GABRIEL ETHAN VAINER

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EDUCATION

University of Toronto Sep. 2020 – Dec. 2024
Honors Bachelor of Science – Computer Science Specialist, Software Engineering Stream *Toronto, CAN*
Teaching Experience: CSCA08, CSCD03

EXPERIENCE

Software Developer Intern Apr. 2022 – Present
Empyrean Medical Systems | C#,C, .NET, Node.js *Boca Raton, USA*
- Developed an **Embedded API** utilizing **UART serial communication** to interface with **DWIN DGUSII LCM** displays for Empyrean's **Morpheus** Radiation Device.
- Implemented secure packet transmission methods with validation protocols, including **data encoding** and **checksum verification**, to enable real-time updates of system variables on the hardware interface.
- Integrated **Dose Calculation Algorithms** and **TCP/IP** socket protocols into Empyrean's Dosimetry Engine, optimizing **voxel-based radiation transport simulations** for Radiology equipment.
- Refactored the engine codebase, reducing it by **64%** while maintaining clean architecture and enhancing system security through modular design and vulnerability assessment.

Software Engineer Intern Jan. 2022 – Apr. 2022
Royal Bank of Canada | Java, Spring, Maven, SQL, Confluence, Cucumber Framework *Toronto, CAN*
- Developed and maintained scalable **Microservices** for RBC's **File Management** and **User Compliance** systems within the **Retail Banking Payments Technology & Integrations Lab**.
- Built advanced file scenario features for **Profile Compliance** & **Client Identification** APIs, strengthening **Input Validation**, **Schema Validation**, and **Enforcement** protocols to prevent injection attacks and unauthorized access.
- Designed end-to-end application test suites using a **Behavior-Driven Development (BDD)** approach to validate the performance and functionality of the client system.
- Leveraged Continuous Integration pipelines with **Jenkins**, automating build, test, and deployment processes to enhance development efficiency and accelerate delivery cycles.

Documentation Consultant Jan. 2023 – Apr. 2023
Taichi Graphics | React, Node.js, Docusaurus *Toronto, CAN*
- Maintained, oversaw, and proposed documentation updates for Taichi's **Developer Documentation application** by working with their Documentation team to enhance developer engagement for the open-source community.

PROJECTS & CLUBS

UofT Blueprint | *Project Lead - Internal Team*
- Led a team of 4 developers in implementing UofT Blueprint's website redesign and a custom CRM solution using **TypeScript**, **React**, **Next.js**, and **Firebase**, applying **Agile principles** for efficient sprint planning.

One-to-One
- Engineered a client-side web application written in **React** to enable users to easily schedule online meetings by communicating with a **RESTful API** integrated with a **Django** backend for efficient data management.

Traffic Racer
- Wrote a 2D rendition of the Traffic Racer game in **MIPS assembly**, implementing **bitmap graphics** for real-time vehicle movement, **memory-mapped I/O** for responsive keyboard controls, and **collision detection** logic to manage player lives and game state.

Pintos
- Developed core OS primitives for a toy operating system in **C**, including priority scheduling, system calls, memory-mapped files, virtual memory management(paging and swapping), and an extensible file system.

TECHNICAL SKILLS

Languages: Python, C, C++, C#, Java, JavaScript, Typescript, SQL, Haskell, Hack
Frameworks and Databases: React, React Native, Django, Mongo, Spring, Cucumber, MySQL, Firebase, Next.js
Environments and Tools: Linux/UNIX, Maven, Selenium, Git, Node.js