

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 <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 to notify users of COVID-19 statistics in their state.
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Technical Extracurriculars

2019/09 - Present	Capture The Flag 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

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 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.
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>

- 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 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, parse, and interpret data.

2020/08

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

- In a team of 5, created 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 the GNU C Library.
- 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>

- Performed dynamic analysis using Wireshark to identify external connections and Windows filesystem auditing to identify files read or modified.
- 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 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.
- 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 programming with Rust.

2021/12	discord-balance-tracker <i>https://github.com/Green-Avocado/discord-balance-tracker</i> <ul style="list-style-type: none">• Wrote a Rust application to provide a convenient way to track balances through Discord.• Used asynchronous programming to send and receive interactions through the Discord API.
2021/03	Etwahl <i>https://github.com/Green-Avocado/Etwahl</i> <ul style="list-style-type: none">• 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 <i>University of British Columbia, Vancouver, BC</i>
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