Arvind Ramaswami

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Website: https://arvindr9.github.io/ Codeforces:https://codeforces.com/profile/arvindr9
Interests: Combinatorial optimization, machine learning

Education

Georgia Tech (Fall 2017 - Fall 2020): BS Computer Science. (Threads: Intelligence and Theory.
Cumulative GPA: 3.87)

Georgia Tech (Expected Spring 2021 - Fall 2022): MS in Computer Science (Machine Learning)

Relevant Coursework:

Math Classes: Advanced Graph Theory, Algebraic Topology I, Probability I, Analysis I, Abstract Algebra I

CS Classes: Advanced Algorithms in Machine Learning, Intro to Database Systems, Deep Learning, Robot Intelligence: Planning, Applied Cryptography

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Research

Model Theory Research **Summer 2021**

Designing a theoretical framework for narrative storytelling using model theory

Theoretical ML Research - *Advisor: Jacob Abernethy* **Sept 2019 — Present**

Evaluated the effectiveness of different optimization algorithms such as Mirror Prox in the adversarial learning problem. Wrote an undergraduate thesis *Minimax Perspective of Adversarial Examples* in Spring 2020.

Currently working with a group to rework Schapire's Multiclass Boosting framework to fit the adversarial robustness problem. We have currently had success on ensembles of decision trees, and are in the process of extending this to neural networks.

ML Research - *Advisor: Sebastian Pokutta* **Jan 2018 — May 2019**

Engineered adversarial attacks on random forest classifiers and developed methods to make them more robust. Performed this research as a member of the Interactive Optimization and Learning (IOL) Lab.

Skills

Programming languages: C++, Python, Java, Javascript

Competitive programming: Qualified for Round 3 of Google Code Jam (2021), ACM ICPC Participant (2020: **4th** place team out of ~**80** teams in the Southeast USA Region, qualified for the North American Division Championship and received **11th** place in the South USA division)

Work Experience

Amazon - *Software Development Engineer (SDE) Intern* **May 2020 — Aug 2020**

Designed a recommender system that matches advertisers to partners for AAPN (Amazon Advertiser Partner Network). Also performed cluster analysis on the advertiser data.

Lawrence Livermore National Laboratory - *Software Engineer Intern* **May 2019 — Aug 2019**

Developed a testing framework for the calculations to set up experiments at the National Ignition Facility (NIF), the largest laser facility in the world. Proposed data science techniques to validate the calculations.

Other Experience

Georgia Tech Programming Team - (*Vice President from Fall 2020 to present)* **Aug 2017 — Present**

Prepares content for weekly meetings in topics such as dynamic programming, data structures, and combinatorial optimization

Big-O Theory Club - (*President from Fall 2020 - Spring 2021)* **Aug 2017 — May 2021**

Gave talks about theoretical computer science (examples of topics discussed: randomized algorithms, flows) and invited other students to give talks about their research.

Projects

ReconBlind Multi-Chess Agent **Nov 2020**

Worked on a team (for the class *Robot Intelligence: Planning*) to create an agent that would play Reconchess. Based our agent on the AlphaGo Zero paper by David Silver and incorporated a policy neural network with Monte-Carlo Tree Search.

DonationTracker **Aug 2018 - Dec 2018**

Created an Android application in a team of five that allows people in need in Atlanta to locate places to get aid and receive donations. Used SQLite to persist profile information and wrote extensive JUnit tests.

WeLocate **Oct 2017**

Built a website that uses Yelp's API and AWS Machine Learning to find where to open their business. Received first-place awards at VandyHacks for the Most Disruptive Hack and the Best Financial Hack.

Honors

Competitive Programming: Qualified for Round 3 of Google Code Jam (2021), ACM ICPC Participant (2020: **4th** place team out of ~**80** teams in the Southeast USA Region, qualified for the North American Division Championship and received **11th** place in the South USA region)

Mathematics: Represented Georgia for the American Regions Mathematics League (ARML) in 2015 and 2017.

Violin: Previously a member of the Atlanta Symphony Youth Orchestra, Georgia All-State Orchestra. Currently playing in the Georgia Tech Symphony Orchestra. Also learned conducting under Dr. Chaowen Ting.

Spoken Languages: English, Spanish, Tamil, Chinese.