Peyman Jabbarzade

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Education

Ph.D. in Computer Science, University of Maryland – College Park, US — Jan 2022 – present

- **Field:** Theoretical Computer Science
- Designing algorithms for fundamental graph theory problems and optimizing submodular functions in the dynamic model.

M.Sc. in Computer Engineering, Sharif University of Technology – Tehran, Iran — Sept 2019 – Dec 2021

- **Field:** Algorithms and Computation
- Studied geometric graph problems in the massively parallel computation (MPC) model.

B.Sc. in Computer Engineering, Sharif University of Technology – Tehran, Iran — Sept 2015 – Aug 2019

Awards

Dean's Fellowship, University of Maryland — Jan 2022 – Dec 2023

Asia West Champion, International Collegiate Programming Contest (**ICPC**) World Final — Apr 2018

14th Place, ACM International Collegiate Programming Contest (**ACM-ICPC**) World Final — May 2016

Bronze Medal, International Olympiad in Informatics (**IOI**) — July 2015

Gold Medal, Asia-Pacific Informatics Olympiad (**APIO**) — May 2015

Gold Medal, Iranian National Olympiad in Informatics — Sept 2014

Experience

Software Engineer, Balad (Map and Navigation App) – Tehran, Iran — Sept 2018 – Nov 2021

- Enhanced service stability and scalability and optimized inter-service communication as part of the infrastructure team.
- Developed and took ownership of Balad's core service for managing and providing location-specific data.
- Led a diverse team of 10 technical members to collect and clean location-specific data and refine service design with microservices.
- Primarily wrote code in Python, with additional experience in C++, Java, Go, and various other tools.

Research Intern, Max Planck Institute for Informatics – Saarbrücken, Germany — July 2019 – Aug 2019

- Designed and benchmarked an energy-preserving online scheduling algorithm.

Software Engineer Intern, Balad (Map and Navigation App) – Tehran, Iran — June 2018 – Aug 2018

- Designed and implemented a novel algorithm for optimal routing of camera-equipped cars, ensuring comprehensive street coverage in Tehran within the minimum time.

Publications

(All papers use **alphabetical** author ordering.)

Prize-Collecting Forest with Submodular Penalties: Improved Approximation — June 2025
Ali Ahmadi, Iman Gholami, MohammadTaghi Hajiaghayi, Peyman Jabbarzade, Mohammad Mahdavi
26th Conference on Integer Programming and Combinatorial Optimization (**IPCO 2025**).

A Dynamic Algorithm for Weighted Submodular Cover Problem — July 2024
Kiarash Banihashem, Samira Goudarzi, MohammadTaghi Hajiaghayi, Peyman Jabbarzade, Morteza Monemizadeh
41th International Conference on Machine Learning (**ICML 2024**). **Accepted for oral presentation**

Prize-Collecting Steiner Tree: A 1.79 Approximation — June 2024
Ali Ahmadi, Iman Gholami, MohammadTaghi Hajiaghayi, Peyman Jabbarzade, Mohammad Mahdavi
56th ACM Symposium on Theory of Computing (**STOC 2024**).

2-Approximation for Prize-Collecting Steiner Forest — Jan 2024
Ali Ahmadi, Iman Gholami, MohammadTaghi Hajiaghayi, Peyman Jabbarzade, Mohammad Mahdavi
ACM-SIAM Symposium on Discrete Algorithms (**SODA 2024**). **Invited for a special issue of ACM TALG**

Dynamic Algorithms for Matroid Submodular Maximization — Jan 2024
Kiarash Banihashem, Leyla Biabani, Samira Goudarzi, MohammadTaghi Hajiaghayi, Peyman Jabbarzade, Morteza Monemizadeh
ACM-SIAM Symposium on Discrete Algorithms (**SODA 2024**).

Dynamic Non-monotone Submodular Maximization Dec 2023

Kiarash Banihashem, Leyla Biabani, Samira Goudarzi, MohammadTaghi Hajiaghayi, Peyman Jabbarzade, Morteza Monemizadeh

37th Conference on Neural Information Processing Systems (**NeurIPS 2023**).

Dynamic Constrained Submodular Optimization with Polylogarithmic Update Time July 2023

Kiarash Banihashem, Leyla Biabani, Samira Goudarzi, MohammadTaghi Hajiaghayi, Peyman Jabbarzade, Morteza Monemizadeh

40th International Conference on Machine Learning (**ICML 2023**)

A Novel Prediction Setup for Online Speed-Scaling June 2022

Antonios Antoniadis, Peyman Jabbarzade, Golnoosh Shahkarami

18th Scandinavian Symposium and Workshops on Algorithm Theory (**SWAT 2022**)

Volunteer Experience

Coaching 2020 – 2023

- Coached the University of Maryland's team for ICPC 2023, leading them to a silver medal at the North America Championship and advancing to the world final. [1, 2]
- Led Iran's national team for IOI 2020, achieving 3 gold and 1 silver medal—the best result for Iran in IOI.
- Coached Sharif University of Technology's team in the ICPC 2020 World Finals.

Scientific Committee 2017 – present

- Member of the Host Scientific Committee (HSC) for IOI 2017.
- Judge for the ICPC North America Championship 2024.
- Member of the Iranian National Olympiads in Informatics Scientific Committee for 6 years.
- Contributed to the preparation of the ICPC Tehran Regional Contest for 6 years.

Task Author 2015 – present

- Authored the problem "Rectangles" for IOI 2019.
- Managed numerous programming competitions and authored problems for selecting Iran's national team for IOI.

Technical Skills

Programming Languages: Python, C/C++, SQL

Technologies: Docker, Kubernetes, Kafka, gRPC, REST, Sentry, Redis, Prometheus, Grafana, ElasticSearch, Logstash, Kibana