Rohan Garg

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Citizenship: USA

Research Interests

Algorithms, Algorithmic Game Theory, Parallel and Distributed Computing, Combinatorial Optimization, Computational Social Choice

Current Position

Purdue University — West Lafayette, IN
Graduate Student — Aug 2020 – Present

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 Fellow (Purdue): "Recognizes academic excellence." — 2020 – 2021
University Honors Fall (UT Austin) — 2016

Publications

Efficient Mechanisms without Money: Randomization Won't Let You Escape From Dictatorships
Rohan Garg, Alexandros Psomas.
In Submission.
Preprint (Working Paper)

Fast and Work-Optimal Parallel Algorithms for Predicate Detection
Rohan Garg.
In Submission - IPDPS 2022
arXiv preprint (Working Paper), 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

Fair Division and Kings in Graphs
Mentor: Alexandros Psomas (UT Austin) May 2021 – Present
Studied the role of randomization in truthful and efficient fair division settings. Resulting paper in submission to AAAI 2022. Currently also studying generalized king vertices in graphs.

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.

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

Teaching Experience

CS 381: Intro to the Analysis of Algorithms, (Purdue) Fall 2021
Head Graduate Teaching Assistant
In charge of creating assignments, administering discussion sessions, and holding office hours. Covering topics including dynamic programming, network flow, and intractability.

EE 360C: Algorithms, (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: Machine Learning and Algorithms Seminar, Advanced Topics in Algorithms.

Completed: Algorithmic Economics, Sublinear Algorithms, Approximation Algorithms, 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 CS Graduate Student Association 2021
Serving as Faculty Search Committee Representative. Assisting the department in the faculty search process.

Purdue Algorithms Reading Group 2020
Served as co-organizer in charge of scheduling and preparing talks.

UT Austin - Code Orange 2018-19
Taught elementary school students basic programming principles.

UT Austin - Student Engineers Educating Kids 2018
Taught elementary school students basic engineering principles.

Other Interests

Badminton, Tennis, Soccer, Contract Bridge, Chess, English Premier League (Manchester United F.C).

Last Updated

September 2021