Alexander Apostolu

Toronto, ON | 587-990-6542 | alex.apostolu@mail.utoronto.ca | linkedin.com/in/apostolu | github.com/alexapostolu

Education

University of Toronto

Honours in Bachelors of Science, Computer Science and Mathematics + PEY Co-op *Sep. 2022 – June 2027*

Courses: Software Design (Java), Systems Programming (**C**, **Bash**, and **Linux**), Data Structures and Analysis, Computer Organization (Assembly), Theory of Computation

Technical Skills

Languages: C/C++, Assembly, Python
Developer Tools: Make, CMake, Git, Github, VS Code, Visual Studio
Other: STM32, Arduino, Zephyr

Experience

Firmware Engineer May 2024 – Present

U of T Aerospace Design Team, Space Systems Division *Toronto, ON*

- Developed and verified **comprehensive test plans** for housekeeping, parameter, and logging services in our CubeSat project, ensuring alignment with project requirements.
- Implemented these services in **C** using **Zephyr RTOS**, focusing on thread safety, and conducted extensive testing on **STM32 Nucleo** boards. Successfully integrated multi-threaded logging, utilizing **message queues** for telemetry data collection, and effectively communicated design decisions to team leads.
- Led a team of two members through the development process, enhancing leadership skills. Actively participated in PR reviews, ensuring my **thread-safe code** was well documented and tested.
- Presented a detailed overview during the **internal design review**, highlighting high-level design considerations and the rationale behind the chosen test framework.

Projects

Programming Language | Github

- Developed a bytecode-interpreted programming language using C++ and CMake, leveraging **Git** and **Github** for version control.
- **Optimized expression parsing** through Syntax Trees, implemented tree traversal algorithms and used data structures including lists and stacks to ensure readability and performance. Achieved a stable version with streamlined installation through persistent effort and self-education.
- Designed and implemented a website with JavaScript, HTML, and CSS to effectively showcase the language's capabilities and features to potential users.

Text to Braille Glove | Linkedin Post

- Developed a haptic glove prototype leveraging AI text recognition and **Arduino components** to translate text into braille for visually impaired individuals, enhancing accessibility in noisy environments.
- Used OpenCV and EasyOCR in Python for text recognition via webcam, and programmed an **Arduino Uno** to control six servo motors mimicking Braille characters' vibrations, resulting in a haptic glove.
- Facilitated project coordination, contributed to software development, and meticulously assembled hardware components, showcasing a **multidisciplinary approach** to achieving a tangible solution for **societal impact**.

Assembly Sokoban

- Developed a rendition of Sokoban using **Assembly**, where players maneuvered a box towards the designated goal on a virtual LED grid. Distinguished player, box, and goal elements through various colored LEDs.
- Used the **RISC-V architecture**, including functions and stack operations, to develop a fully operational game. Wrote **comprehensive documentation** for both the game and its code base to enhance user understanding.