

# Aditya Saligrama

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Freshman at Stanford University and computing enthusiast with research and project experience in machine learning, parallel computing, and systems optimization.

## Education

**Stanford University (Stanford, CA : September 2020 - Present)** GPA: 4.05

- Relevant coursework: CS107 Computer Organization & Systems, CS106B Programming Abstractions, CS103 Mathematical Foundations of Computing (all grades A)

**University of Wisconsin Independent Learning (Fall 2019):** Calculus III, Grade: A

**Weston High School (Weston, MA : August 2016 - June 2020)** Weighted GPA: 4.70

## Projects & Experience

**Engineering Intern at Uptycs (Waltham, MA : November 2020 - Present)**

**Research Intern at Akamai Labs via 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 realtime garbage collection monitoring system with per-thread, per-phase detail now part of Akamai codebase

**MIT PRIMES (Cambridge, MA : January 2018 - June 2020)**

*Project I: A Practical Analysis of Rust's Concurrency Story (2018 - 2019) 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 95 stars on GitHub ([github.com/saligrama/concache](https://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 - 2020) 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](http://corels.eecs.harvard.edu)) and R language API ([github.com/saligrama/rcorels](https://github.com/saligrama/rcorels))
- Conducted several experiments on algorithm scalability for systems papers

**Independent Project: KnowBias ([knowbias.ml](http://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 - June 2020)**

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

- Managed an editorial staff of 13; significantly increased article output by 20% as co-editor-in-chief

## Publications

- A. Saligrama, G. Leclerc. [Revisiting Ensembles in an Adversarial Context: Improving Natural Accuracy](#). 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](#). AAAI 2020 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 5<sup>th</sup> district (2018)
- USA Computing Olympiad, Gold division (2018 - 2020)
- MetroHacks III Best Entrepreneurial Hack (2018)
- Providence College High School Programming (Team) Contest, 2<sup>nd</sup> place (2019, 2018), 3<sup>rd</sup> place (2017)
- Other awards: National Merit Finalist (2020), Wildcat Tracks Journalism Award, AIME Qualifier (2019)