

Jason Ngo

Computer Science Major @ UBC

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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
Binary Analysis	Ghidra, Radare2, Binary Ninja, GDB, angr, Triton
Software development	Rust, x86 Assembly, C / C++, Java, NodeJS, NGINX, Google Firebase
System administration	Linux, Docker, Bash, SQL, Google Cloud, Oracle Cloud

Work Experience

2022/05 - 2022/08	Undergraduate Academic Assistant <i>University of British Columbia</i> <ul style="list-style-type: none"> Discovered and patched vulnerabilities in services involving arbitrary code execution and XML injection. Used Python to automate student evaluation on a variety of topics using randomized questions.
2020/04 - 2022/02	Freelance Software Development <i>Commissioned by clients for various projects. Some examples include:</i> <ul style="list-style-type: none"> <u>Transactions database</u> — Designed proof-of-concepts for database solutions using Firebase Realtime Database, MySQL, and Google Drive APIs. <u>Mosque timetable</u> — Developed a web application to read data from a CSV file and display prayer times using HTML, CSS, and JavaScript. <u>covidping.com</u> — Wrote scripts to load current COVID-19 statistics into Google Sheets and send emails to a list of subscribers for notifying users of COVID-19 statistics in their state.

Technical Extracurriculars

2019/09 - Present	Capture The Flag Competitions https://github.com/Green-Avocado/CTF <ul style="list-style-type: none"> Reverse engineered binaries using static and dynamic analysis techniques. Identified vulnerabilities in binary applications and web services. Defeated common exploit mitigations such as PIE, ASLR, canaries, and RELRO. 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 <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> In a team of 4, created a website using React and NodeJS for helping language students connect. Used Google Firebase to set up authentication, store user data, match users according to their goals.
2021/11	Speak-able https://devpost.com/software/speak-able-inclusive-unconferencing <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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

2022/05 - 2022/07

No Flag 4 U<https://github.com/Green-Avocado/No-Flag-4-U>

- Created a dynamic shared library using Rust to hooks standard library functions.
- Mitigates common vulnerabilities including buffer overflow, format string, and use-after-free.
- Logs function calls by sending data to an external process using a TCP stream.

2021/03 - 2022/04

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.

2021/09 - 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 - 2022/01

website<https://github.com/Green-Avocado/website-inactive>

- 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.
- Managed services using Docker and GitHub 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.

2021/03

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.

Education

2020/09 - 2024/04

Bachelor of Science, Major in Computer Science*University of British Columbia*

2022/04

Program Analysis for Vulnerability Research*Vector35 & Margin Research*