Calvin Roth

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calvinroth.github.io

EDUCATION

University of Minnesota, Twin Cites **Fall 2022 - Current**

PhD in Industrial Engineering

University of Minnesota, Twin Cities **Fall 2020-Spring 2022**

Master of Computer Science

University of Minnesota, Twin Cities **Spring 2020**

Bachelor of Science,Math(Cum Laude)

Thesis Title: An Overview of Factoring Algorithms Advisor: Daniel Johnstone

Bachelor of Science,Computer Science

RESEARCH INTERESTS

3rd year industrial and Systems engineer PhD Student at University of Minnesota. Interested in network economics, graph theory, social networks, stochastic processes, and computational tools.

PAPERS

"Ankur Mani, Krishnamurthy Iyer, Calvin Roth" Peer Filtering: Democratic Misinformation Control in Social Networks

- 2024 INFORMS Conference
- 2024 International School and Conference on Network Science(NetSci)
- 2024 Conference on Network Science and Economics

"Calvin Roth, Ankur Mani, Jiali Huang" The Value of Community Information for Pricing Under Network Externalties

- 2023 INFORMS Conference
- 2024 Revenue Management Conference

"Nathaniel Morgan, Caleb Yenusah, Adrian Diaz, et. al" On a Simplified Approach to Achieve Parallel Performance and Portability Across CPU and GPU Architectures

- Information Applications: Advances in High Performance Computing and Scalable Software, 2024

COURSEWORK & SKILLS

Coursework

•Probability and Statistics • Advanced Algorithms and data structures • Numerical Methods • Modern Cryptography • Abstract Algebra • Intro to Parallel Computing • Program Design & Development • Intro to Machine Learning • Matrix Theory • Sparse Linear Algebra • Intro to Network Science • Combinatorial Theory • Optimization • Stochastic Processes • Engineering the allocation of Public Resources • Game Theory • Modeling & Analysis of Queuing Systems • Causal Learning & Discovery

Programming Languages

Fluent: C/C++ •Python •Julia *Familiar:* Ocaml •Prolog •Agda •Html/Css/Javascript •R

PROFESSIONAL EXPERIENCE

Simons Laufer Mathematical Sciences Institute **June 20-June 30 2023**

Graduate Summer School Participant

- Studied algorithmic market design and presented on a Refugee allocation algorithm.

Los Alamos National Laboratory **June-August 2022**

Parallel Computing Summer Research Internship

- Created code to auto-generate a documentation website using Doxygen and Sphinx.
- Implemented sparse datatypes for the parallel computing library MATAR.
- Completed parallel coding projects working across GPUs and CPUs.

University of Connecticut **June-August 2019**

Semi-Quantum Key Distribution

- Learned in a research environment the basics of Quantum Computing
- Derived equations to model the state of various Quantum Communication Protocols.
- Applied statistics and numerical methods to calculate better bounds on the allowed noise rate in the channel that the protocol can allow.

Activated Research Company **June-August 2018**

Software Engineer Intern

- Website development using HTML, my SQL, and JavaScript.
- Created interactive data visuals using JavaScript and plotly.
- Low level Arduino programming to control mechanical systems.

TEACHING EXPERIENCE

University of Minnesota

•Discrete Structures of Mathematics **Fall 2018**

•Linear algebra and Differential Equations **Fall 2020**

•Formal Languages and Automata Theory **Spring, Fall 2021, Spring 2022**

•Matrix Theory **Fall 2021**

•Optimization for Machine Learning **Fall 2022, 2023**

•Quality Engineering and Six Sigma **Spring 2023** •Computational Software TA **Fall 2024**

REFERENCES

- Ankur Mani, Assistant Professor, Department of Industrial and Systems Engineering University of Minnesota, amani@umn.edu
- Krishnamurthy Iyer , Associate Professor, Associate Professor, Department of Industrial and Systems Engineering University of Minnesota, kriyer@umn.edu