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** for managing real-time system updates on **DWIN DGUSII LCM** displays for Empyrean's **Morpheus Radiation Device** by implementing methods for secure packet transmission and validation protocols, enabling system variable updates of numerical, float, and string values 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.
- Reduced the engine codebase by **64%** through modular refactoring while maintaining functionality and clean architecture.

Software Engineer Intern Jan. 2022 – Apr. 2022
Royal Bank of Canada | Java, Spring, Maven, SQL, Confluence, Cucumber Framework *Toronto, CAN*

- Implemented **Microservices** in RBC's Client Systems application for the **Retail Banking Payments Technology & Integrations Lab**, enhancing **Input Validation, Schema Validation**, and **Compliance Enforcement** features for the File Management and User Compliance APIs.
- Designed end-to-end application test cases with a **BDD** approach to validate the performance and functionality of the client system.

Documentation Consultant Jan. 2023 – Apr. 2023
Taichi Graphics | React, Node.js, Docusaurus *Toronto, CAN*

- Maintained and oversaw documentation updates for Taichi's **Developer Documentation application**, enhancing developer engagement and streamlining project onboarding 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 features for an operating system framework written in **C**, including thread synchronization and priority scheduling, user program execution with system calls, virtual memory management with paging and swapping, and a file system with extensible files.

BookMeBot

- Architected a booking automation API using **Selenium** and **Python** for a chat bot that allowed users to quickly book multiple gym slots in advance (via Discord and Facebook Messenger) during COVID-19 without authentication or web navigation.

Technical Skills

Languages: Python, C, C++, C#, Java, JavaScript, Typescript HTML, CSS, SQL, Haskell
Frameworks and Databases: React, Django, Mongo, Spring, Cucumber, MySQL, Firebase, Next.js
Environments and Tools: Linux/UNIX, Maven, Selenium, Git, Node.js, Material UI, Postman, JUnit, Jira