Mahsa Eftekhari Hesari

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Summary

◦ Ten years plus experience in Java programming

◦ Five years plus research on design and analysis of algorithms, distributed algorithms, randomized algorithms, approximation algorithms, and online algorithms

Education

• **Ph.D. Student in Computer Science, University of California, Davis (UC Davis)** **2017–now**

(GPA: 3.95/4.0)

◦ *Teaching Assistant:* Theory of Computation (Graduate and undergraduate courses)

◦ *Selected Courses:* Advanced Algorithms (4.0/4.0), Programming Languages (3.7/4.0)

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

(GPA: 18.78/20, Ranked 3rd in class)

◦ *Teaching Assistant:* Approximation Algorithms, Computational Geometry (Graduate courses)

◦ *Selected Courses:* Algorithmic Game Theory (18.1/20), Approximation Algorithms (19.5/20)

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

(GPA: 15.35/20, Ranked 7th in class)

◦ *Teaching Assistant:* Advanced Programming (2 Semesters), Principles of Computer System

◦ *Selected Courses:* Advanced Programming (18.6/20), Data Structures (18.7/20), Design and Analysis of Algorithms(19/20)

Work Experience

• **Software Engineer Intern at Google** **Summer 2020**

◦ 13 weeks working with **Data Commons** team.

◦ Implementing **Python** scripts and Colab notebooks to clean data sets and import them into the **Knowledge Graph**; Peer review scripts using GitHub.

◦ Using **Python and Rest API calls** to retrieve data and analyze them.

◦ **Design and implementation** of missing data imputation module using **Go language**.

Technical Skills

Programming Language:	Java (advanced proficiency), Go, Python (intermediate), C++, Pascal (beginner)
Web Design / Framework:	HTML, CSS (advanced proficiency)), JavaScript, Ajax (intermediate)
Other:	LaTeX, SQL (intermediate)

Technical Experience

• **Implementing** autograding homeworks Spring 2020

◦ Using **Python** scripts

◦ Connecting **GitHub** and Gradescope

• **Java Implementation** of multiple simulators for algorithms in population protocols 2018-now

◦ Object oriented programming to simulate agents in distributed model

◦ Implementing randomized protocols

• 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

• **Java Implementation** of a P2P File Transfer Software Spring 2011

• **Java Implementation** of a 2-Player Chess Board Game Fall 2010

• **Data Mining** in Practice Spring 2014

- Clustering psychological data by implementing K-means algorithm

• Developing a Social Media Webpage — 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

Research Experience

- **Ph.D.:** Research on Distributed Computing Algorithms and Population Protocols — 2017-now
  - **Simulating** the algorithms in population protocols with Java
  - Designing consensus scheme for **byzantine state machine replication (SMR)** systems
  - Designing algorithms for junta election with **constant message complexity** in population protocols
  - Presenting the first **sublinear time algorithms** for counting the number of agents in population protocols
  - **Designing** composition scheme for protocols in the uniform setting of populations protocols
- **Master Thesis:** Online Algorithms for Fair Allocation of Goods — 2016-2017
  - **Designing** an online allocation algorithm
  - **Analyzing** the competitive ratio of the presented algorithm
  - **Proving a lower bound** on the competitive ratio of any proposed algorithms for the problem
- Survey on **Mechanism Design** for Distributed Computing — Fall 2015
- Research on Truthful Incentives in **Crowdsourcing** — Spring 2015

Publications

• A stable majority population protocol using logarithmic time and states.,*David Doty, Mahsa Eftekhari, and Eric Severson. arXiv preprint arXiv:2012.15800.*

• Message complexity of population protocols., *Talley Amir, James Aspnes, David Doty, Mahsa Eftekhari, and Eric Severson. arXiv (2020): arXiv-2003.*

• 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, 2018.*

• 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.*

Service Experience

• **Poster** Efficient size estimation and impossibility of termination in uniform dense population protocols., *In the 25th International Conference on DNA Computing and Molecular Programming (DNA).* — Oct. 2019

• **Presentation** Brief announcement: Exact size counting in uniform population protocols in nearly logarithmic time., *In the 32nd International Symposium on Distributed Computing (DISC).* — Oct. 2018

• **President** of SEDAD, Graduate Student Association — 2018-2019

• **Member of board** of Student Scientific Association in Mathematical Sciences Dept. — 2012-2013

Awards and Honors

- GHC scholarship recipient — Summer 2020
- CRA-W travel 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