

Daniel Brodsky

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Extracurricular

FOUNDING MEMBER OF THE **UBC CTF** TEAM

Feb 2019 – Present

- Solved cybersecurity-related problems in various domains (**Linux, Windows, Embedded**) using a variety of different techniques, tools, and languages (**Python, C, C++, Rust**) in **60+ CTFs**, achieving **1st place in Canada for 2019 and 2020**
- Organized events and provided presentations/mentorship related to binary exploitation and reverse engineering, helping grow the team to **100+ members** (see my website at danbrodsky.me for writeups to some of the interesting problems I have solved)

Research

HUMAN INTERACTION WITH SYMBOLIC EXECUTION

Jun 2020 – Sep 2020

- Examined possible methods of leveraging humans to improve binary analysis when using dynamic and static symbolic execution tools and vice-versa as part of a **DARPA** research project between UBC, and **ASU SEFCOM**
- Developed an academic understanding of binary analysis and decompilation to direct our research moving forward
- Created prototypes for adding functionality to angr, an open-source concolic execution framework, with the goal of improving human understanding during analysis

Projects

WEBRTL

- Designed and built an FPGA simulator in **Rust** for simulating hardware design netlists in the browser using **WebAssembly**
- Wrote several demo designs in Clash (**Haskell**) for demonstrating functionality of the simulator

XEROS KERNEL

- Wrote a Xeros-like operating system in **C** and **x86 assembly**, learning about operating system internals in the process
- Implemented core kernel functionalities such as memory allocation, context switching/dispatching, IPC, and I/O

Experience

Kunnamon

FREELANCE SECURITY DEVELOPER

Feb 2021 – Jul 2021

- Conducted vulnerability research into the Tesla Model 3 ICE as part of **Pwn2Own**, discovering several bugs in the process
- Developed a unikernel in **C** for running an emulator with reduced overhead, leading to a **1.2x increase in performance**
- Wrote a more extensible interface for configuring QEMU machines and peripherals in **Rust**

SAP

SOFTWARE SECURITY ENGINEER INTERN

May 2019 – Dec 2019

- Designed an application using **Python, Go**, and **Terraform** for aggregating access privileges for all cloud-related assets
- Improved on a SIEM for alerting on abnormal AWS events, **achieving ~100% uptime** and **improving performance by ~40%**

HSBC

CLOUD SECURITY DEVELOPER INTERN

May 2018 – Aug 2018

- Built a prototype authentication layer in **Python** that makes an IAM service act as an OAuth2 server without direct modification, saving on development time and costs compared to a conventional solution

TELUS

SECURITY DEVELOPER INTERN

Sep 2016 – Apr 2017

- Created data transformation pipelines for a SIEM processing **100M+ events per day** to detect internal network intrusions, moving relevant events to a **SQL** database and custom interface for client viewing

Education

Bachelor in Computer Science, University of British Columbia

VANCOUVER, BRITISH COLUMBIA, CANADA

Jun 2020

- Notable courses include Operating Systems, Parallel Computing, Distributed Systems, Advanced Algorithms Analysis