

Nathan Munaiah

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EDUCATION

Ph.D. 2019 (Expected), Computing and Information Sciences, Rochester Institute of Technology

Title Assisted Discovery of Software Vulnerabilities
Advisor Dr. Andrew Meneely
GPA 4.0

B.E. 2009, Computer Science and Engineering, Visveswaraiah Technological University, Karnataka, India

Class First Class with Distinction

RESEARCH EXPERIENCE

2014-Present Graduate Research Assistant, Rochester Institute of Technology

- Leading a research project in which Natural Language Processing (NLP) is applied to characterize developers' conversations in the context of modern code review.
- Leading an effort to evaluate the effectiveness of a commonly used measure of security vulnerability severity—the Common Vulnerability Scoring System (CVSS).
- Developed a tool—*reaper*—capable of classifying a GitHub repository as containing an engineered software project or otherwise.
- Developed fine-grained attack surface metrics that enable the proactive assessment of security risk throughout the development lifecycle of a software system.

PUBLICATIONS

JOURNAL ARTICLES

J.1 Nathan Munaiah, Felivel Camilo, Wesley Wigham, Andrew Meneely, and Meiyappan Nagappan. 2016. Do bugs foreshadow vulnerabilities? An in-depth study of the chromium project. *Empirical Software Engineering*: 1305–1347. <http://doi.org/10.1007/s10664-016-9447-3>

J.2 Nathan Munaiah, Steven Kroh, Craig Cabrey, and Meiyappan Nagappan. 2017. Curating GitHub for Engineered Software Projects. *Empirical Software Engineering*: 3219–3253. <http://doi.org/10.1007/s10664-017-9512-6>

CONFERENCE PAPERS

C.1 Nathan Munaiah. Assisted Discovery of Software Vulnerabilities. In *Proceedings of the 40th International Conference on Software Engineering: Companion Proceedings (ICSE-DS 2018)*. ACM, New York, NY, USA, 464–467. DOI: <http://doi.acm.org/10.1145/3183440.3183453>

C.2 Nathan Munaiah, Benjamin S. Meyers, Cecilia O. Alm, Andrew Meneely, Pradeep K. Murukannaiah, Emily Prud'hommeaux, Josephine Wolff and Yang Yu. Natural Language Insights from Code Reviews that Missed a Vulnerability: A Large Scale Study of Chromium. In *Proceedings of the 9th International Symposium on Engineering Secure Software and Systems (ESSoS 2017)*. Springer International Publishing, Cham, 70–86. DOI: https://doi.org/10.1007/978-3-319-62105-0_5

C.3 Nuthan Munaiah, Andrew Meneely and Pradeep K. Murukannaiah. 2017. A Domain-Independent Model for Identifying Security Requirements. In Proceedings of the 25th International Requirements Engineering Conference (RE 2017), IEEE, 506-511. DOI: <https://doi.org/10.1109/RE.2017.79>

WORKSHOP PAPERS

W.1 Nuthan Munaiah and Andrew Meneely. 2016. Beyond the Attack Surface: Assessing Security Risk with Random Walks on Call Graphs. In Proceedings of the 2016 ACM Workshop on Software PROtection (SPRO '16). ACM, New York, NY, USA, 3-14. DOI: <https://doi.org/10.1145/2995306.2995311>

W.2 Nuthan Munaiah and Andrew Meneely. 2016. Vulnerability Severity Scoring and Bounties: Why the Disconnect?. In Proceedings of the 2nd International Workshop on Software Analytics (SWAN 2016). ACM, New York, NY, USA, 8-14. DOI: <https://doi.org/10.1145/2989238.2989239>

W.3 Iván Tactuk Mercado, **Nuthan Munaiah**, and Andrew Meneely. 2016. The Impact of Cross-platform Development Approaches for Mobile Applications from the User's Perspective. In Proceedings of the International Workshop on App Market Analytics (WAMA 2016). ACM, New York, NY, USA, 43-49. DOI: <https://doi.org/10.1145/2993259.2993268>

PRESENTATIONS

P.1 July 4, 2017, Natural Language Insights from Code Reviews that Missed a Vulnerability: A Large Scale Study of Chromium, International Symposium on Engineering Secure Software and Systems (ESSoS), Bonn, Germany

P.2 April 5, 2017, Poster: On the Disconnect between CVSS Scores and Vulnerability Bounties, Hot Topics in the Science of Security (HoTSoS) Symposium and Bootcamp, Hanover, MD

P.3 November 19, 2014, Engineering Secure Software: Evidence-based Research, National Institute of Standards and Technology (NIST) Visit, Rochester Institute of Technology, Rochester, NY

TEACHING EXPERIENCE

Spring 2017-18 Undergraduate Introduction to Software Engineering (SWEN 261)

MENTORSHIP EXPERIENCE

2016-Present Benjamin S. Meyers, Undergraduate Research Assistant

DEVELOPMENT EXPERIENCE

2009-2014 Software Engineer, Infosys Limited, India

- Developed several web applications for internal stakeholders and customers of Citizens Bank.
- Led the redesign effort of citizensbank.com by being a liaison between multiple software and service vendors and Citizens Bank.
- Ensured business continuity by implementing a time-sensitive fix to citizensbank.com when legacy MapQuest services were deprecated.
- Developed a RESTful service to periodically check the sanity of response from CashEdge services. The service helped improve time-to-market of a business critical application that used CashEdge services.

2008-2009 Technical Support Intern, Microsoft Global Technical Support Center, India

- Trained on the deployment and administration of Windows Server 2003 based Active Directory infrastructure, SQL Server 2008, and Exchange Server 2003.

TECHNICAL SKILLS

Languages Python, R, C#

Frameworks Django, ASP.NET, WCF

Databases PostgreSQL

COMMUNITY SERVICE

- Reviewer for the 11th Innovations in Software Engineering Conference (ISEC).
- Co-reviewer for the 9th International Symposium on Engineering Secure Software and Systems (ESSoS) conference.
- Co-reviewer for the Journal of Systems and Software.
- Co-reviewer for the IEEE Software Journal.
- Student volunteer at the 38th International Conference on Software Engineering, Austin, TX, USA.
- Student volunteer at the 24th International Symposium on the Foundations of Software Engineering, Seattle, WA, USA.

ACHIEVEMENTS

- Consistently ranked in the top 10% during annual performance evaluation at Infosys Limited.
- Awarded the quarterly best performer award in the first quarter of employment at Infosys Limited.
- Awarded the first place at the Adobe Flex Boot Camp 2008.