Arvind Ramaswami

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LinkedIn: http://linkedin.com/in/arvind-ramaswami   GitHub: https://github.com/arvindr9

Website: https://arvindr9.github.io/   Codeforces: https://codeforces.com/profile/arvindr9

Interests: Machine Learning, Optimization, Graphs

Education

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

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

Relevant Coursework:

Math Classes: Advanced Graph Theory, Graduate Probability I, Analysis I, Abstract Algebra I, Algebraic Topology I, High Dimensional Statistics

CS Classes: Machine Learning Theory, Dynamic Algebraic Algorithms, High-Performance Computing, Deep Learning, Robot Intelligence: Planning, Applied Cryptography, Intro to Database Systems, NLP

Research

Theory CS Research - *Advisor: Richard Peng*   **Jan 2022 - Present**

Worked on a problem related to the Robust Interior Point method. Currently developing high-accuracy algorithms for the optimal transport problem.

ML Research - *Advisor: Jacob Abernethy*   **Sept 2019 — Oct 2021**

Evaluated the effectiveness of different optimization algorithms such as Mirror Prox in the adversarial learning problem. Also developed adversarial robustness algorithms using multiclass boosting.

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

Engineered adversarial attacks on random forest classifiers and developed methods to make them more robust.

Publications / Submitted Papers

Sinkhorn has Exponential Convergence under Regularization. Preprint (2022). With Richard Peng, Yang Liu, Jingbang Chen.

Other Writeups

SDPs for MaxCut Approximations (2021, Survey for Advanced Graph Theory class)

SQ Learning for Tensor PCA (2021, Project for ML Theory class)

Work Experience

PerfectRec - *Machine Learning Engineer Intern*   **June 2022 - Aug 2022**

Designed and implemented ML algorithms to recommend products to users. Advised by Professor Josh Hug.

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

Designed a ranking system to match advertisers to partners for the Amazon Advertiser Partner Network.

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

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

Skills

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

Competitive programming: ACM ICPC World Finalist (Rank 6 out of 50 teams in the North America Championship), Round 3 of Google Code Jam (2021), Top 200 in Round 3 of Meta Hacker Cup (2022)

Leadership

Georgia Tech Programming Team - *(President from Spring 2022 to present)*   **Aug 2017 — Present**

Prepares content for weekly meetings in topics such as dynamic programming, data structures, and combinatorial optimization. Arranges team practices for ICPC.

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.

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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 David Silver's AlphaGo paper and incorporated a policy neural network with Monte-Carlo Tree Search.

WeLocate   **Oct 2017**

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

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Miscellaneous

Math Contests: Represented Georgia for the American Regions Mathematics League (ARML) in 2015 and 2017, qualifier for American Invitational Mathematics Exam (AIME) in 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.