Will Rosenberg

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Education

Arizona State University *Tempe, AZ*
PhD in Computer Science *Started August 2025*
Advisor: Yan Shoshitaishvili - SEFCOM Laboratory

Washington University in St. Louis (WashU) *St. Louis, MO*
Bachelor of Science in Computer Science, Physics, and Mathematical Sciences *2021 - 2025*
Summa Cum Laude

Relevant Coursework
Systems, Network, & Computer Security | Reverse Engineering & Malware Analysis | Systems Software | Operating Systems | Networks | Number Theory & Cryptography | Compilers | Analysis of Algorithms

Research Interests

Broad interest in software and systems security with a particular passion for automated program analysis and binary exploitation techniques.

Research Experience

Computer Security and Privacy Laboratory
McKelvey School of Engineering, Washington University in St. Louis *August 2023 - May 2025*
- Investigated vulnerabilities in open-source cyber-physical libraries written in C/C++ using libFuzzer and AFL.
- Collected and systematized timing bugs affecting open-source real-time operating systems, including FreeRTOS, Zephyr, and RIOT OS.
- Explored scripting and automation techniques in mainstream decompilers.

Quantum Monte Carlo Group for Nuclear Physics
Department of Physics, Washington University in St. Louis *May 2022 - December 2022*
- Predicted the numerical solution of a nucleon-nucleon scattering problem using a neural network with the goal of applying this network in the optimization problem of nuclear interaction models.
- Researched the effectiveness of machine learning models to predict second-order differential equations and designed models while weighing the trade-offs between speed and accuracy.
- Presented my findings at the Midstates Consortium for Math and Science and the WashU Physics Research Symposium.

Physics Capstone Project
BASIS Scottsdale *September 2020 - August 2021*
- Wrote a Python project to model the thermal distribution of the asteroid 2867 Steins using iterative approximation methods and calculated the Yarkovsky effect to predict potential perturbations to the asteroid's orbit.
- Published "Predicting Orbital Resonance of 2867 Šteins Using the Yarkovsky Effect," Journal of Emerging Investigators.

Teaching Experience

Computer Science Teaching Assistant (TA)
Washington University in St. Louis *August 2021 - May 2025*
- Head TA for Systems Software and previously a TA for Introduction to Computer Security, Object-Oriented Workshop, and Introduction to Computer Science.
- Assist students with debugging labs in C, C++, Python, and Java.
- Organize TA grading efforts and produce supporting materials for class labs.

Cybersecurity Boot Camp

Bearshell, Washington University in St. Louis *December 2023 - August 2024*

- Designed an introductory boot camp for cybersecurity and capture the flag (CTF) competitions, as part of an initiative to increase membership in Bearshell, WashU's CTF and cybersecurity club.
- Doubled the club membership and increased freshman participation.
- Built custom challenges using Docker and Flask to emphasize active participation during meetings.
- Created a custom pwn.college dojo to provide practice challenges for the boot camp.

Publications and Presentations

Publications

- Rosenberg, et al. 2021. *Predicting Orbital Resonance of 2867 Šteins Using the Yarkovsky Effect*. Journal of Emerging Investigators. doi: 10.59720/20-172

Poster Presentations

- Rosenberg, et al. November 2022. Training a feed-forward neural network to solve the S-wave nucleon-nucleon scattering problem. Poster Session presented at the Midstates Consortium for Math and Science and the Washington University Physics Research Symposium.

Technical Experience

BearShell Cybersecurity Club

Washington University in St. Louis *August 2022 - May 2025*

- Captain of WashU's CTF and cybersecurity club.
- Regularly compete in CTF hacking competitions with a focus on binary exploitation and cryptography, publishing write-ups after competitions.
- Prepared lectures and activities for weekly meetings, teaching topics in binary exploitation, web security, reverse engineering, forensics, and cryptography.

Achievements & Awards

- Outstanding Senior Award - Washington University Computer Science and Engineering Department
- Distinction - Washington University Department of Physics
- Washington University Dean's List Fall 2021, Spring 2022, Fall 2022, Spring 2023, Fall 2023, Spring 2024, Fall 2025
- Sigma Pi Sigma National Physics and Astronomy Honor Society Inductee
- Completed Arizona State University's pwn.college - Advanced Exploitation coursework, earning a blue belt.
- Qualified and competed at the Mid-Central Regional Collegiate Programming Contest in 2022 and 2023.

References

Ning Zhang, Associate Professor
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Washington University in St. Louis
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Steve Cole, Senior Lecturer
Department of Computer Science & Engineering
Washington University in St. Louis
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James Orr, Lecturer
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