

Education

École Polytechnique | Palaiseau, FR
MSc. Cybersecurity

Sep 2024 - Present

Vrije Universiteit Amsterdam | Amsterdam, NL
BSc. Computer Science; GPA: 8.5 / 10.0

Sep 2021 - Jul 2024

Experience

Research Assistant, Vrije Universiteit Amsterdam | Amsterdam, NL Jun 2022 - Jul 2024

As a research assistant, I conducted a research project on the topic of consistency in distributed systems, where I systematically explored the properties of a novel and policy-driven consistency model developed and published in earlier work of the AtLarge research group. To this end, I developed and evaluated several new policies through real-world experiments.

OLC Member, Vrije Universiteit Amsterdam | Amsterdam, NL Jan 2022 - Jul 2024

As a member of the educational committee (in Dutch, OLC), I was responsible of improving the education quality for more than 1000 students enrolled in the Bachelor of Computer Science by actively proposing changes to the Faculty regulations and courses' structure, based on student evaluations.

Teaching Assistant, Vrije Universiteit Amsterdam | Amsterdam, NL Sep 2022 - Jul 2023

I had the opportunity to be a teaching assistant for four different courses, where I hosted practical and tutoring sessions, going over the assignments and covered material, for classes of about 30 students each. Courses: Computer Programming in C++, Computational Thinking for Coders, Computer Organization and Computer Networks.

Personal Projects

GhostTrail

GhostTrail is an LLVM compiler pass that utilizes static analysis to detect speculative race condition gadgets, which can lead to speculative concurrent use-after-free attacks. These attacks exploit precise timing within the memory allocator, allowing an attacker to alter memory contents at an arbitrary shared location and free it before the victim accesses the previously freed memory via dangling pointers. This process can result in severe vulnerabilities, such as the disclosure of sensitive information and remote code execution.

KomPass

KomPass is a tool that automates the compilation of C/C++ files into various formats, such as bitcode (.bc) and LLVM-IR (.ll), for use by compiler-based analysis tools. It organizes the output in a structured directory, maintaining the relative paths of the source files. Moreover, KomPass allows users to configure specific compiler passes to be applied to the generated files, with the results stored following the source directory structure for easy manual inspection.

SPECache

This project contains a demo of a side channel attack that can be used to extract sensitive information from a target system. The attack is based on analyzing power consumption variations in the target system to infer information about its internal state.

Other projects I have developed include classic games, such as Snake and Tetris, an JVM-byte emulator, an interactive shell (similar to bash), a custom-made FAT-16 Filesystem, a key-value store that can be accessed concurrently, and a custom memory allocator. Access to these projects can be granted upon request.

Leadership and Awards

- 1st place for implementing the fastest line-following robot algorithm in C++ out of 400 students in my academic year, using PID (Proportional-Integral-Derivative) concepts - Nov 2021 (Amsterdam, NL)
- Finalist at BRD First Tech Challenge Robotics Championship - March 2019 (Bucharest, RO)
- Winner at First Tech Challenge Dutch Open Robotics Championship - June 2018 (Delft, NL)
- Finalist at BRD First tech Challenge Robotics Championship - March 2018 (Bucharest, RO)

Certifications

In 2018 I enrolled into the "CS50's introduction to Computer Science" programming course offered by Harvard University on the Edx online platform. This is an entry-level course taught by Prof. David J. Malan, which provides the necessary information to allow students how to think algorithmically and solve problems efficiently. Topics of this course include abstraction, algorithms, data structures, encapsulation, resource management, security, software engineering, and web development.