vegas, Nevada, June 2006.
51. Program committee, the 11th International CSI Computer Conference (CSICC), Tehran, January 2006.

Panels and Grant Reviews

1. Review for Research Grants Council of Hong Kong, 2020.
2. Review for Research Grants Council of Hong Kong, 2019.
3. Review for Chilean National Science and Technology Commission, 2018.
4. Review for Research Grants Council of Hong Kong, 2018.
5. Panelist for NSF CCF Algorithmic Foundation, February 2017.
6. Review for Research Grants Council of Hong Kong, 2017.
7. Review for European Research Council (ERC), 2016.
8. Panelist for NSF CCF Algorithmic Foundation, February 2016.
9. Panelist for NSF CCF Algorithmic Foundation, January 2015.
10. Panelist for NSF CCF Algorithmic Foundation, November 2014.
11. Panelist for NSF CCF Algorithmic Foundation, March 2014.
12. Review for European Research Council (ERC) 2014.
13. Panelist for NSF CCF Algorithmic Foundation, October 2011.
14. Review for Research Grants Council of Hong Kong, 2007.

Department and University Service at UMD

1. Senator, UMD University Senate, 2022-2025.
2. Chair, Promotion Committee for Assistant Prof. Soheil Feizi, 2022-2023.
3. Chair of Field Committee, Algorithms and Theory of Computing Group, 2022-2023.
4. Member, CMSC Graduate Admission Committee, 2022-2023.
5. Chair, UMD CS Department Hiring Committee for Data Science, 2021-2022.
6. Member, UMD Industrial Fellowship Nomination Selection Committee, 2021.

7. Member, UMD Graduate Faculty Mentor of the Year Award Committee, 2018.
8. Member, UMD Brin and Capital One Search Committee, 2018.
9. Chair of Field Committee, Algorithms and Theory of Computing Group, 2015-2016.
10. Member, CMSC Graduate Admission Committee, 2011-2021.
11. Faculty Member of University of Maryland Student Honor Council, 2012-2018.
12. Member, University of Maryland Senate Educational Affairs Committee, June 2013–May 2015.
13. University of Maryland ACM Faculty Representative, 2012-2017.
14. Organizer, Weekly Capital Area Theory Seminar (CATS), Fall 2010- Spring 2014.
15. Member, Organizing Committee of the 40th Anniversary of UMD CS Department, 2013.
16. Member, CMSC Committee to Review PhD Proposals and MS Scholarly Papers, 2013.
17. Coach, University of Maryland ACM-ICPC Programming Contest Team, 2010-2022. **Our team advanced six times to World Finals in 2010, 2012, 2013, 2014, 2016, 2017 and won Mid-Atlantic ACM-ICPC Regional contest in 2012. The team was ranked 27 and won the "First to Solve Problem J Award" in World Finals held in June 2013. The team was ranked 64 in World Finals held in May 2015 and ranked 56 in World Finals held in May 2017.**.
18. Member, CS EduTech Working Group, 2012.
19. Member, University of Maryland High School Programming Committee, 2011-2017.
20. CS Faculty Representative, CMNS Scholarship Interview Reception, March 7, 2012.
21. Faculty Speaker, CMNS Undergraduate Recruiting Day, March 30, 2012.
22. Member, CMNS Committee for Recruiting of Highly Talented Undergrads, 2012.
23. Member, Revising Mandatory Undergrad Algorithms Courses (CMSC 250&351) Committee, 2011.

Community Engagements and Service

1. Elected Board Member of Silverton Condominium (with 210 Condos), Silver Spring, MD, 2014–2017.

Software in Public Domain

BigDND: Big Dynamic Network Data: Networks are everywhere, and there is an increasing amount of data about networks viewed as graphs: nodes and edges/connections. But this data typically ignores a third key component of networks: time. This repository provides **free, big datasets for real-world networks** viewed as a dynamic (multi)graph, with two types of temporal data:

1. A timeseries of *instantaneous edge events*, such as messages sent between people. Many such events can occur between the same pair of nodes.
2. Timestamped *edge insertions and edge deletions*, such as friending and defriending in a social network. Generally only one such edge can exist at any specific time, but the same edge can be added and deleted multiple times.

