Rohan Garg

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Citizenship: USA

Research Interests

Parallel and Distributed Computing, Algorithms, Game Theory, Combinatorial Optimization

Current Position

Purdue University — West Lafayette, IN
Graduate Research Assistant — Aug 2020 – Present
Ross Fellow: "Recognizes academic excellence." — Aug 2020 – Aug 2024

Education

Purdue University — West Lafayette, IN
Ph.D. in Computer Science — Aug 2020 – Present
Initial Advisor: Kent Quanrud
GPA: 3.93

The University of Texas at Austin — Austin, TX
B.S. in Electrical and Computer Engineering — Aug 2016 – May 2020
Track: Software Engineering
GPA: 3.5

Honors and Scholarships

Ross Fellowship (Purdue University) — 2020 – 2024
University Honors Fall (UT Austin) — 2016

Publications

Fast and Work-Optimal Parallel Algorithms for Predicate Detection
Rohan Garg.
arXiv, 2020

Parallel Algorithms for Predicate Detection
Vijay K. Garg, Rohan Garg.
2019. Proceedings of the 20th International Conference on Distributed Computing and Networking. Association for Computing Machinery, New York, NY, USA.
ICDCN, 2019

Research Experience

Approximate Max-Flow and Hierarchical Cut Decompositions
Mentor: Kent Quanrud (Purdue) — Aug 2020 – Jan 2021
Studied Max-Flow, Sparsest Cut, and Nearly Linear time algorithms for Hierarchical Cut Decompositions of Weighted Graphs.

Machine Learning for Testing Graph Properties
Mentor: Sarfraz Khurshid (UT Austin) Aug 2019 – May 2020
Studied machine learning models for testing data structure invariants. Extended work to graph properties. Full report available on my webpage.

Parallel and Distributed Systems Lab
Mentor: Vijay K. Garg (UT Austin) May 2017 – Jan 2019
Studied Parallel and Distributed Algorithms. Resulted in ICDCN publication listed above.

Community Detection
Mentor: Joe Neeman (UT Austin) Aug 2018 – Jan 2019
Studied Community Detection and Spectral Clustering on Random Graphs.

Teaching Experience

EE 360C: Algorithms, ECE Department (UT Austin) Spring 2019, 2020
Teaching Assistant
Created assignments, tests and quizzes over topics including runtime analysis, intractability, and network flow. Administered discussion sessions and office hours. **Spring '19 rated 4.5/5**. **Spring '20 rated 4.8/5**.

Industry Experience

Amazon AWS Seattle, WA
Software Development Engineering Intern Summer 2019
Developed a serverless function that combined and modified data from DynamoDB Key-Store System for Commerce Platform. Worked with AWS S3, Lambda, and DynamoDB technologies.

Cox Automotive vAuto Inc. Austin, TX
Software Engineering Intern Summer 2018
Developed Python applications to perform keyword extraction and text-entity detection using AWS Comprehend NLP tool for Backend Services team. Wrote Automated Tests for the front-end of AuctionGenius Products using C#/.NET and the Selenium Testing Framework to aid the Automated Testing team.

Courses

Purdue University West Lafayette, IN
Enrolled: Algorithmic Economics, Sublinear Algorithms, Approximation Algorithms.
Completed: Randomized Algorithms (Audit), Graduate Algorithms.

The University of Texas at Austin Austin, TX
Graduate: Combinatorics and Graph Theory (Audit), Graduate Algorithms, Mobile Computing (Audit).
Undergraduate: Abstract Algebra, Software Design I & II, Algorithms, Probability, Linear Algebra, Number Theory, Data Science, Theory of Computation.

Talks and Tutorials

Improved Bounds for Matching in Random Streams Spring 2021
Purdue Theory Seminar

Pigeonhole Principle and Some Applications Fall 2020
Purdue Algorithms Reading Group

Error Correcting Codes Fall 2020
Purdue Algorithms Reading Group

Intro to Parallel and Distributed Computing Fall 2020
Purdue Algorithms Reading Group

The Feedback Vertex Set Problem Summer 2020
Purdue Algorithms Reading Group

Approximation Algorithms for Multiway Cut and k-Cut Summer 2020
Purdue Algorithms Reading Group

Network Flow Spring 2020
Purdue Algorithms Reading Group

Undergraduate Research and Jobs in Academia/Industry Spring 2020
Women in Natural Sciences First-Year Interest Group

Skills

Programming
Proficient in: Java, Python.
Frameworks/Tools: AWS Comprehend NLP, Selenium Web Testing, LaTeX.
Industry Practices: Agile Methodology, Git Version Control, JUnit/NUnit.
Software: AutoDesk Inventor (CAD), MultiSim/LogiSim (Circuit Simulation), MS Office.

Languages
English (Fluent), Hindi (Advanced), Spanish (Limited)

Service and Outreach

Purdue Algorithms Reading Group Purdue
Served as co-organizer in charge of scheduling and preparing talks.

Code Orange UT Austin
Taught elementary school students basic programming principles.

Student Engineers Educating Kids UT Austin
Taught elementary school students basic engineering principles.

Other Interests

Badminton, Tennis, Soccer, Contract Bridge.