

Sepideh Aghamolaei

Date of Birth: May 25th 1991

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Google Scholar: <https://scholar.google.com/citations?user=kbNZ7DEAAAAJ&hl=en>

GitHub: <https://github.com/saghamolaei>

Education:

- Sharif University of Technology, Tehran, Iran, Ph.D., Software Engineering – Algorithms and Computation (2016-2025). Thesis: Approximation MapReduce Algorithms for Some Geometric Problems. Supervisor: Prof. Mohammdd Ghodsi.
- Sharif University of Technology, Tehran, Iran, M.S., Software Engineering – Algorithms and Computation (2013-2015). Thesis: Approximation Algorithms for Finding Diverse Near Neighbors. Supervisor: Prof. Hamid Zarrabi-Zadeh. **Ranked 3rd in software engineering (2nd in algorithms and complexity branch)**, GPA: 18.16/20.
- AmirKabir University of Technology, Tehran, Iran, B.Sc., Software Engineering (2009-2013). Thesis: Semantic Search of Symbolic Execution of Constraint Automata. Supervisor: Prof. Bahman Pourvatan. **Ranked 1st in software engineering**, GPA: 18.54/20.
- Farzanegan High School, Tehran, (2005-2009), Affiliated with National Organization for Development of Exceptional Talents (NODET), Diploma in Physics and Mathematics Discipline.

Research Interests:

- Computational Geometry
- Sublinear Algorithms
- Approximation Algorithms
- MapReduce and Parallel Algorithms
- Big Data Algorithms and Analytics, Algorithms for Data Science
- Data-Driven Algorithm Design

Selected Publications (Journals):

- Aghamolaei, Sepideh, and Mohammad Ghodsi. "Explainable Graph Clustering via Expanders in The Massively Parallel Computation Model." *Information Sciences* (2024).
- Aghamolaei, Sepideh, and Mohammad Ghodsi. "Density-Based Clustering in MapReduce with Guarantees on Parallel Time, Space, and Solution Quality." *Transactions on Combinatorics* (2024).
- Aghamolaei, Sepideh, Vahideh Keikha, Mohammad Ghodsi, and Ali Mohades. "Sampling and sparsification for approximating the packedness of trajectories and detecting gatherings." *International Journal of Data Science and Analytics* 15.2 (2023): 201-216.
- Keikha, Vahideh, Sepideh Aghamolaei, Ali Mohades, and Mohammad Ghodsi. "Clustering geometrically-modeled points in the aggregated uncertainty model." *Fundamenta Informaticae* 184 (2022).
- Aghamolaei, Sepideh, Vahideh Keikha, Mohammad Ghodsi, Ali Mohades. "Windowing queries using Minkowski sum and their extension to MapReduce", *Journal of Supercomputing* (2020).

Selected Publications (Conferences):

- Aghamolaei, Sepideh, Mohammad Ghodsi, and Seyyedhamid Miri. "A MapReduce Algorithm for Metric Anonymity Problems." 31st Canadian Conference on Computational Geometry (CCCG) 2019.
- Aghamolaei, Sepideh, Fatemeh Baharifard, and Mohammad Ghodsi. "Geometric spanners in the MapReduce model." International Computing and Combinatorics Conference (COCOON), 2018.
- Aghamolaei, Sepideh, and Mohammad Ghodsi. "A Composable Coreset for k-Center in Doubling Metrics." 30th Canadian Conference on Computational Geometry (CCCG), 2018.
- Aghamolaei, Sepideh, Majid Farhadi, and Hamid Zarrabi-Zadeh. "Diversity maximization via composable coresets." 27th Canadian Conference on Computational Geometry (CCCG), 2015.

Industry Experience:

- "Data-oriented balance between the cost of upgrades, maintenance and security of the banking system", 2nd place, Open Data Hackathon: : Service Development Based on Open Data, Iran Telecommunications Research Center and IEEE Iran section, 2022.

- Software engineer, Computer network security department, Telecommunication Infrastructure Company of Iran (TIC), 2017-2020. (Main tasks: Compiler design for automated migration, Network and security log analysis, Linux server configurations).

Teaching Experience (TA):

- Parallel Processing, Sharif University of Technology, 2016,2018,2020.
- Advanced Algorithm Design, Ghiaseddin Jamshid Kashani University, 2018, 2019.
- Advanced Algorithm Design, Sharif University of Technology, 2017.
- Design and Analysis of Algorithms, Sharif University of Technology, 2015-2018.
- Data Structures and Fundamentals of Algorithms, Sharif University of Technology, 2015, 2016.
- Compiler Design, AmirKabir University of Technology, 2012.
- Computer Architecture, AmirKabir University of Technology, 2011.

Honors:

- 5th place, ACM ICPC local contest, AmirKabir University of Technology, 2011.
- Chosen project in robotics, NODET's National Sponsorship for Student Projects, 2007.
- Chosen project in web design, NODET's National Sponsorship for Student Projects, 2004.
- Chosen project in computer graphics, NODET's National Sponsorship for Student Projects, 2004.
- Chosen project in logic circuit design, NODET's National Sponsorship for Student Projects, 2004.

Events:

- Aghamolaei, Sepideh, Mohammad Ghodsi. "Samples Using Geometric Counting Lower Bounds", SoCG-YRF 2020.
- Aghamolaei, Sepideh, Mohammad Ghodsi. "Surrounded k-Center and Applications in MapReduce", ICCG 2020.
- Aghamolaei, Sepideh, Mohammad Ghodsi. "Planar Euclidean TSP via Snowflake Tree", ICCG 2020.
- Aghamolaei, Sepideh, and Mohammad Ghodsi. "A Theoretical Proof of Angular Random Walk." First Iranian Conference on Computational Geometry (ICCG), 2018.