Zhanna Kaufman zhannakaufma@umass.edu

Education

University of Massachusetts Amherst - Amherst, MA
Second year PhD Student in the College of Information and Computer Science, working with Professor Yuriy Brun
Worcester Polytechnic Institute – Worcester, MA
Master of Science in Computer Science with Focus in Cyber Security – July 2018 – GPA 3.91
Boston University College of Engineering – Boston, MA
Bachelor of Science in Electrical Engineering with Minor in Computer Engineering – May 2015 – GPA 3.65 (Magna Cum Laude)

Work History

UMASS Amherst, Amherst, MA
PhD Student, Research and Teaching Assistant - September 2021 - Current

Publications

- [Passport: Improving Automated Formal Verification Using Identifiers]
  Alex Sanchez-Stern*, Emily First*, Timothy Zhou, Zhanna Kaufman, Yuriy Brun, Talia Ringer.
  (*Co-first authors)
  Will appear in TOPLAS 2023.
- [PRoofster: Automated Formal Verification]
  Arpan Agrawal, Emily First, Zhanna Kaufman, Tom Reichel, Shizhuo Zhang, Timothy Zhou, Alex Sanchez-Stern, Talia Ringer, Yuriy Brun.
  Will appear at ICSE 2023 (demo track).

Research Projects

- Currently working on using reinforcement learning to enhance capabilities of Proverbot9001, a tool which automatically synthesizes theorem proofs Coq using machine learning.
- Worked on enhancing model encodings to increase accuracy of Proverbot9001, a tool which automatically synthesizes theorem proofs Coq using machine learning.
- Working on a project in understanding the impact of visualization and text explanation methods on individuals' trust in discriminatory machine learning algorithms.

Teaching Assistantships

- TA for Computer Networks, CS453
- TA for Introduction to Algorithms, CS311

Service to the University

- CICS department Steward and 2022-2023 Steward Cochair for the Graduate Employee Organization
- Grad student representative for spring 2023 faculty candidate interviews

The MITRE Corporation, Bedford, MA
Senior Cyber Research and Innovation Engineer - June 2015 – January 2022

Project Work

- Developed vulnerability models for network prototypes to inform future network architecture proposals and created automated methods of detection and remediation
- Developed solution to cross-cutting issue of messaging between multiple communicating architectures
- Translated code and calculations for motion trajectories into Python, and integrated translations into complex high-visibility system while ensuring backwards compatibility
- Developed DevSecOps pipeline to automate building, integration testing, and software integrity confirmation in critical legacy software within a virtual environment
- Verified several CVEs related to container file system accessibility to confirm successful mitigation through patching
- Worked on creating debugging methods for OpenSSL encrypted lwIP TCP/IP stack

Corporate Funded Research Work

- Researched and implemented new and innovative methods for communication across diverse network fabrics and devices within a restricted environment.
  - Performed research on numerous internet protocols and wrote a white-paper about their possible applications.
- Researched, planned and implemented a method for creation of large datasets specific to a sponsor's needs for data analysis
- Researched methods of using Windows API hooking and DLL injection to subvert spyware

Bears Den – MITRE Initiative

- Co-Lead coordinator for competition which awards short-term funding for ideas with tech transfer potential; judged by panel of MITRE leadership