Sepideh Mahabadi

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Research Interests

- ◇ High Dimensional Computational Geometry, Proximity Search
- ◇ Streaming Algorithms, Sub-linear Algorithms
- ◇ Graph Algorithms

Education

- ◇ Ph.D in Computer Science, Massachusetts Institute of Technology (MIT), Computer Science and Artificial Intelligence Laboratory (CSAIL), Theory of Computation Group (TOC), 2011- 2017

  Advisor:Prof. Piotr Indyk

  - · PhD Thesis: Sub-linear Algorithms for Massive Data Problems
  - · M.Sc. Thesis: Approximate Nearest Neighbor and Its Many Variants

- ◇ B.S. in Computer Engineering, Sharif University of Technology, 2007-2011
  Advisor: Prof. Mohammad Ghodsi
  B.Sc. Thesis: Minimum Dominating Set Network Creation Game

Appointments

- ◇ Postdoctoral Research Scientist in the Data Science Institute at Columbia University, August 2017-August 2018
- ◇ Research Assistant Professor at the Toyota Technological Institute at Chicago (TTIC), September 2018-September 2021

Publications

- ◇ S. Har-Peled, P. Indyk, S. Mahabadi, "Approximate Sparse Linear Regression", ICALP 2018.
- ◇ S. Mahabadi, K. Makarychev, Y. Makaryhev, I. Razenshteyn, " Nonlinear Dimension Reduction via Outer Bi-Lipschitz Extensions", STOC 2018.
- ◇ P. Indyk, S. Mahabadi, R. Rubinfeld, A. Vakilian, A. Yodpinyanee, "Set Cover in Sub-linear Time", SODA 2018.
- ◇ P. Indyk, S. Mahabadi, R. Rubinfeld, J. Ullman, A. Vakilian, A. Yodpinyanee, "Fractional Set Cover in the Streaming Model", Approx 2017.
- ◇ S. Har-Peled, S. Mahabadi, "Proximity in the Age of Distraction: Robust Approximate Nearest Neighbor Search", SODA 2017.
- ◇ P. Indyk, S. Mahabadi, A. Vakilian, "Towards Tight Bounds for the Streaming Set Cover Problem", PODS 2016.
- ◇ P. Indyk, R. Kleinberg, S. Mahabadi, Y. Yuan, "Simultaneous Near Neighbor Search", SoCG 2016.
- ◇ S. Mahabadi, "Approximate Nearest Line Search in High Dimensions", SODA 2015.
- ◇ E. Demaine, P. Indyk, S. Mahabadi, A. Vakilian, "On Streaming and Communication Complexity of the Set Cover Problem", DISC 2014.
- ◇ P. Indyk, S. Mahabadi, M. Mahdian, V. Mirrokni, "Composable Core-sets for Diversity and Coverage Maximization", PODS 2014.
- ◇ S. Abbar, S. Amer-Yahia, P. Indyk, S. Mahabadi, K. Varadarajan, "Diverse Near Neighbor Problem", SoCG 2013.
- ◇ S. Abbar, S. Amer-Yahia, P. Indyk, S. Mahabadi, "Efficient Computation of Diverse News", WWW 2013.

- ◇ H. Mirzaei, S. Ahmadian, S. Mahabadi, M. Sadeghi M., C. Eslahchi, H. Pezeshk "An Algorithm for Construction of all Perfect Phylogeny Matrices", MATCH, 2009, 62, 2: 251-259.
- ◇ M. Sadeghi, H. Pezeshk, C. Eslahchi, S. Ahmadian, S. Mahabadi, "Construction of Random Perfect Phylogeny Matrix", Advances and Applications in Bioinformatics and Chemistry 2010, 3: 89-96.

Honors and Awards

- ◇ **Gold Medal** in the International Olympiad in Informatics (IOI) 2007, Croatia. I was the only female contestant to win a gold medal at IOI 2007 and the first Iranian female contestant to win a gold medal at IOI.
- ◇ **Ranked 14^{th}** in the **ACM-ICPC World Finals** 2013, St. Petersburg. I was the only female contestant among the contestants from United States.
- ◇ **Ranked 13^{th}** in the **ACM-ICPC World Finals** 2011, Florida.
- ◇ Awarded as **Outstanding Student** by university president, 2007.
- ◇ Recipient of the grant for undergraduate studies from the Iranian National Elites Foundation, for outstanding academic success, 2007 - 2011.
- ◇ **Gold Medal** in the Iranian National Olympiad in Informatics (INOI), 2006.
- ◇ **Ranked 1^{st}** in the Northeast North America Regional ACM-ICPC Contest, 2012, and **Ranked 2^{nd}, 2^{nd}, 3^{rd} and 2^{nd}** in the Asia Regional ACM-ICPC Contest, 2007, 2008, 2009 and 2010.

Research Experience

- ◇ **Summer internship at Toyota Technological Institute, Chicago, 2016**
  Mentors: Julia Chuzhoy and Yury Makarychev
  Projects: I worked on prioritized embeddings, and algorithms for finding an approximately optimal graph drawing.
- ◇ **University of Illinois Urbana-Champaign, July-August 2015**
  Mentor: Sariel Har-Peled
  Project: Robust nearest neighbor search.
- ◇ **Research internship at Yahoo! Labs NYC, August 2014**
  Mentors: Howard Karloff and Edo Liberty
  Project: k-nearest neighbor classification.
- ◇ **Research internship at Google, Mountain View, 2013**
  Mentor: Mohammad Mahdian
  Project: Core-sets for diversity and coverage maximization problems under different notions of diversity.
- ◇ **Research internship at ADSC**, joint research center between UIUC and A*STAR, 2010.
  Mentors: Marianne Winslett and Jiangbo Lu.
  Projects: Pill identification and indoor navigation.

Teaching Experience

- ◇ **Teaching Assistant**: Introduction to Algorithms (Spring 2017, MIT), Randomized Algorithms (Spring 2013, MIT), Design and Analysis of Algorithms (Spring 2010, Sharif UT), Theory of Languages and Machines (Fall 2010, Sharif UT), and Introduction to Programming (Fall 2010, Sharif UT)
- ◇ **Member of the International Olympiad in Informatics (IOI) 2017 Host Scientific Committee**
- ◇ **Member of the Scientific Committee and Contest Designer** at Young Scholars Club (YSC), 2007-2009. YSC is the sole regulating body for scientific olympiads in Iran.
  - · Teaching Special Topics in Computer Science such as Algorithms and Data Structures, Graph Theory, Computational Geometry and Linear Algebra in training campus of Iranian National Olympiad in Informatics (INOI), YSC, 2008 - 2009.
  - · Instructor and Scientific Observer of the Iranian team in IOI, Plovdiv, Bulgaria, August 2009.
- ◇ **Member of the Student Scientific Chapter(SSC)** of Computer Engineering Department, 2009 - 2010. SSC is the student committee concerned with directing the department extra-curriculum activities.