

Yonathan Fisseha

yonathanfisseha.com

RESEARCH EXPERIENCE

Hardware Design Languages and Verification, University of Michigan *Aug. 2020 - Present*
Graduate Researcher

- Designing a new hardware description language called HardKAT with a strong emphasis on mathematical rigor. HardKAT fits into a family of mathematical structures called Kleene Algebras. This allows equational reasoning and gives a decision algorithm which we aim to rely on for hardware verification tasks
- Formally verifying the design and implementation of a new processor called Sequestered Encryption. This work uses both RTL level verification techniques and ISA level language verifications
- Helped design and implement an extension to the Chisel HDL called Twine which introduces high-level interfaces to the language

Compression-Aware Algorithms and MPC, University of Virginia *Aug. 2017 - Aug. 2020*
Undergraduate Researcher

- Re-designed classical string and graph algorithms such that they can process data compressed with certain compression schemes without decompressing the data
- Implemented a graph compression algorithm and a generalized graph generator
- Exploring the application of compression-aware algorithms in multi-party computation

NetSys Group, UC Berkeley *May 2019 - Aug. 2019*
Undergraduate Researcher

- Surveyed the existing literature on streaming algorithms, cryptographic schemes, and data summarization
- Designed a technique for securely summarizing streaming data using sketching data structures and symmetric partially homomorphic encryption schemes
- Implemented a portion of the system on top of Summary Store

NoSQL Databases and Distributed Computing, University of Virginia *Aug. 2016 - May 2017*
Undergraduate Researcher

- Experimentally studied the performance of NoSQL databases on distributed frameworks
- Proposed a Hybrid Transactional/Analytical Processing system based on experimental results to bridge the gap between data storage and analytics for Big Data
- Co-created a poster for the conference CAPWIC 2017 and won 1st place

WORK EXPERIENCE

Algorithms, OS, Web PL, Adv. Software Development, University of Virginia *Aug. 2018 - Aug. 2020*
Teaching Assistant

- Holding office hours to help students with homework and exam preparation
- Designing rubrics for homeworks and exams
- Grading homework and exams

Intune, Microsoft Corp. *May. 2018 - Aug. 2018*
Software Engineer Intern

- Designed and implemented Network-Fencing and Geo-Fencing testing tools for the Intune Android client using Hyper-V and Android Mock Locations
- Integrated the testing tools with the existing CI infrastructure
- Created architectural designs for these tools
- Produced specifications, one-pagers, and reports to communicate with PMs

EDUCATION

University of Michigan, Ann Arbor, Michigan *Aug 2020 - Present*
PhD in Computer Science

University of Virginia, Charlottesville, Virginia *Aug 2016 - May 2020*
Bachelor of Science in Computer Science

Community College of Aurora, Aurora, Colorado *Aug. 2013 - May 2016*
Associates in Science