See http://projects.csail.mit.edu/dnd/ for more details.

Ranking of CS Departments based on the Number of Papers in Theoretical Computer Science We feel there is a lack of transparency and well-defined measures in the methods used by U.S. News to rank CS departments in theoretical computer science (and other similar rankings). Over the past several months we have developed a ranking based on a hard, measurable method for the top 50 U.S. universities. See http://projects.csail.mit.edu/dnd/ranking/ for more details.

Served as Referee

Journals: Journal of the ACM, SIAM Journal on Computing, SIAM Journal on Discrete Mathematics, Combinatorica, Mathematics of Operation Research, Operations Research, Games and Economic Behavior, ACM Transactions on Algorithms, Algorithmica, Journal of Combinatorial Theory, Series B, Theory of Computing, Communications of the ACM, Random Structures and Algorithms, Theoretical Computer Science, Journal of Graph Algorithms and Applications, Journal of Discrete Algorithms, Journal of Graph Theory, Networks, IEEE/ACM Transactions on Networking, ACM Transactions on Sensor Networks, IEEE Journal on Selected Areas in Communications, IEEE Transactions on Automatic Control, IEEE Transactions on Parallel and Distributed Systems, IEEE Signal Processing Letters, Discrete Mathematics, Discrete Applied Mathematics, Journal of Parallel and Distributed Computing, Operations Research Letters, Information Processing Letters, The Australasian Journal of Combinatorics.

Conferences: IEEE Symposium on Foundations of Computer Science (FOCS), ACM Symposium on Theory of Computing (STOC), ACM-SIAM Symposium on Discrete Algorithms (SODA), ACM Symposium on Computational Geometry (SoCG), Innovations in Theoretical Computer Science (ITCS), IEEE

Conference on Computational Complexity (CCC), ACM Symposium on Parallelism in Algorithms and Architectures (SPAA), ACM Conference on Electronic Commerce (EC), International Conference on Integer Programming and Combinatorial Optimization (IPCO), International Colloquium on Automata, Languages and Programming(ICALP), Annual European Symposium on Algorithms (ESA), Foundations of Software Technology and Theoretical Computer Science (FSTTCS), Scandinavian Workshop on Algorithm Theory (SWAT), The IEEE Conference on Computer Communications (INFOCOM), ACM SIGKDD International Conference on Knowledge Discovery and Data (KDD), International Workshop on Approximation Algorithms for Combinatorial Optimization Problems (APPROX), Scandinavian Workshop on Algorithm Theory (SWAT), Latin American Theoretical Informatics Symposium (LATIN), International Computing and Combinatorics Conference (COCOON), International Symposium on Mathematical Foundations of Computer Science (MFCS), Symposium on Theoretical Aspects of Computer Science (STACS), International Symposium on Algorithms and Computation (ISAAC), IEEE International Conference on Communications (ICC), Workshop on Graph Theoretic Concepts in Computer Science (WG), Workshop on Algorithm Engineering and Experimentation (ALENEX), International Conference on Parallel Processing (ICPP), International Workshop on Approximation and Online Algorithms (WAOA), International Workshop on Parameterized and Exact Computation (IWPEC), The International Conferences on Theory and Applications of Satisfiability Testing (SAT).

PROFESSIONAL MEMBERSHIPS

Association for Computing Machinery (ACM)
IEEE Computer Society (IEEE)
European Association for Theoretical Computer Science (EATCS)
Association for the Advancement of Artificial Intelligence (AAAI)
American Association for the Advancement of Science (AAAS)

SOFTWARE SKILLS

Programming in C, C++, Python, Basic, Pascal, PC 8086 Assembly, LISP, Prolog, Maple, Fortran, TeX and LaTeX, PostScript, Standard ML, HTML 4, Java, JavaScript, Matlab, Mathematica, DirectX.
Experienced in working on Unix, Linux and Windows operating systems.