

Your Name

 [username](#) |  [reed-milewicz](#) |  [rmmilewi.github.io](#) |  rmmilewi@gmail.com |  +205.612.0779

SUMMARY

Reed M. Milewicz Ph.D., is a computer scientist and software engineering researcher in the Department of Software Engineering and Research at Sandia National Laboratories. His current research focuses on developing better practices, processes, and tools to improve software development in the scientific domain. This is a course of research that straddles the line between systems and human factors, ranging from technologies such as compilers and formal verification tools to direct engagement with software teams through evidence-based software process improvement.

WORK EXPERIENCE

Senior Member of Technical Staff at Sandia National Laboratories Spring 2019 - Present

- Lead original research in software engineering and computing at the intersection of AI, HPC, and high-consequence systems,
- Serve as Principal Investigator and project lead for multiple projects, responsible for defining research vision, managing multidisciplinary teams, and ensuring successful delivery of technical milestones and sponsor outcomes.
- Develop and win competitive research proposals to DOE, DoD, and other federal agencies, securing funding to sustain and grow strategic R&D initiatives.
- Author and co-author peer-reviewed publications in top-tier conferences and journals, disseminating novel methods and findings to the academic and industrial research communities.
- Build and maintain strong collaborations across national laboratories, universities, and industry, as well as cross-directorate partnerships within Sandia, to extend research impact and influence.

Postdoctoral Appointee at Sandia National Laboratories Fall 2016 - Spring 2019

Performed software engineering research targeting scientific software development, and, as part of the Productivity and Sustainability Improvement Planning (PSIP) team within the Interoperable Design of Extreme-Scale Application Software (IDEAS) project, coordinating and conducting PSIP activities with partners across the Exascale Computing Project (ECP).

Graduate Research Assistant Fall 2013 - Spring 2016

Worked as part of the iProgress lab (PI: Dr. Peter Pirkelbauer) to develop innovative research while concurrently pursuing a doctoral degree. Was directly responsible for coordinating undergraduate research activities.

Research Intern at Lawrence Livermore National Laboratory Summer 2013

Developed critical software components for the ROSE compiler framework, in particular memory management around AST node deletion.

Teaching Assistant and Student Instructor at University of Alabama at Birmingham 2012-2013

Was responsible for grading assignments, tutoring students, and teaching lab sessions. Taught an introductory course in programming using the Python language, with a focus on multimedia applications, where I was responsible for all lectures and labs.

PROJECTS

Some Project

[Link to Demo](#)

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EDUCATION

Fall 2013–Summer 2016 PhD in Computer and Information Sciences, University of Alabama at Birmingham.

Thesis Title: Improving the Scalability of Directed Model Checking of Concurrent Java Code through Hybrid and Distributed Analysis.

Supervisor: Dr. Peter Pirkelbauer.

Interesting aside: At the time of my graduation, I held the unusual distinction of attaining both the highest scores on the qualifying exams and the fastest completion rate of my PhD in the history of the department.

Fall 2011–Spring 2013 MS in Computer and Information Sciences, University of Alabama at Birmingham.

Fall 2007–Spring 2011 BS in Computer Science with minors in Mathematics and Classics, Birmingham-Southern College.

RECENT PUBLICATIONS

Brundage, A. et al. (2021). *Engineering Common Model Framework*. Tech. rep. SAND2021-15291. Sandia National Laboratories.

Milewicz, Reed and Miranda Mundt (Nov. 2021a). “An Exploration of the Mentorship Needs of Research Software Engineers”. In: *Research Software Engineers in HPC (RSE-HPC-2021)*.

– (Dec. 2021b). “Building Bridges: Establishing a Dialogue Between Software Engineering Research and Computational Science”. In: *Proceedings of the Workshop on the Science of Scientific-Software Development and Use*.

Mundt, Miranda and Reed Milewicz (Dec. 2021). “Working in Harmony: Towards Integrating RSEs into Multi-Disciplinary CSE Teams”. In: *Proceedings of the Workshop on the Science of Scientific-Software Development and Use*.

Raybourn, Elaine M., Reed Milewicz, et al. (2021). “A Data-Driven Approach to Rethinking Open Source Software Organizations as a Team of Teams”. In: *Proceedings of the 2021 World Congress in Computer Science, Computer Engineering, and Applied Computing (CSCE’21)*.

Raybourn, Elaine M., Greg Watson, et al. (2021). “Automating Software Productivity Planning: Lightweight Tools for Upgrading Team Practices”. In: *Proceedings of the 2021 World Congress in Computer Science, Computer Engineering, and Applied Computing (CSCE’21)*.

Wunrow, Han Yong et al. (2021). “Towards a Data-Driven Understanding of Cross-Team Collaboration”. In: *2021 Collegeville Workshop on Scientific Software*.

