Mahsa Eftekhari

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Summary

- Ten years plus experience in **Java** programming and object-oriented programming concepts.
- Five years plus experience in **design and analysis** of algorithms, distributed algorithms, randomized algorithms, approximation algorithms, and online algorithms

Education

Ph.D. Candidate in Computer Science, University of California, Davis (UC Davis) 2017–2022

- **GPA:** 3.95/4.0 (expected)
- **Selected Courses:** Advanced Algorithms (4.0/4.0), Computer Architecture (4.0/4.0)
- **Teaching Assistant:** Theory of Computation (both graduate and undergraduate level)

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

- **GPA:** 4.0/4.0
- **Selected Courses:** Algorithmic Game Theory (18.1/20), Approximation Algorithms (19.5/20)
- **Teaching Assistant:** Approximation Algorithms, Computational Geometry (graduate level)

Bachelor of Science in Computer Science, Sharif University of Technology 2010–2015

- **GPA:** 3.2/4.0, (Ranked 7th in class)
- **Selected Courses:** Advanced Programming (18/20), Data Structures (18/20), Design and Analysis of Algorithms (19/20)
- **Teaching Assistant:** Advanced Programming (interactive lab), Principles of Computer System

Work Experience

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

(with **Data Commons** team)

During the internship I contributed to an open source project:

- Phase 1: Implement **Python** (peer-reviewed via **GitHub**) scripts to clean data sets, import them into the **Knowledge Graph**, and analyze them using Python and Rest API calls.
- Phase 2: Initiate a **research project** on the existing time series in Data Commons.
- Phase 3: **Design and implement** a standalone **Go library** for imputation on time series to enrich Data Commons' API calls with multiple imputation methods in case of missing data.

Technical Skills

Programming Languages / Libraries: Java (advanced proficiency), Go, Python, Pandas (intermediate), C++ (beginner)

Web Design / Frameworks: HTML, CSS, JavaScript

Mathematical: Algorithm Analysis, Probability, Combinatorics, Graph

Other: Git, SQL, LaTeX

Research and Projects

- **Java Implementation** of multiple simulators for algorithms in population protocols 2018-now
  - **Object oriented programming** to simulate agents in a distributed model of computation
  - Implementing randomized protocols for leader election, majority, and size computation in both static and dynamic networks

- **Visualizing** simulated data using **Python** scrips and JSON formatted outputs

- **Implementation and Maintenance** of autograding homeworks — Spring 2020
  - **Python** scripts to judge solutions using **GitHub** and Gradescope
- **Research on** online allocation algorithms (Masters Thesis) — 2016-2017
  - **Designing** an online allocation algorithm for the **fair allocation** of goods
  - **Analyzing** the competitive ratio of the presented algorithm
  - **Proving a lower bound** on the competitive ratio of any proposed algorithms for the problem
- Designing an **App Review Miner** to Extract Information from user reviews — Fall 2016
  - Phase 1: **Survey** on existing App-review miners — Team Project
  - Phase 2: **Enhancement** of two existing App-review miners by combining their approaches
  - Phase 3: **Evaluation**; comparing the results of our designed App-review miner with real user experiences
- Developing a social media platform — Spring 2015
  - Mastering **HTML, CSS**, and **JavaScript** for the front-end implementation — Team Project
  - Gaining skills in using **GitHub** commands
  - Utilizing **Django** platform for the back-end development
- **Implementation** of K-means algorithm to cluster psychological data — Spring 2014
- **Java Implementation** of a P2P file transfer software — Spring 2011
- **Java Implementation** of a 2-Player Chess board game — Fall 2010

Publications

- Brief Announcement: A Time and Space Optimal Stable Population Protocol Solving Exact Majority. David Doty, **Mahsa Eftekhari**, Leszek Gąsieniec, Eric Severson, Grzegorz Stachowiak, and Przemysław Uznański. In the 40th ACM Symposium on Principles of Distributed Computing (PODC 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)

Preprint

- A survey of size counting in population protocols. David Doty, **Mahsa Eftekhari**. arXiv preprint arXiv:2105.05408 (2021)

Awards and Honors

- UC Davis GGCS Richard Walters scholarship winner — Summer 2021
- GHC scholarship recipient — Summer 2020
- CRA-W scholarship recipient — Spring 2019
- UC Davis GGCS travel award recipient — Fall 2018
- UC Davis graduate fellowship recipient ($ 59,334.0/year) — Fall 2017
- Ranked 15th, National Scientific Olympiad in Computer Engineering — Summer 2015
- Ranked 3rd, National Graduate Entrance Exam in CS. (amongst more than 5000 students) — Spring 2015
- Ranked 15th, National Graduate Entrance Exam in Computer Engineering, Software Engineering, Algorithms and Computations. (amongst more than 18000 students) — Spring 2015