

SAM THOMAS

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EDUCATION

Davidson College

Bachelor of Science.

Major in Honors Computer Science.

Major in Political Science.

August 2016 - May 2020

Overall GPA: 3.58

Computer Science GPA: 3.52

Political Science GPA: 3.54

RELEVANT COURSES

Linear Algebra, Data Structures, Computer Organization, Discrete Structures, Analysis of Algorithms, Operating Systems, Theory of Computation, Advanced Concurrency and Cache Performance, Machine Learning (IP), Networks and Distributed Systems (IP).

PAPERS

Samuel Thomas and Hammurabi Mendes. 2019. Layering Data Structures over Skip Graphs for Increased NUMA Locality. In Proceedings of the 2019 ACM Symposium on Principles of Distributed Computing (PODC '19). ACM, New York, NY, USA, 422-424. DOI: <https://doi.org/10.1145/3293611.3331576>

Thomas, S., Mendes, H. (2019). Layering Data Structures over Skip Graphs for Increased NUMA Locality. *arXiv preprint arXiv:1902.06891*.

RESEARCH EXPERIENCE

Davidson College

Undergraduate Research Assistant

Summer 2018

- I built and read concurrent algorithms for both locked-free and lock-based data structures. The process included designing concurrent skip list and variants by experimentation. We maximized cache friendliness with an emphasis on NUMA locality. I looked at potential applications in building priority queues. The research was accepted as a brief announcement in PODC 2019 and is currently under submission for a full paper. The pre-print can be viewed here: <https://arxiv.org/abs/1902.06891>.

Davidson College

Advanced Concurrency and Cache Performance - Independent Study

Spring 2019

- I built concurrent data structure with Transactional Memory as the primary synchronization mechanism. The structure uses a fallback protocol of compare-and-swap instead of locks. Produced similar performance as highly optimized Layered Skip Graph with some improvements. The work done in this Independent Study turned into new undergraduate summer research project.

Davidson College

Undergraduate Research Fellow

Summer 2019

- I studied the impact of partitioning data structures in software that best utilize the benefits of NUMA hardware architectures. I developed a reclamation strategy particular to the Layered Skip Graph, seeing as Threadscan cannot be applied. I helped develop a lazy alternative of the Layered Skip Graph to help in its optimization.

PROJECTS

Web-Scraping and Dataset Analysis I have presented a web-scraping workshop to Davidson College CatsStats student group and co-led web-scraping subteam. I have built several web-scraping projects for professional sports teams, ESPN, private companies, on-campus teams, on-campus marketing department, and general research questions. Projects include dynamic modelling weather and ticket sales, basketball lineup efficiencies, heat mapping, etc. Some of my projects for the CatsStats group can be found on my GitHub (<https://github.com/samthomas2020/CatsStats>).

Hackathons I have competed in four hackathons.

- I competed individually and finished as an honorable mention in the WakeHacks 2018 by working on a project that both scrapes NCAA race result data from <https://tfrrs.org> and displays it as an interactive graph.
- I competed individually and created an application that displays data from the provided housing-data at hackathonCLT 2018.
- I competed with a team and finished as an honorable mention in the DavidsonHackathon 2018 where we created a sentiment analysis for any user-provided keyword in the school newspaper, *The Davidsonian*, since its establishment in 1918.
- I competed with a team and finished as a winner of the Wolfram Award at HackNC 2019 where we created a virtual reality game that has the user open a website in the virtual environment and spawns “Attack Ads” that must be shot at with a virtual gun that represent all ads discovered in the site’s live HTML layout.

Programming Competitions I competed in two ICPC style programming competitions. My profile can be seen on Kattis here: <https://open.kattis.com/users/sam-thomas>, and were solved in Python, Java, and C.

- My team finished in the top 10 at the CCSC:SE competition in Roanoke, VA in 2018.
- My team was an honorable mention at the ACM ICPC competition in Chapel Hill, NC in 2018.

EXTRACURRICULAR

- Founding member and president of the Davidson College ACM Chapter
- Member of the Bernard Society
- Ran Division I Cross Country and Track Field in the Atlantic 10 Conference
- Cross Country and Track Field Team Manager upon suffering injury
- Sports Editor and Senior Sports Writer of *The Davidsonian*, the only regularly publishing on-campus periodical
- Co-president of Davidson College Pep Band (Alto Saxophone)
- Co-founder of the Davidson College Disc Golf Club and member of the Charlotte Disc Golf Club
- Babysitting and nannying for community families

WORK EXPERIENCE

Davidson College Computer Science Department

Fall 2019 - present

Teaching Assistant (TA) - Data Structures

Planning additional problems and hosting office hours for students in one of the two section offerings of Data Structures. Providing individual and group assistance with concepts from class with additional practice.

Davidson College Math and Science Center

Spring 2018 - Spring 2019

Computer Science and Mathematics Tutor

Provided assistance for students in introductory and intermediate computer science and mathematics courses. Open office hour style help. Among these courses include Linear Algebra, Calculus I and II, Introductory Programming and Problem Solving, Data Structures, Discrete Structures, Computer Organization, and Analysis of Algorithms.

Davidson College Spanish Department

Fall 2017

Apprentice Teacher - Spanish 101

Planning reading, writing, and speaking activities for one of four offered sections of Spanish 101. Held sessions twice per week with students for mandatory practice outside of vocabulary and grammatical structures.

Brewster Day Camp

Summer 2017, Summer 2018

Tent Counselor

In charge of group of twelve to twenty-one (depending on week's registration) five year old boy campers. Collaborating directly with immediate supervisor over campers-of-concern from mental health perspective. Guided activities such as archery, swimming, kickball, arts and crafts, and low ropes. Managed parking lot at camp pick up. Was twice offered a promotion.

Charlotte Running Company

August 2018 - present

Sales

I managed store inventory and basic accounting. I was top salesman per hour during Summer 2019. I've been promoted three times.

TECHNICAL STRENGTHS

Languages	C++, C, Standard ML, Java, Python, HTML
Techniques	Concurrent Programming, Functional Programming

PERSONAL TRAITS

- Highly motivated and eager to learn new things.
- Love of debugging.
- Ability to work as an individual as well as in group.
- Love of reading and engaging with political theory.
- Avid sports fan.