



Jason Ngo

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Skills Summary

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| 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

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| 2020/04 - 2022-02 | Freelance Software Development <ul style="list-style-type: none"> Designed proof-of-concepts for database solutions using Firebase Realtime Database, MySQL, and Google Drive APIs. Developed a web application to read data from a CSV file and display prayer times using HTML, CSS, and JavaScript. Wrote scripts to load current COVID-19 statistics into Google Sheets and send emails to a list of subscribers for covidping.com to notify users of COVID-19 statistics in their state. |
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Technical Extracurriculars

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| 2019/09 - Present | CTF Competitions https://github.com/Green-Avocado/CTF <ul style="list-style-type: none"> 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 <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. Our team won a programming award and we were invited to compete in the international event. |

Hackathon Projects

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|----------------|---|
| 2022/01 | Language Exchange https://github.com/Green-Avocado/Language-Exchange <ul style="list-style-type: none"> Created a website using React and NodeJS in a team of 4 for connecting language students with complementary strengths and goals. Used Google Firebase to set up a database and user authentication, allowing users to log in using their existing Google accounts. Stored user data in the Firebase real-time database, which could be queried and filtered to match users according to their learning goals. |
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2021/11

Speak-able

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

- Created a website using NodeJS in a team of 4 for encouraging inclusivity in participant-driven meetings.
- Used 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>

- Worked in a team of 2 to create a website for helping students connect and help each other study while social distancing.
- Used Google Firebase to set up hosting, a database, and user authentication.
- Matched students with complementary strong and weak subjects by using JavaScript to query the Firestore database.

2020/08

BikePath

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

- Worked in a team of 3 to create a website to help users find alternative locations that would permit eco-friendly alternatives to driving, such as walking or biking.
- 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 and format data for use by the webpage.

2020/08

COVID Wait

<https://devpost.com/software/covid-wait>

- Worked in a team of 5 to create a website to help users avoid highly populated areas and reduce the risk of exposure to COVID-19.
- 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 and gdbserver to create an environment for debugging exploits against applications using different versions of glibc.
- The project is frequently used by myself in CTF competitions.

2022/02

BBY Stealer Malware Analysis

<https://github.com/Green-Avocado/bbystealer-malware-analysis>

- Performed dynamic analysis using Wireshark and Windows filesystem auditing to identify files read or modified and external connections.
- Reverse engineered JavaScript code that was obfuscated using obfuscator.io and packaged as a Windows executable using nexex.
- Helped affected 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 progressively introduce and test binary exploitation techniques.
- Used Docker to containerize challenges so they could be deployed through Kubernetes.
- Helped beginners by running demonstrations at a workshop and answering questions related to binary exploitation and reverse engineering.

2021/09 - 2021/12

EasyROP

<https://github.com/Green-Avocado/EasyROP>

- Wrote a program in Java using principles of object-oriented design to automate the process of writing scripts for binary exploitation.
- The project began as a command-line application and later included a graphical user interface which was developed 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.
- Set up a reverse proxy using NGINX which secures connections using TLS and forwards requests to internal services.
- Used Docker to containerize internal services, allowing each service 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.

2021/12

discord-balance-tracker

<https://github.com/Green-Avocado/discord-balance-tracker>

- Wrote a Rust application to track balances of users on Discord.
- Used asynchronous programming to interact with the Discord API for sending and receiving interactions.
- The application was used by my roommates and myself to keep track of our shared finances.

2021/03

Etwahl

<https://github.com/Green-Avocado/Etwahl>

- Wrote a program in C++ to bind signals from an electronic piano to simulated keypresses.
- 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

2019/04

U of Calgary Science Engineering and Technology Challenge - First Place

Education

2020/09 - 2024/04

Bachelor of Science, Major in Computer Science

University of British Columbia, Vancouver, BC