ANDISHEH (ELAHE) GHASEMI

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SUMMARY

PhD candidate in Computer Science (expected Dec 2027) specializing in algorithms for large-scale graph optimization under uncertainty. Google Research Software Engineering intern who built a C++/Python optimization engine for city-scale road networks with millions of edges. Published at ICALP, EC, and Algorithmica.

EDUCATION

Northeastern University *expected Dec 2027*
PhD in Computer Science
Advisors: Rajmohan Rajaraman, Mahsa Derakhshan

Université Paris Cité *2023*
M.Sc. in Computer Science, Parisian Master of Research in Computer Science (MPRI)

Sharif University of Technology *2022*
B.Sc. in Computer Science, Department of Mathematical Sciences

EXPERIENCE

Software Engineering Intern Summer 2026
Google Research *Seattle, WA*

- Built a C++/Python engine that finds minimum-length road networks under travel-time limits on NYC OpenStreetMap data (7M+ edges), cutting road footprint by 7.5–9% (1,400+ km) versus shortest-path baselines.
- Designed a parallel decomposition (OpenMP) that turned LP solves that previously timed out into 2.5–4.3 s runs.
- Implemented a lossless graph contraction that removes 33–48% of LP variables, speeding up the solver 5.9×.

Doctoral Researcher Jan 2024 – Present
Northeastern University *Boston, MA*

- Designed online algorithms for correlation clustering under random-order arrivals with competitive guarantees (in submission).
- Characterized the one-way communication complexity of minimum vertex cover in general graphs, with implications for streaming and distributed graph algorithms (ICALP 2025).
- Developed approximation algorithms for stochastic matching in the query-commit model (EC 2026).

Visiting Graduate Student Fall 2025
Simons Institute, UC Berkeley *Berkeley, CA*

- Participated in the research program on algorithmic foundations for emerging computing technologies.

Graduate Researcher Apr – Sep 2023
Advisor: Chien-Chung Huang *Paris, France*

- Studied approximation algorithms for job scheduling under bag constraints.

Undergraduate Researcher Sep 2021 – Mar 2022
Advisor: Vincent Jugé *Paris, France*

· Designed and analyzed galloping-based merging routines for natural merge sorts such as Timsort (ICALP 2022, Algorithmica 2024).

Frontend Developer Intern Summer 2021
Shab Company

· Developed interactive UI components in React, JavaScript, HTML, and CSS.
· Worked with the engineering team to improve user experience and frontend performance.

PROJECTS

Algorithm Visualizer Platform
React, TypeScript, SVG

· Built an interactive web app animating 17+ sorting, graph-search, and clustering algorithms in real time.
· Implemented a dynamic graph editor and streaming/online clustering visualizations (e.g. Pivot).

Multiplayer Network Game
Java, Networking, Concurrency

· Implemented a custom TCP protocol for real-time multiplayer play with thread-safe shared game state.
· Built AI opponents using pathfinding and state-machine logic.

PUBLICATIONS (AUTHORS IN ALPHABETICAL ORDER)

- M. Derakhshan, **A. Ghasemi**, T. Yu: Settling the Query Complexity of Weighted Stochastic Matching *In submission.*
- C. Dwork, **A. Ghasemi**, L. Hu. Rural Readiness: Domain Generalization with Adversarially Chosen Domains. *In submission.*
- M. Derakhshan, **A. Ghasemi**, R. Rajaraman, O. Wasim, T. Wilson. Competitive Random-Order Correlation k-Clustering. *In submission.*
- M. Derakhshan, **A. Ghasemi**, C. MacRury. Approximation Algorithms for Action-Reward Query-Commit Matching. *EC 2026*.
- M. Derakhshan, **A. Ghasemi**, R. Rajaraman. One-way Communication Complexity of Minimum Vertex Cover in General Graphs. *ICALP 2025*.
- **E. Ghasemi**, V. Jugé, G. Khalighinezhad, H. Yazdanyar. Galloping in Fast-Growth Natural Merge Sorts. *Algorithmica 2024*; *ICALP 2022*.
- M. Rashid, **E. Ghasemi**, J. B. Ebrahimi. Entropic Weighted Rank Function. *IWCIT 2022*.

TECHNICAL SKILLS

Languages:	Python, C++20, Java, JavaScript/TypeScript, SQL
Libraries & Frameworks:	HiGHS, OR-Tools, OpenMP, NumPy, Matplotlib, React, Node.js, Flask
Tools:	Git, Linux, CMake

ACHIEVEMENTS

- Khoury College PhD Service Award (2026) for leading the Northeastern Theory Seminar.

- PGSM scholarship, Fondation Sciences Mathématiques de Paris.
- Ranked 60th among 148,429 participants in Iran's national university entrance exam (Konkour).

SERVICE & TEACHING

Teaching Assistant, Northeastern University and Sharif University: Algorithms, Automata, Data Structures.
Organizer, Northeastern Theory Seminar.
Reviewer: ITCS 2027, FOCS 2025, SOSA 2025, APPROX 2023.