Maryam Aliakbarpour

Curriculum Vitae

https://maryamaliakbarpour.com
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Research Interests

- ◇ Theoretical Computer Science
- ◇ Statistical Learning Theory
- ◇ Differential Privacy
- ◇ Sub-linear Algorithms
- ◇ Property Testing

Education

◇ **Massachusetts Institute of Technology (MIT)** — Cambridge, USA
Ph.D. in Computer Science — Sep 2015 - Sep 2020
Thesis: Distribution Testing: Classical and New Paradigms
Advisor: **Prof. Ronitt Rubinfeld**

◇ **Massachusetts Institute of Technology (MIT)** — Cambridge, USA
M.S. in Electrical Engineering and Computer Science — Sep 2013 - Sep 2015
Thesis: Learning and Testing Junta Distributions over Hypercubes
Advisor: Prof. Ronitt Rubinfeld

◇ **Sharif University of Technology** — Tehran, Iran
B.S. in Computer Engineering - Software — Sep 2009 - June 2013

Work Experiences

- ◇ Michael B. Yuen and Sandra A. Tsai **Assistant Professor** — July 2023 - present
  Department of Computer Science at **Rice University**
- ◇ **Postdoctoral** Scholar at **Boston University/Northeastern University** — Sep 2021 - June 2023
- ◇ **Postdoctoral** Research Associate at **UMass Amherst** — Sep 2020 - Aug 2021
- ◇ Visiting participant of at **Simons Institute, UC Berkeley** — Fall 2020
  Probability, Geometry, and Computation in High Dimensions Program
- ◇ Summer internship at **Google** Sunnyvale, CA, USA — Summer 2017
- ◇ Summer internship at **EPFL** (Ecole Polytechnique Federale de Lausanne), Lausanne, Switzerland. — Summer 2012

Publications

1. *Optimal Hypothesis Selection In (Almost) Linear Time*
   M. Aliakbarpour, M. Bun, A. Smith
   Sumbitted.
2. *Metalearning with Very Few Samples Per Task*
   M. Aliakbarpour, K. Bairaktari, G. Brown, A. Smith, J. Ullman
   Submitted.
3. *Estimation in Path Dependent Stochastic Processes*
   M. Aliakbarpour, C. Daskalakis, R. Rubinfeld, M. Zampetakis
   Preprint
4. *Differentially Private Medians and Interior Points for Non-Pathological Data*
   M. Aliakbarpour, R. Silver, T. Steinke, J. Ullman
   To appear in **ITCS 2024**
   Presented in Theory and Practice of Differential Privacy, **TPDP 2023**
5. *Hypothesis Selection with Memory Constraints*
   M. Aliakbarpour, M. Bun, A. Smith

To appear in **NeurIPS 2023**

6. *Testing Tail Weight of a Distribution Via Hazard Rate*
   M. Aliakbarpour, A.S. Biswas, K. Ravichandran, R. Rubinfeld
   34th International Conference on Algorithmic Learning Theory, **ALT 2023**
7. *Estimation of Entropy in Constant Space with Improved Sample Complexity*
   M Aliakbarpour, A. McGregor, J. Nelson, E. Waingarten
   36th Conference on Neural Information Processing Systems, **NeurIPS 2022**
8. *Local Differential Privacy Is Equivalent to Contraction of an f-Divergence*
   S. Asoodeh, **M. Aliakbarpour**, FP Calmon
   2021 IEEE International Symposium on Information Theory, **ISIT 2021**
9. *Rapid Approximate Aggregation with Distribution-Sensitive Interval Guarantees*
   S. Macke, **M. Aliakbarpour**, I. Diakonikolas, A. Parameswaran, R. Rubinfeld
   37th IEEE International Conference on Data Engineering, **ICDE 2021**
10. *Testing Determinantal Point Processes*
    Khashayar Gatmiry, **M. Aliakbarpour**, Stefanie Jegelka
    34th Conference on Neural Information Processing Systems, **NeurIPS 2020 (Spotlight)**
11. *Testing Properties of Multiple Distributions with Few Samples*
    M. Aliakbarpour, S. Silwal
    11th Innovations in Theoretical Computer Science Conference, **ITCS 2020**
12. *Private Testing of Distributions via Sample Permutations*
    M. Aliakbarpour, I. Diakonikolas, D. Kane, R. Rubinfeld
    33rd Conference on Neural Information Processing Systems, **NeurIPS 2019**
13. *Towards Testing Monotonicity of Distributions Over General Posets*
    M. Aliakbarpour, T. Gouleakis, J. Peebles, R. Rubinfeld, A. Yodpinyanee
    32nd Annual Conference on Learning Theory, **COLT 2019**
14. *Testing Mixtures of Distributions*
    M. Aliakbarpour, R. Kumar, R. Rubinfeld
    32nd Annual Conference on Learning Theory, **COLT 2019**
15. *Differentially Private Identity and Equivalence Testing of Discrete Distributions*
    M. Aliakbarpour, I. Diakonikolas, R. Rubinfeld
    35th International Conference on Machine Learning, **ICML 2018**, pp. 169–178
16. *Sublinear-Time Algorithms for Counting Star Subgraphs via Edge Sampling*
    M. Aliakbarpour, A. S. Biswas, T. Gouleakis, J. Peebles, R. Rubinfeld, A. Yodpinyanee
    Algorithmica 2018, pp. 668–697
17. *I've Seen "Enough": Incrementally Improving Visualizations to Support Rapid Decision Making*
    S. Rahman, **M. Aliakbarpour**, H. Kong, E. Blais, K. Karahalios, A. G. Parameswaran, R. Rubinfeld
    43rd International Conference on Very Large Data Bases, **VLDB 2017**, pp. 1262–1273
18. *Learning and Testing Junta Distributions*
    M. Aliakbarpour, E. Blais, R. Rubinfeld
    29th Annual Conference on Learning Theory, **COLT 2016**, pp. 19–46
19. *Join of Two Graphs has a Nowhere-zero 3-flow*
    S. Akbari, **M. Aliakbarpour**, N. Ghanbari, E. Nategh, H. Shahmohamad
    Czechoslovak Mathematical Journal 2014, pp. 433–446
20. *Minimum flow number of complete multipartite graphs*
    S. Akbari, **M. Aliakbarpour**, N. Ghanbari, E. Nategh, H. Shahmohamad
    Bulletin of the Institute of Combinatorics and its Applications 2012, pp. 57–64

