Jason Ngo

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Skills Summary

Application Security	Buffer overflow, Format-string exploits, Return-oriented programming, Use-after-free
Web Security	SQL injection, Cross-site scripting, Template injection, Local file inclusion, Prototype pollution
Systems development	Rust, x86 Assembly, C / C++, Java
Web development	NodeJS, REST APIs, NGINX, Google Firebase
System administration	Linux, Docker, SQL

Work Experience

2020/04 - 2022/02

Freelance Software Development

Commissioned by clients for various projects. Some examples include:

- Transactions database — Designed proof-of-concepts for database solutions using Firebase Realtime Database, MySQL, and Google Drive APIs.
- Mosque timetable — Developed a web application to read data from a CSV file and display prayer times using HTML, CSS, and JavaScript.
- covidping.com — Wrote scripts to load current COVID-19 statistics into Google Sheets and send emails to a list of subscribers for to notify users of COVID-19 statistics in their state.

Technical Extracurriculars

2019/09 - Present

Capture The Flag Competitions

https://github.com/Green-Avocado/CTF

- Reverse engineered binaries without symbols using Ghidra and Radare2.
- Performed dynamic analysis and debugged exploits using GDB.
- Identified vulnerabilities in binary applications and web services.
- Defeated common exploit mitigations such as position independent executables, address-space layout randomization, stack canaries, and relocation read-only.
- Created writeups to explain vulnerabilities and exploit techniques used in each challenge.

2017/09 - 2020/02

Vex Robotics Club

https://github.com/Green-Avocado/3388D-vex-robotics-edr-2020

- Wrote firmware in C++ which used the Vex API to receive instructions from a controller.
- Used feedback from sensor data to guide autonomous routines and aid user control.
- Created a user interface for the controller display screen to configure the robot at runtime.
- Won an award for most efficient autonomous program and was invited to compete in VEX Worlds.

Hackathon Projects

2022/01

Language Exchange

https://github.com/Green-Avocado/Language-Exchange

- In a team of 4, created a website using React and NodeJS for helping language students connect.
- Used Google Firebase to set up authentication, allowing users to log in using existing Google accounts.
- Used Google Firebase realtime database to store user data and match users according to their goals.

2021/11

Speak-able

https://devpost.com/software/speak-able-inclusive-unconferencing

- In a team of 4, created a website for encouraging inclusivity in participant-driven meetings.
- Used NodeJS and Express to implement a RESTful API to interact with the webpage, allowing users to submit new topics, vote for existing topics, and view the number of votes for each topic.

2020/08

Study Tinder

https://devpost.com/software/study-tinder

- In a team of 2, created a website for helping students connect and study while social distancing.
- Used Google Firebase to set up hosting, a database, and user authentication.
- Matched students with complementary interests by using JavaScript to query the Firestore database.

2020/08

BikePath

https://devpost.com/software/bikepath-dkpstx

- In a team of 3, created a website to find locations that encourage eco-friendly alternatives to driving.
- Used the Google Maps API to render a map view of selected locations on the webpage.
- Used Python to interact with the Google Places API to retrieve, parse, and interpret data.

| 2020/08 | **COVID Wait** |
| | *https://devpost.com/software/covid-wait* |

- In a team of 5, created a website to help avoid populated areas to reduce the risk COVID-19 exposure.
- Used Python to develop a server-side application to retrieve data from the Google Maps API.
- Implemented a RESTful API to allow clients to query data from the server.

Cybersecurity Projects

| 2021/03 - **Present** | **pwndocker** |
| | *https://github.com/Green-Avocado/pwndocker* |

- Wrote a minimal program in C to create symbolic links without standard libraries.
- Used Docker to create an environment for debugging exploits under different versions of Glibc.
- The project became a go-to tool for CTF challenges involving binary exploitation.

| 2022/02 | **BBY Stealer Malware Analysis** |
| | *https://github.com/Green-Avocado/bbystealer-malware-analysis* |

- Used Wireshark and Windows filesystem auditing to identify connections and filesystem access.
- Reverse engineered JavaScript code that was obfuscated and packaged as a Windows executable.
- Helped victims with incident response by identifying compromised credentials and modified files.

| 2021/10 - 2022/01 | **UBC MapleCTF** |
| | *https://github.com/ubcctf/maple-ctf-ubc-2022* |

- Wrote challenges in C with intentional vulnerabilities to teach binary exploitation techniques.
- Used Docker to containerize challenges so they could be deployed through Kubernetes.
- Helped run a workshop and answered questions about binary exploitation and reverse engineering.

| 2021/09 - 2021/12 | **EasyROP** |
| | *https://github.com/Green-Avocado/EasyROP* |

- Wrote a Java program using object-oriented design to automate writing scripts for binary exploitation.
- The project began as a command-line application and later included a GUI using Java Swing.
- Return-oriented programming payloads could be saved as a local JSON file and reloaded.

Personal Projects

| 2020/12 - **Present** | **website** |
| | *https://github.com/Green-Avocado/website* |

- Used NodeJS with Express to serve web pages which are generated using a templating engine.
- Used NGINX to secure connections using TLS and forward HTTP requests to internal services.
- Used Docker to containerize services, allowing each to be modified and restarted independently.
- Tested the website and scanned for vulnerabilities using continuous integration.

| 2021/11 - 2022/01 | **atom-ide-rust** |
| | *https://github.com/rust-lang/atom-ide-rust* |

- Contributed to an open source plugin for integrating rust-analyzer into the Atom text editor.
- Used NodeJS to read config files, parse JSON data, and interface with a language server.
- Wrote documentation using markdown to explain the usage of the plugin with examples.
- The plugin has been downloaded over 164 000 times by developers for programming with Rust.

| 2021/12 | **discord-balance-tracker** |
| | *https://github.com/Green-Avocado/discord-balance-tracker* |

- Wrote a Rust application to provide a convenient way to track balances throught Discord.
- Used asynchronous programming to send and receive interactions through the Discord API.

| 2021/03 | **Etwahl** |
| | *https://github.com/Green-Avocado/Etwahl* |

- Wrote a program in C++ to bind signals from an electronic piano to simulated keyboard events.
- Received MIDI signals over a USB connection using the open source RtMidi library.
- Used CMake, X11 libraries, and Windows libraries to develop a multi-platform application.

Awards

| 2022/01 | CyberSci Vancouver Regionals - First Place |
| 2020/03 | Vex EDR Alberta Provincial Tournament - Think Award |

Education

| 2020/09 - 2024/04 | **Bachelor of Science, Major in Computer Science** |
| | *University of British Columbia, Vancouver, BC* |