Sarah Morin

San Francisco, CA

(603) 998-6402
morin.sarah.m@gmail.com
sarahmorin.github.io
sarahmorin *sarahmariemorin*

Education

2017–2021 **BS Computer Science**, *The George Washington University*, Washington, DC
Minor in Mathematics
Technical GPA: 3.95/4.0, GPA: 3.89/4.0
Relevant Coursework: Operating Systems, Systems Programming, Computer Architecture, Algorithms, Cryptography, Software Engineering, Foundations of Computing, Discrete Structures, Neural Networks, Linear Algebra, Abstract Algebra, Number Theory

Professional Experience

Oracle Cloud Infrastructure, Oracle

2023–Present **Member of Technical Staff**, *File Storage Service*

- Leading development of data-plane implementation of user quota enforcement, including persistent metadata store, efficient scan and aggregation of usage data for all users across the filesystem, and synchronization between client servers and persistent store to rapidly detect and alert when a quota is exceeded.
- Collaborated with control-plane, platform, and product management teams to design a user quota enforcement system that a) allows administrators to set space usage limits on users, and b) does not have any significant effect on throughput of requests that do not exceed quota.
- Increased flexibility of File Storage Service by introducing support for ARM hardware, served as lead data-plane developer. (C, x86 and ARM asm)
- Collaborated with 3 developers to provide data-plane level support for SMB protocol. (C, Go)
- Architected efficient garbage collection of ACLs without reference counting to minimize the performance impact on ACL-related operations. Guaranteed cleanup within 3 hours of becoming unreferenced. (C)

2021–2023 **Software Engineer**, *File Storage Service*

- Designed and implemented a background thread to enforce a new expiration principle by cleaning server keyrings which enhanced file system security and helped to secure a contract for a new customer with extensive security standards. (C)
- Refined IO time-out metrics and alarms to reflect an increase in scale. Effectively reduced unnecessary ticket load by 75%. (C, Python)
- Automated weekly data plane KPI report generation, saving 10 hours per week of manual reporting work.
- Improved service resiliency by developing internal tooling, improving documentation, and increasing integration test coverage. (Python)

Academic Experience

2019-2021 **Research Assistant**, *Department of Computer Science*, The George Washington University
Professor Poorvi Vora

- Led development of R2B2 Risk-Limiting Audit Python library and CLI to execute both Bayesian and ATHENA audits.
- Built simulation engine and simulated millions of trials to experimentally verify theoretical risk and stopping probabilities of ATHENA audits.

- Simulated Bayesian risk-limiting audits to investigate invalid-ballot and multiple candidate problem solutions.
- **Poster:** Grant McClearn, Sarah Morin, Neal McBurnett, Poorvi L. Vora, Filip Zagórski, *A New Statistical Audit for Real Elections*

2019-2020 **Teaching Assistant**, *Department of Computer Science*, The George Washington University

- Taught weekly lab/recitation section, held weekly office hours (5 hours/week), assisted professor with development of course materials.
- Developed Processor Design (Computer Architecture) and Embedded Systems Signal Processing and Analysis projects (Systems Programming)

CSCI 2461 Computer Architecture *Fall 2019, 2020*

CSCI 3410 Systems Programming *Spring 2020*

CSCI 1311 Discrete Structures I *Spring 2019*

Publications

Journal Articles

2020 Filip Zagórski, Grant McClearn, **Sarah Morin**, Neal McBurnett, and Poorvi L. Vora. The athena class of risk-limiting ballot polling audits. *CoRR*, volume abs/2008.02315, 2020.

In Conference Proceedings

2023 Oliver Broadrick, **Morin, Sarah**, Grant McClearn, Neal McBurnett, Poorvi L. Vora, and Filip Zagórski. Simulations of ballot polling risk-limiting audits. In Shin'ichiro Matsuo, Lewis Gudgeon, Ariah Klages-Mundt, Daniel Perez Hernandez, Sam Werner, Thomas Haines, Aleksander Essex, Andrea Bracciali, and Massimiliano Sala, editors, *Financial Cryptography and Data Security. FC 2022 International Workshops*, pages 351–365, Cham, 2023. Springer International Publishing.

2021 Filip Zagórski, Grant McClearn, **Sarah Morin**, Neal McBurnett, and Poorvi L. Vora. Minerva–an efficient Risk-Limiting ballot polling audit. In *30th USENIX Security Symposium (USENIX Security 21)*, pages 3059–3076. USENIX Association, August 2021.

2020 **Morin, Sarah**, Grant McClearn, Neal McBurnett, Poorvi L. Vora, and Filip Zagórski. A note on risk-limiting bayesian polling audits for two-candidate elections. In Matthew Bernhard, Andrea Bracciali, L. Jean Camp, Shin'ichiro Matsuo, Alana Maurushat, Peter B. Rønne, and Massimiliano Sala, editors, *Financial Cryptography and Data Security*, pages 337–344, Cham, 2020. Springer International Publishing.

Achievements

2021 **SEAS Distinguished Scholar**, *The George Washington University*
For outstanding achievement in the School of Engineering and Applied Sciences.

2019–2021 **Clare Boothe Luce Scholar**, *The George Washington University*
Awarded to undergraduate women in the School of Engineering and Applied Sciences pursuing research.

2019–2021 **Karlgaard Scholarship in Computer Science**, *The George Washington University*

2019 **Steve and Shelly Heller Prize**, *The George Washington University*
Awarded to sophomore women for excellence in computer science.

2018–2021 **Dean's List**, *The George Washington University*

Projects

2019 **Container Manager in xv6** *C, x86 Assembly*

- Developed a protected file system, shared memory regions, mutexes, and priority scheduling in xv6 operating system on 3 person team.

- Implemented mutexes and futexes to protect shared memory regions and provide synchronization across the system.

Skills

Programming	Python, C, Java, Rust, Assembly, LaTeX, Markdown, MATLAB, PHP, HTML/CSS
Technologies	Linux, Windows, Shell (Bash/Zsh), Git, OCI, AWS, Docker, Grafana, Jira, BitBucket, TeamCity
Database	SQL, MySQL, SQLite, MongoDB

Interests

Distributed Storage	I enjoy tackling difficult problems in storage, specifically distributed file systems, at the operating system level.
Go	I am an amateur Go player actively working on improving my ranking.