

Aditya Saligrama

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High school senior and computing enthusiast with research and project experience in machine learning, parallel computing, and systems optimization.

Education

Weston High School (Weston, MA : August 2016 - June 2020)

- Weighted GPA: 4.70 SAT: 1570/1600 SAT II: Math II, Physics: 800/800, World History: 790/800
- Relevant Coursework: AP Calculus BC, AP Physics C, AP Statistics, AP Computer Science A

Projects & Experience

Research Science Institute (Cambridge, MA : June 2019 - August 2019)

Project title: Real-Time, Detailed Tracking of Garbage Collection Activity in Go Programs

Mentors: Samuel Erb, Adam Brockett, Tom Houman, Tim Glynn (Akamai Labs)

- Created a real-time garbage collection monitoring system with per-thread, per-phase detail
- Currently being incorporated into Akamai codebase

MIT PRIMES (Cambridge, MA : January 2018 - Present)

Project I: A Practical Analysis of Rust's Concurrency Story (2018) Mentors: Jon Gjengset, Prof. Frans Kaashoek (MIT PDOS)

- Developed set of concurrent hashmaps that are among the fastest available for the Rust language with over 80 stars on GitHub (github.com/saligrama/concache)
- Presented report on how the Rust language helps and hurts developers in writing concurrent code at the September 2018 Boston Rust Meetup and at the October 2018 MIT PRIMES conference

Project II: Adversarial Machine Learning (2019) Mentors: Guillaume Leclerc, Prof. Aleksander Mądry (MIT Mądry Lab)

- Investigating effectiveness of ensembling with robust and non-robust features for adversarial robustness
- Developed ensemble schemes that yield same adversarial robustness as a single model but improve natural accuracy
- Paper published in ICLR 2020 workshop on trustworthy machine learning (44% acceptance rate)

CORELS: Learning Certifiably Optimal Rule Lists (Cambridge, MA : June 2017 - Present)

A machine learning algorithm that builds human-interpretable rule list models

PIs and mentors: Prof. Margo Seltzer (University of British Columbia), Prof. Cynthia Rudin (Duke)

- Co-first author of upcoming paper on systems optimizations that allow algorithm to scale to large datasets
- Key contributor to parallel (multithread) implementation
- Implemented web UI (corels.eecs.harvard.edu) and R language API (github.com/saligrama/corels)
- Conducted several experiments on algorithm scalability for systems papers

Independent Project: KnowBias (knowbias.ml) : May 2018 - Present)

An award-winning AI algorithm that detects political polarization in online articles in real time

- Won district Congressional App Challenge (2018), MetroHacks III Best Entrepreneurial Hack Award (2018)
- Long paper on arXiv; short paper published as an AAAI 2020 Student Abstract (48% acceptance rate)
- Now used in Weston High School English and history classes.

Wildcat Tracks (Weston, MA : August 2016 - Present)

Co-Editor-In-Chief (2018 - Present), News Editor (2017 - 2018), Photo Editor (2016 - 2017)

- Managing a team of five staff writers and eight section editors
- Significantly increased print and digital article output by 20% in first year as co-editor-in-chief

Publications

- **A. Saligrama, G. Leclerc. [Revisiting Ensembles in an Adversarial Context: Improving Natural Accuracy](#). In *Proceedings of the 8th International Conference on Learning Representations (ICLR 2020) Workshop on Towards Trustworthy ML: Rethinking Security and Privacy for ML, ICLR:TML'20*. arXiv:2002.11572, 2020.**
- **A. Saligrama. [KnowBias: Detecting Political Polarity in Long Text Content](#). In *Proceedings of the 34th AAAI Conference on Artificial Intelligence: Student Abstract and Poster Program, AAAI:SAP'20*. arXiv:1909.12230, 2020.**
- **A. Saligrama. [KnowBias: A Novel AI Method to Detect Polarity in Online Content](#). arXiv:1905.00724, 2019.**
- **A. Saligrama, A. Shen, J. Gjengset. [A Practical Analysis of Rust's Concurrency Story](#). arXiv:1904.12210, 2019.**
- N. Larus-Stone, E. Angelino, D. Alabi, M. Seltzer, V. Kaxiras, **A. Saligrama**, C. Rudin. [Systems Optimizations for Learning Certifiably Optimal Rule Lists](#). SysML Conference, 2018.

Selected Awards & Honors

- Congressional App Challenge Winner, Massachusetts 5th district (2018)
- Science Olympiad: 1st Python Code Analysis (2019 MA State), 3rd Data Science, 6th Circuit Lab (2020 Harvard Inv)
- USA Computing Olympiad, Gold division (2018 - Present)
- MetroHacks III Best Entrepreneurial Hack (2018)
- Providence College High School Programming (Team) Contest, 2nd place (2019, 2018), 3rd place (2017)
- Other awards: National Merit Finalist (2020), Wildcat Tracks Journalism Award, AIME Qualifier (2019)