HONORS AND AWARDS

- ◇ Selected participant of **Rising Stars in EECS** 2018
- ◇ **Neekeyfar Award**, Office of Graduate Education, MIT 2013

◇ **Ranked 2nd** in Cumulative GPA 2013
among the students in Computer Engineering Department who started in Fall 2009, Sharif University of Technology

◇ **Ranked 9th** in Nationwide Graduate Entrance Qualification Exam 2012
computer engineering (artificial intelligence discipline)
among more than 31,000 participants, Iran

◇ **Silver Medal** in Iranian National Olympiad in Informatics 2008

Invited Talks

◇ Workshop on Local Algorithms (WOLA), MIT Aug 2023
◇ Purdue University, Theory seminar Nov 2022
◇ Sublinear Algorithm Workshop, FODSI, MIT Aug 2022
◇ Workshop on Differential Privacy and Statistical Data Analysis, Fields Institute July 2022
◇ Workshop on Local Algorithms (WOLA) June 2022
◇ Northeastern University Nov 2021
◇ Boston University Nov 2021
◇ Learning and Testing in High Dimensions Workshop, Simons Institute, Berkeley Dec 2020
◇ Carnegie Mellon University, Theory lunch Oct 2020
◇ Harvard University, DP meeting Sep 2020
◇ Workshop on Local Algorithms (WOLA) July 2020
◇ Georgia Tech, ARC Colloquium Mar 2020
◇ University of Massachusetts Amherst Feb 2020
◇ Boston University Feb 2020
◇ Northeastern University Oct 2018
◇ IBM Thomas J. Watson Research Center Dec 2016

Teaching Experiences

◇ **Teaching Assistant**, Massachusetts Institute of Technology:
· Geometric Computation Spring 2020
· Introduction to Algorithms Fall 2017
· Design and Analysis of Algorithms Spring 2016, Fall 2016

◇ **Teaching Assistant**, Sharif University of Technology:
· For six times in Algorithms, Discrete Mathematics, Scientific and Technical Presentation.

Service work

◇ **Program committee**: COLT 2024, ITCS 2024, TPDP 2023, COLT 2021, ITCS 2022, COLT 2022,
◇ Reviewer committee: COLT 2020, NeurIPS 2020, ICLR 2021, FAccT 2022
◇ Subreviewer for many conferences and journals

Leadership Roles and Activities

◇ **Co-organizer of Boston-Area Data Privacy Seminar** Sep 2021 - Dec 2022
This is a joint seminar series between Boston University, Northeastern University, and Harvard University. We invited speakers from a wide range of backgrounds to talk about recent and influential work on the topic of foundations of data privacy and related subjects.

◇ **Member of Resources for Easing Friction and Stress (REFS)** 2016 - 2019
Department of Electrical Engineering and Computer Science, MIT, Cambridge, MA, USA
REFS is a group of EECS graduate students trained as peer mediators by Conflict Management at MIT. Our role is to support the graduate community and serve as the first point of contact in dealing with stress and conflict.

◇ **Member of Sidney Pacific Executive Council (SPEC)** 2015 - 2016
Sidney Pacific Graduate Community, MIT, Cambridge, MA, USA
I was the *Chair of the Halls* in Sidney Pacific, my graduate dormitory, with over 600 residents. My role was to train and lead a group of grad students, the hall councilors, at each floor. The goal of my

team was to form smaller community in the dorm and make sure that each resident had someone to reach out to. Moreover, I organized several health and wellness events for our residents.

References

- **Prof. Ronitt Rubinfeld**
  Edwin Sibley Webster Professor of Electrical Engineering and Computer Science
  Massachusetts Institute of Technology (MIT)
  <ronitt@csail.mit.edu>
- **Prof. Adam Smith**
  Professor of Computer Science and Engineering, and Data Science Faculty
  Boston University
  <ads22@bu.edu>
- **Dr. Ravi Kumar** Senior Staff Research Scientist
  Google Research
  <ravi.k53@gmail.com>