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 2020): 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)
- 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) and R language API (github.com/saligrama/rcorels)
- 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 - 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 5th district (2018)
- USA Computing Olympiad, Gold division (2018 - 2020)
- 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)