Mahsa Eftekhari

Department of Computer Science, University of California, Davis

Email: mhseftekhari@ucdavis.edu

Phone: +1 (530)761-6207

Research Interests

Distributed Computing Algorithms, Population Protocols, Randomized Algorithms, Algorithmic Game Theory

Education

Ph.D. Candidate in Computer Science, University of California, Davis **2017–2022**

Supervisor: Prof. David Doty (expected)

GPA: 3.95/4.0

Master of Science (M.Sc.) in Computer Engineering-Software, Sharif University of Technology 2015–2017

Supervisor: Prof. H. Zarrabi-Zadeh

(GPA: 18.78/20 – equivalent to 4.0/4.0, ranked 3rd in class)

Bachelor of Science (B.Sc.) in Computer Science, Sharif University of Technology 2010–2015

(GPA: 15.35/20 – equivalent to 3.35/4.0, ranked 7th in class)

Publications

- A Time and Space Optimal Stable Population Protocol Solving Exact Majority. David Doty, Mahsa Eftekhari, Leszek Gąsieniec, Eric Severson, Grzegorz Stachowiak, and Przemysław Uznański.
  - Appears In the 62nd Annual of IEEE Symposium on Foundations of Computer Science **(FOCS 2021)**
  - Brief announcement appears In the 40th ACM Symposium on Principles of Distributed Computing **(PODC 2021)**
- A survey of size counting in population protocols. David Doty, Mahsa Eftekhari. Theoretical Computer Science Journal **(TCS 2021)**
- Message complexity of population protocols. Talley Amir, James Aspnes, David Doty, Mahsa Eftekhari, and Eric Severson. In the 34th International Symposium on Distributed Computing **(DISC 2020)**
- Efficient size estimation and impossibility of termination in uniform dense population protocols. David Doty, Mahsa Eftekhari. In the 38th ACM Symposium on Principles of Distributed Computing **(PODC 2019)**
- Brief announcement: Exact size counting in uniform population protocols in nearly logarithmic time. David Doty, Mahsa Eftekhari, Othon Michail, Paul G. Spirakis, and Michail Theofilatos. In the 32nd International Symposium on Distributed Computing **(DISC 2018)**

Professional Experiences

Software Engineering Intern at Google: Working on Google's knowledge Graph — Summer 2020

- Working with **Data Commons** team.
- Implementing Python scripts to clean and import data sets into the **Knowledge Graph**; Peer review scripts using GitHub.
- **Analyzing** types of missing data points in time series available in the knowledge graph; Using Python and Rest API calls to retrieve data.
- **Design and implementation** of missing data imputation module using Go language.

Research Assistant at UC Davis: Distributed computing algorithms — 2017-now

- Design, implement, and analyze of protocols
- Working on the population protocols: abstract model for molecular computation
- Research on: exact majority, exact and approximate population size counting, and counting problem in a dynamic network

Research Assistant at Sharif University of Technology: — 2016-2017

- Research on online algorithms for fair allocation of goods
- Design and analyze a new online allocation algorithm
- Proving a lower bound on the competitive ratio of any proposed algorithms

Awards and Honors

- UC Davis GGCS Richard Walters scholarship recipient — Summer 2021
- GHC scholarship recipient — Summer 2020
- CRA-W scholarship recipient — Spring 2019
- UC Davis graduate fellowship recipient — Fall 2017
- Ranked 15^{th}, National Scientific Olympiad in Computer Engineering. — Summer 2015
- Ranked 3^{rd}, National Graduate Entrance Exam in CS. (amongst more than 5000 students) — Spring 2015
- Ranked 15^{th}, National Graduate Entrance Exam in Computer Engineering, Software Engineering, Algorithms and Computations. (amongst more than 18000 students) — Spring 2015

Service Experience

Journal referee

- Journal of Computer and System Sciences (JCSS) — 2021
- Journal of Natural Computing (NACO) — 2021

Conference reviewer

- International Symposium on Distributed Computing (DISC) — 2020

- International Conference on DNA Computing and Molecular Programming (DNA) 2019
- Conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS) 2019
- Mathematical Foundations of Computer Science (MFCS) 2019

Presentation

- Brief announcement: A Time and Space Optimal Stable Population Protocol Solving Exact Majority., at the 40th ACM Symposium on Principles of Distributed Computing (PODC). June. 2021
- Efficient size estimation and impossibility of termination in uniform dense population protocols (Poster), at the 25th International Conference on DNA Computing and Molecular Programming (DNA). Oct. 2019
- Efficient size estimation and impossibility of termination in uniform dense population protocols (Poster), at the Computing Research Association's Committee on the Status of Women in Computing Research (CRA-W). Apr. 2019
- Brief announcement: Exact size counting in uniform population protocols in nearly logarithmic time., at the 32nd International Symposium on Distributed Computing (DISC). Oct. 2018

• **President** of SEDAD, Iranian Graduate Student Association at UC Davis 2018-2019

• **Member of board** of Student Scientific Association in Department of Mathematical Sciences, Sharif University of Technology 2012-2013

Teaching Assistant

University of California, Davis

Responsibilities: Leading discussion classes, Maintaining auto-grading homeworks, and holding office hours

- *Theory of Computation* Fall'21, Spring'21, Spring'20, Spring'18, Winter'18
- *Theory of Computation (Graduate Course)* Winter'19

Sharif University of Technology

Responsibilities: Leading discussion classes, designing homeworks, leading interactive Java programming labs

- *Approximation Algorithms (Graduate Course)* Spring 2017
- *Computational Geometry (Graduate Course)* Fall 2016
- *Advanced Programming (Java)* Spring'15, Spring'14
- *Principles of Computer System* Spring 2015