Sanaz Rabinia

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Department of Computer Science
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SUMMARY

I received my Ph.D. in Computer Science from Wayne State University with expertise in algorithm design, combinatorial optimization, and applied machine learning/AI. Skilled in developing innovative solutions for Edge computing, large-scale graph algorithms, and real-world predictive modeling. Recognized with the 2024 NCWIT AiC National Collegiate Award–Honorable Mention from the National Center for Women & Information Technology (NCWIT) and the 2025 Ralph H. Kummler Distinguished Achievement Award from Wayne State University for impactful contributions to the fields of Algorithms and Edge computing systems.

RESEARCH INTERESTS

Edge Computing, Cloud Computing, Parallel Algorithms, Randomized Algorithms, Approximation Algorithms, Applied Machine Learning, Game Theory

EDUCATION

1/2019 - 7/2025 **Ph.D., Computer Science**
Department of Computer Science,
Wayne State University, Detroit, MI
Minor: Mathematics
Advisor: Dr. Daniel Grosu

9/2011 - 9/2013 **M.Sc., Mathematics, Sharif University of Technology, Iran**

9/2007 - 7/2011 **B.Sc., Mathematics, Shahid Beheshti University, Iran**

PUBLICATIONS

Journal Articles

J1. Speeding-up Graph Algorithms via Parallel Randomized Clique Partitioning, A. Chavan, S. Rabinia, M. Brocanelli, D. Grosu, submitted to **ACM Transactions on Parallel Computing**, 2025.

J2. Speeding-up Graph Algorithms via Clique Partitioning, A. Chavan, S. Rabinia, M. Brocanelli, D. Grosu, submitted to **Networks**, 2025.

J3. Online Algorithms for Data Sharing-Aware Task Allocation in Edge Computing Systems, S. Rabinia, D. Grosu, submitted to **IEEE Transactions on Cloud Computing**, 2025.

J4. Algorithms for Data Sharing-Aware Task Allocation in Edge Computing Systems, S. Rabinia, N. Didar, D. Grosu, M. Brocanelli, **IEEE Transactions on Parallel and Distributed Systems**, Vol. 36, No. 1, pp. 15-28, January 2025.

J5. Machine Learning Approach to Forecast Work Zone Mobility using Probe Vehicle Data, M. Kamyab, S. Remias, E. Najmi, S. Rabinia, JM. Waddell, **Transportation Research Record**, SAGE Publications, Vol. 2674, No. 9, pp. 157-167, July 12, 2020.

Conference Papers

C1. Data Sharing-Aware Online Algorithms for Task Allocation in Edge Computing Systems
S. Rabinia, D. Grosu, **Proc. of the IEEE International Conference on Edge Computing (IEEE EDGE 2024)**, July 7-13, 2024, Guangzhou, China.

C2. Data Sharing-Aware Algorithms for Task Allocation in Edge Computing Systems
S. Rabinia, D. Grosu, **Proc. of the IEEE International Symposium on Cluster, Cloud, and Internet Computing (CCGrid 2024)**, May 6-9, 2024, Philadelphia, USA.

C3. Data Sharing-Aware Task Allocation in Edge Computing Systems
S. Rabinia, H. Mehryar, M. Brocanelli, D. Grosu, **Proc. of the IEEE International Conference on Edge Computing (IEEE EDGE 2021)**, December 18-20, 2021, Guangzhou, China.

Book Chapter

B1. A Comprehensive Study of Game Theory Applications for Smart Grids and Demand Side Management Programs, and Transportation Networks.
A. Mohammadi, S. Rabinia, **Smart Microgrids**, pp 57-64, Springer, January 18, 2019.

FELLOWSHIPS, AWARDS AND HONORS

- Received the 2025 Ralph H. Kummler Distinguished Achievement Award in Graduate Student Research, Wayne State University, April 2025 .
- Panelist of Michigan Council of Women in Technology Foundation Conference (MICWIC), October 2024.
- Received the 2024 travel award from the National Center for Women and Information Technology (NCWIT), October 2024.
- Received the 2024 Association for Computing Machinery (ACM) Certificate as top 5 posters presented at Tapia2024 for my poster with title: "Data Sharing-Aware Online Algorithms for Task Allocation in Edge Computing Systems", September 2024.
- The Graduate Student Professional Travel Award from the department of Computer Science, Wayne State University, April and June 2024.
- Finalist in the Doctoral Consortium track to present my doctoral dissertation at the CMD-IT/Tapia Conference 2024.
- Received the 2024 NCWIT AiC Collegiate Award - Honorable Mention and Monetary Prize from the National Center for Women & Information Technology (NCWIT), May 2024.
- Full Scholarship to attend the 2024 NCWIT Summit, May 2024.
- Full Scholarship to attend the CMD-IT/Tapia Conference 2024, May 2024.
- Full Scholarship to attend the 24th IEEE/ACM International Symposium on Cluster, Cloud, and Internet Computing (CCGrid 2024), May 2024.
- Finalist of the 2024 National Center for Women & Information Technology (NCWIT) AiC Collegiate Award, January 2024.
- Graduate Research Excellence Award in Computer Science, Wayne State University, 2022.
- Full Scholarship to attend Grace Hopper Conference, September 21-23, 2022.
- Full Scholarship to attend CRA-WP Grad Cohort, Computing Research Association Women Workshop, April 22-24, 2021 & 2022.
- Outstanding Graduate Teaching Assistant Award in Computer Science, Wayne State University, 2020.
- Travel Award to attend the International Conference on Machine Learning (ICML), June 9-15, 2019.

- Travel Award to attend StringBio Conference at University of Central Florida, October 25-27, 2018.
- Travel Award to attend the Approximation Theory and Machine Learning Conference at Purdue University, September 29-30, 2018.

