Molave Liggayu

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Education

BASc **University of British Columbia**, Computer Engineering (3rd Year) — Sept 2023 – Present

- **Expected Graduation:** May 2027
- **GPA:** 4.10/4.33 Dean's List
- **Course Coverage:** Computer Architecture, Circuit Analysis, Hardware and Operating System Abstractions, Virtualization, Concurrency

Technologies

Languages: C, C++, Java, JavaScript, HTML, Python, Bash, MATLAB
Source Control: Git
Operating Systems: Windows, UNIX
IDEs: Visual Studio/Visual Studio Code, IntellJ, CLion, ArduinoIDE, STM32CUBEIDE
Simulation Tools: Quartus, Model-Sim, MATLAB, Waveforms, SOLIDWORKS
Software Tools: GDB, Gradle, Docker, Vim/NeoVim, Playwright, Microsoft Excel/Word/PowerPoint

Experience

atVenu, Student Intern Developer — Calgary, AB — Jul 2022 – Sep 2022

- Developed automated unit tests using Playwright's automated testing platform. Also implemented parameterized smoke tests for end to end online checkout processes.
- Deployed unit tests across different mobile os versions, and browsers including firefox, chrome, and safari.
- Created an automated tool to flag incorrect and out of sync UI behavior using Playwright's UI simulation.
- Learned Agile methodologies and SOLID development under mentorship from senior developers.

SailBot Design Team, Firmware Subteam Member — Vancouver, BC — Jan 2025 – Present

- Designed a custom boot-loader for the STM32u5 micro-controller including custom boot sequences and memory locations.
- Implemented a custom CAN library for communication between raspberry Pi and STM boards for over the wire program data transfer.
- Developed safe-boot configuration to ensure that program integrity is maintained through CRC checks.
- Created utility library for memory overwriting functions that interface with existing HAL functions.

SailBot Design Team, Electrical Subteam Member — Vancouver, BC — Sep 2025 - Jan 2025

- Analyzed existing circuit configurations using an oscilloscope to determine large noise producing components on power lines.
- Built and tested different noise filtering circuit configurations for better noise profiles.

Projects

Custom RISK-V CPU github.com/name/repo

- Developed a RISK-V based CPU using System Verilog deployed on an FPGA De1-SOC board.
- Tested functionality through gate-level simulation with custom testbenches to verify instruction execution and pipeline behavior.
- Tools Used: Verilog, System Verilog, Quartus, Model-Sim, Vim/Neovim

ML based Motion Tracking game github.com/name/repo

- Developed a game that uses the OpenCV library to track a person's joints through a webcam. Front end runs on the Java swing framework, using gradle as the build tool.
- Part of the 2025 NASA space apps Hackathon. Received number one overall in regionals with global nomination.
- Tools Used: C#, Java, Java Swing, OpenCV, Python,

Nutrition Tracking App github.com/name/repo

- Created a small client side nutrition tracking app built on the Java Swing framework. Uses open sourced nutritional APIs to suggest recipies and track nutritional data.
- Tools Used: Java, Java Swing, Docker

Arduino Robotic Claw github.com/name/repo

- Constructed an autonomous mechanical claw using the arduino uno micro-controller and sonar features.
- Programmed the firmware and algorithms for detecting objects of various sizes and weights.
- Tools Used: C, Arduino IDE

UNIX-Based Signal-Handling Shell Implementation github.com/name/repo

- Developed a UNIX-based shell implementing process spawning and signal handling, enabling execution of user commands while safely managing concurrent modifications and interrupts.
- Tools Used: C

Virtual Memory System and Dynamic Memory Allocator github.com/name/repo

- Implemented a user-level virtual memory manager featuring a two-level hierarchical page table structure supporting up to 512 concurrent address spaces.
- Developed a custom dynamic memory allocator (malloc, free, realloc) using block headers and pointer arithmetic to manage heap allocations efficiently.
- Enhanced understanding of low-level memory management, address translation, and OS-level abstractions through C implementation and rigorous testing.
- Tools Used: C, GDB

Scholarships and Awards

EGBC 2024

Renchko Family Scholarship: 2023
Awarded to a well-rounded student who has exemplary academic standing, who demonstrates positive character traits, and active in school and community activities

Bishop Carroll Spirit of 76 Scholarship Awarded to a student who shows outstanding work ethic 2023

Alexander Rutherford Scholarship Awarded to a student with strong academic achievement 2023