- Harvey, Evan et al. (2022). “Half-Precision Scalar Support in Kokkos and Kokkos Kernels: An Engineering Study and Experience Report”. In: *2022 IEEE 18th International Conference on e-Science (e-Science)*. IEEE, pp. 551–560.
- Malviya, Addi Thakur et al. (2022). *Real-World Experiences Adopting Workflows at Exascale on the ExaAM Project*. United States: N. p. Web.
- Milewicz, Reed, Jeffrey Carver, et al. (2022). “A Secure Future for Open-Source Computational Science and Engineering”. In: *Computing in Science and Engineering* 24.4, pp. 65–69.
- Mundt, Miranda et al. (2022). “In Their Shoes: Persona-Based Approaches to Software Quality Practice Incentivization”. In: *Computing in Science and Engineering*.
- Raybourn, Elaine et al. (2022). *Incentivizing Adoption of Software Quality Practices*. United States: N. p. Web. DOI: [10.2172/1845193](https://doi.org/10.2172/1845193).
- Weirs, V. Gregory et al. (2022). “Enabling Catalyst Adoption in SPARC”. In: *2022 IEEE/ACM International Workshop on In Situ Infrastructures for Enabling Extreme-Scale Analysis and Visualization (ISAV)*. IEEE, pp. 20–25.
- Grayson, Samuel, Darko Marinov, et al. (2023). “Automatic Reproduction of Workflows in the Snakemake Workflow Catalog and nf-core Registries”. In: *Proceedings of the 2023 ACM Conference on Reproducibility and Replicability*, pp. 74–84.
- Milewicz, Reed, Jonathan Bisila, Miranda Mundt, Sylvain Bernard, et al. (2023). “DevOps Pragmatic Practices and Potential Perils in Scientific Software Development”. In: *Proceedings of the 8th International Congress on Information and Communication Technology*. Springer, pp. 1–20.
- Milewicz, Reed, Jonathan Bisila, Miranda Mundt, and Joshua Teves (2023). “Seeking Enlightenment: An Experience Report on Incorporating Evidence-Based Practice Techniques in a Research Software Engineering Team”. In: *1st Annual Conference of the United States Association of Research Software Engineers (US-RSE’23)*, pp. 1–10.
- Milewicz, Reed and Miranda Mundt (2023). “Towards Evidence-Based Software Quality Practices for Reproducibility: Preliminary Results and Research Directions”. In: *Proceedings of the 2023 ACM Conference on Reproducibility and Replicability*, pp. 85–88.
- Mundt, Miranda, Jonathan Bisila, et al. (2023). “Challenges and Strategies for Testing Automation Practices at Sandia National Laboratories”. In: *1st Annual Conference of the United States Association of Research Software Engineers (US-RSE’23)*, pp. 1–10.
- Mundt, Miranda R. et al. (2023). “For the Public Good: Connecting, Retaining, and Recognizing Current and Future RSEs at National Organizations”. In: *Computing in Science and Engineering*.
- Gilbertson, Christian et al. (2024). “Towards Evidence-Based Software Quality Practices for Reproducibility: Practices and Aligned Software Qualities”. In: *Proceedings of the 2nd ACM Conference on Reproducibility and Replicability*, pp. 52–63.
- Grayson, Samuel, Faustino Aguilar, et al. (2024). “A benchmark suite and performance analysis of user-space provenance collectors”. In: *Proceedings of the 2nd ACM Conference on Reproducibility and Replicability*, pp. 85–95.
- Jacobs, Mariska et al. (2024). “Mentorship of women in oss projects: A cross-disciplinary, integrative review”. In: *Equity, Diversity, and Inclusion in Software Engineering: Best Practices and Insights*, pp. 337–364.

- McInnes, Lois Curfman et al. (2024). “A cast of thousands: How the IDEAS productivity project has advanced software productivity and sustainability”. In: *Computing in Science & Engineering* 26.1, pp. 48–60.
- Feng, Zixuan, Reed Milewicz, et al. (2025). “Charting Uncertain Waters: A Socio-Technical Framework for Navigating GenAI’s Impact on Open Source Communities”. In: *arXiv preprint arXiv:2508.04921*.
- Feng, Zixuan, Igor Steinmacher, et al. (2025). “The multifaceted nature of mentoring in oss: strategies, qualities, and ideal outcomes”. In: *2025 IEEE/ACM 18th International Conference on Cooperative and Human Aspects of Software Engineering (CHASE)*. IEEE, pp. 203–214.
- Thakur, Addi Malviya et al. (2025). “Scientific Open-Source Software Is Less Likely to Become Abandoned Than One Might Think! Lessons from Curating a Catalog of Maintained Scientific Software”. In: *Proceedings of the ACM on Software Engineering* 2.FSE, pp. 2216–2239.

SKILLS

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| Some Skills | This, That, Some of this and that etc. |
| Some More Skills | Also some more of this, Some more that, And some of this and that etc. |