SIVANA HAMER

Ph.D. Student in Computer Science | Researching Software Supply Chain Security

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Second-year Computer Science Ph.D. Student at North Carolina State University. I am researching the **state of software supply chain security** as a community **to help improve the security posture of industry and open-source projects**. I look forward to opportunities to conduct software supply chain security research.

EXPERIENCE

Graduate Research Assistant
North Carolina State University

📅 Aug 2023–Present

Researcher and Interim Instructor
Universidad de Costa Rica

📅 2020-2023

Student Visitor Research Internship
Carnegie Mellon University

📅 Jan 2022–March 2022

FEATURED RESEARCH PROJECTS

Reduce your risk of being Solarwinds, Log4j, or XZ Utils

- Analyzing the attack techniques in SolarWinds, Log4j, and XZ Utils to systematically map software supply chain framework tasks to provide software organizations with a recommended list of tasks. Collaboration with **Yahoo**.
- **Methods:** Qualitative Analysis, Incident Analysis, Mapping.
- **Tools:** MITRE ATT&CK, Threat Modeling, P-SSCRM.
- **Publication:** In Submission.

Reputation Measures to Review Dependencies

- Investigated if network centrality measures, proxying contributor reputation, can be used as a signal to inform developers of dependency changes that require additional examination.
- **Methods:** Mixed-Methods, Statistical Models, Social Networks.
- **Results:** Network centrality measures are a significant factor in explaining how developers review dependencies in Rust.
- **Tools:** Python, R, SQL, GitHub API.
- **Publication:** In IEEE Transactions on Software Engineering.

Comparing Vulnerabilities ChatGPT and StackOverflow

- Compared the vulnerabilities of ChatGPT and StackOverflow to help raise software developers' awareness of the security implications when selecting code snippet platforms.
- **Method:** Quantitative Analysis, Statistical Methods.
- **Results:** ChatGPT generated less vulnerable code. Yet, insecure code propagation can happen in both platforms.
- **Tools:** Python, R, ChatGPT API, StackOverflow API, CodeQL.
- **Publication:** In IEEE Security and Privacy Workshops 2024.

RESEARCH INTERESTS

Software Supply Chain Security • Software Security • Empirical Software Engineering • Software Measurement

EDUCATION

Ph.D. Computer Science
North Carolina State University

📅 Aug 2023 – Expected 2028

Advisor: Dr. Laurie Williams

M.Sc. Computer Science
Universidad de Costa Rica

📅 2023

Thesis: Mining software repositories to automatically measure developer code contributions. *Advisor:* Dr. Christian Quesada-López

B.Sc. Computer Science
Universidad de Costa Rica

📅 2020

AWARDS

- *Goodnight Doctoral Fellowship (2023-2027).*
- *RSA Conference Security Scholar (2024).*
- *North Carolina State University Provost's Doctoral Fellowship (2023).*
- *Best Postgraduate Grade Universidad de Costa Rica (2020).*

SKILLS

- *Languages:* English, Spanish.
- *Programming languages:* Python, Java, R, C#, JavaScript, Bash, SQL.
- *Software tools:* Git, Jenkins, JIRA, Visual Studio Code, CodeQL, SonarQube, LLM.
- *Frameworks and libraries:* ASP.NET, Flask, Bootstrap, jQuery, React, Unity.
- *Research methods:* Quantitative, Qualitative, Mining Software Repositories, Machine Learning, Statistical Models.