

Sarah E. Elder

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Education

North Carolina State University, Raleigh, NC GPA: 3.73
Provost Fellowship (2015-2016), Teaching Assistant (2018-2019), Research Assistant (2016-2018, 2019-2023)
MS Computer Science Graduation Date: 2018
PhD Computer Science Degree Conferred: December 14, 2024
Dissertation Topic: Applying Software Security Assessments in Realistic Contexts

University of Virginia, Charlottesville, VA GPA: 3.65
BA Computer Science; BA History Graduation: May 2012

Work Experience

UNC-Wilmington, *Visiting Assistant Professor*, Wilmington, NC 2024-2025

- Prepared and presented lectures and assignments for an undergraduate Introduction to Computer Science course using Python and a graduate-level Software Engineering course

NCSU, *Instructor of Record – Discrete Mathematics*, Raleigh, NC 2018

- Prepared and presented lectures and assignments based on existing material for a 15 student course

IBM, *I/T Specialist*, DC Metropolitan Area 2012-2015

- Prepared test plans and test data for System and User Acceptance testing, and analyzed defects found
- Assisted in multiple proposal efforts.

Internships

Microsoft, *Intern/Contractor through Aquent*, Remote. 2021

- Researched relative security risk in large, interconnected (e.g. cloud) systems

Northrop Grumman Corporation, *Intern*, Morrisville, NC 2017

- Refactored and documented a machine-learning-based Python application

Corporation for National Research Initiatives, *Intern*, Charlottesville, VA 2012

- Researched Digital and Institutional Repositories to improve utilization of existing resources

NASA Langley Research Center, *Intern*, Hampton, VA 2011

- Worked in a team adapting existing tools to improve compatibility with data from the CALIPSO satellite

Skills

Proficient In: Java, MySQL, Python, R

Familiar With: C#, C/C++, Go, HTML, Javascript, Selenium Webdriver, Linux, Windows, NIST SP 800 series

Service Highlights

NCSU Libraries Departmental Representative, 2019-2023: Attended meetings and facilitated communication between the department and NCSU libraries as the CSC graduate student representative

WiSEC Replicability, 2021: Evaluated a replicability package according to ACM and conference guidelines

NCSU Cybersecurity Awareness Data Privacy Checkup, 2021: Lead a small-group, hands-on discussion of data privacy hygiene for iPhones using a script provided by the NCSU Cybersecurity Awareness Team

NCSU CSC PhD Recruitment, 2017: Assisted with guiding prospective students around the NCSU campus.

IBM Public Sector Women's Networking Group (PSWNG), 2012-2014: Part of a team that taught a monthly course at a charter school in Washington D.C. (ad-hoc)

Peer-Reviewed Publications

"A Survey on Software Vulnerability Exploitability Assessment". **Elder, S.**, Rahman, R., Fringer, G., K. Kapoor, K., and Williams, L. *ACM Computing Surveys*, vol 56, no. 8, 2024

"Do I really need all this work to find vulnerabilities? An empirical case study comparing vulnerability detection techniques on a Java application," **Elder, S.**, Zahan, N., Shu, R., Metro, M., Kozarev, V., Menzies, T., and Williams, L. *Empirical Software Engineering*, vol. 27, 2022.

"Structuring a Comprehensive Software Security Course Around the OWASP Application Security Verification Standard". **Elder, S.**, Zahan, N., Kozarev, V., Shu, R., Menzies, T., Williams, L., *IEEE/ACM 43rd International Conference on Software Engineering: Software Engineering Education and Training*, May 2021

"Systematically Developing Prevention, Detection, and Response Patterns for Security Requirements" Riaz, M., **Elder, S.**, Williams, L, *3rd International Workshop on Evolving Security and Privacy Requirements Engineering (ESPRE)*, Beijing, China, September 2016

"A Cross-Tool Communication Study on Program Analysis Tool Notifications," Johnson, B., Pandita, R., Smith, J., Ford, D., **Elder, S.**, Murphy-Hill, E., Heckman, S., Sadowski, C., *24th International Symposium on the Foundations of Software Engineering*, Seattle, WA, November 2016