PROJECTS

Software Engineering: Warrior Delivery Web Application. A doorstep delivery service for Wayne State University's Dining halls, Wayne State University, Dec 14, 2020.

Data Base: Date-A-Base for Dating Website. Design Personal Information System, a MySQL database on the LSU classes' server using the MariaDB engine, Louisiana State University, December 14, 2018.

Algorithm: Succinct Data Structures and Text Indexing: Collaborating on an NSF project to index a portion of the web pages examined by their indexing systems, Louisiana State University, June 15, 2018.

Machine Learning: Matching Handwriting with Its Author. Implemented the convolutional neural network Algorithm for matching handwriting with its author for bank check authentication and forensic investigation, Louisiana State University, April 29, 2018.

COMPUTER SKILLS

- Supercomputer: Utilizing Wayne State University's supercomputer (Grid), Pittsburgh Supercomputing Center (Bridge-2)
- Programming Languages: C, C++, Java, Python, R, Qiskit
- Programming Tools: gcc, Visual Studio, IntelliJ IDEA, Spring boot, Hibernate
- Parallel Programming: CUDA, MPI, OpenMP, pThreads
- Machine Learning: Python, Octave, PySpark
- Deep Learning/AI: PyTorch, TensorFlow, LLM
- Machine Learning Frameworks: Hugging Face, Transformers
- Web Technology: JavaScript, HTML, CSS, PHP
- Databases: SQL Server, MySql, AWS
- Software Engineering Methods: UML, Agile, REST
- Unit Testing: JUnit, PHPUnit, Laravel
- Other Tools: GitHub, Linux, Ubuntu, LaTeX, Corel, Continuous Integration

COURSEWORK AND ONLINE CERTIFICATE

University Coursework: Algorithm Design, Parallel Computing 1&2, Machine Learning, Distributed Systems, Data Mining, Database Management System, Advanced Algebra, Advanced Graph Theory, Real Analysis, Statistics 1 &2

Online Certified Coursework: Machine Learning, Artificial Intelligence, Deep Learning, Qiskit Programming, PySpark, AWS Cloud Practitioner, Large Language Models, Natural Language Processing

Other Certificates: AWS Certified Cloud Practitioner, ACM Certified Reviewer

PRESENTATIONS

Conferences

- **Data Sharing-Aware Task Allocation Algorithms in EC Systems**

  ACM CMD-IT/Tapia Conference , September 2024.

- **Data Sharing-Aware Online Algorithms for Task Allocation in Edge Computing Systems**

  IEEE International Conference on Edge Computing, July 2024.

- **Data Sharing-Aware Task Allocation in Edge Computing Systems**

  IEEE International Symposium on Women in Service Computing (WISC 2024), July 2024.

  Data Sharing-Aware Algorithms for Task Allocation in Edge Computing Systems

  IEEE International Symposium on Cluster, Cloud, and Internet Computing (CCGrid 2024), May 2024.

- **Data Sharing-Aware Task Allocation in Edge Computing Systems**

  IEEE International Conference on Edge Computing, December 2021.

Workshops

- **Data Sharing-Aware Task Allocation in Edge Computing Systems**

  CRA-WP Grad Cohort, Computing Research Association Women Workshop, April 23, 2022.

- **Parallel Fixed-Parameter Tractable Algorithms**

  CRA-WP Grad Cohort, Computing Research Association Women Workshop, April 23, 2021.

- **Some Results of the Existence of P_3- Factor in Regular Graphs**

  3rd Istanbul Design Theory, Graph Theory and Combinatorics Workshop, Turkey, June 16-21, 2016.

  8th Conference and Workshop on Algebraic Combinatorics and Graph Theory, Iran, April 17, 2015.

University

Parameterized Algorithms

Weekly seminar at Wayne State University, Summer 2019.

Burrows-Wheeler Transform and FM Index

Presentation at University of Central Florida, Summer 2018.

Presentation at Louisiana State University, Fall 2018.

A Rational Approach to the Coloring in Graphs, Fractional Graph Theory

Presentation at Sharif University of Technology, Fall 2013.

Nowhere-Zero Flow in Random Graphs

Presentation at Sharif University of Technology, Fall 2012.

Application of Hyperbolic Geometry in Planar Models of the Hyperbolic Plane "The Poincare Disc Model"

Presentation at Shahid Beheshti University, Summer 2011.

A review on "Gödel Incompleteness Theorem", Weekly Seminars in Logic

Presentation at Shahid Beheshti University, Fall 2010.

TEACHING

Primary Instructor for three courses at Wayne State University

CSC3110: Algorithm Design and Analysis, Summer 2021 and 2022.

CSC2201: Laboratory for Data Structures and Algorithm Analysis, Winter 2020.

CSC3020: Java Programming, Summer 2019.

Graduate Teaching Assistant for three courses at Wayne State University

CSC6580: Design and Analysis of Algorithms, Fall 2022.

CSC3020: Java Programming, Fall 2019.

CSC4996: Senior Capstone Project, Winter 2019.

Graduate Teaching Assistant for three courses at Louisiana State University

CSC1351: Java Programming, Fall 2017, Spring 2018, Fall 2018.

SERVICE

Reviewer

IEEE Transactions on Automation Science and Engineering (T-ASE 2024).

8th IEEE International Conference on Fog and Edge Computing (ICFEC 2024)

15th IEEE/ACM International Conference on Utility and Cloud Computing (UCC2022)

IEEE Data Compression Conference (DCC 2019)

PROFESSIONAL AFFILIATIONS

ACM (Association for Computing Machinery)

IEEE (Institute of Electrical and Electronics Engineers)

IMS (Iranian Mathematical Society)

IranWiC (Iranian Women in Computer Science)