Sarah Morin

San Francisco, CA

603-998-6402 | morin.sarah.m@gmail.com | sarahmorin.github.io | github.com/sarahmorin | linkedin.com/in/sarahmariemorin

Experience

Oracle Cloud Infrastructure, Oracle — *Santa Clara, CA*

Member of Technical Staff | File Storage Service — *Feb 2023 - Present*

- 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)

Software Engineer | File Storage Service — *July 2021 - Feb 2023*

- 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)

Department of Computer Science, The George Washington University — *Washington, DC*

Research Assistant — *Jan 2019 - May 2021*

- Spearheaded 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.

Teaching Assistant — *Jan 2019 - May 2021*

- Taught weekly lab/recitation section, held weekly office hours (5 hours/week), assisted professor with development of course materials.
- **Courses:** Computer Architecture, Systems Programming, Discrete Structures I

Skills

Programming Python, C, Java, Rust, Go, MySQL, SQLite, Assembly, LaTeX, Markdown, MATLAB, PHP, HTML/CSS

Technology Linux, Windows, Shell (Bash/Zsh), Git, MongoDB, OCI, AWS, Docker, Grafana, Jira, BitBucket, TeamCity

Projects

Container Manager in xv6 — *GWU*

C, x86 Assembly — *Sept 2019 - Dec 2020*

- 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 system.

Education

The George Washington University — *Washington, DC*

BS in Computer Science, Minor in Mathematics — *Sept 2017 - May 2021*

Publications

Broadrick, Oliver, Sarah Morin, Grant McClearn, Neal McBurnett, Poorvi L. Vora, and Filip Zagórski. "Simulations of Ballot Polling Risk-Limiting Audits". In: *Financial Cryptography and Data Security. FC 2022 International Workshops*. Cham: Springer International Publishing, 2023, pp. 351–365. ISBN: 978-3-031-32415-4.

Zagórski, Filip, 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)*. USENIX Association, Aug. 2021, pp. 3059–3076. ISBN: 978-1-939133-24-3.

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: *Financial Cryptography and Data Security*. Cham: Springer International Publishing, 2020, pp. 337–344. ISBN: 978-3-030-54455-3.

Zagórski, Filip, Grant McClearn, Sarah Morin, Neal McBurnett, and Poorvi L. Vora. "The Athena Class of Risk-Limiting Ballot Polling Audits". In: *CoRR* abs/2008.02315 (2020).

Achievements

2021 **SEAS Distinguished Scholar,** George Washington University, School of Engineering and Applied Science — *Washington, DC*

2020 **Karlgaard Scholarship for Computer Science,** The George Washington University — *Washington, DC*

2019 **Clare Booth Luce Scholar,** The George Washington University — *Washington, DC*

2019 **Steve and Shelly Heller Prize,** The George Washington University — *Washington, DC*