Sami Al-Aboudi

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Education

Carleton University **Expected Graduation: Apr 2026**
Bachelor of Engineering in Computer Systems Engineering

Technical Skills

Programming Languages: C, C++, Python, R, Java, Bash
Development Tools & IDEs : Git, Github, CLion, IntelliJ, VScode, Vitis
Embedded Systems & Hardware : Raspberry Pi 4, Arduino, UART, I2C, Verilog(HDL), Vivado, Breadboarding, Soldering
Networking & Communication Protocols: Wireshark(packet analysis), TCP/IP, UDP/IP, MQTT(paho-mqtt)
Modeling, Markup & Documentation: UML, HTML, CSS, LaTeX
Testing & Debugging: unittest(python), cassert(C++), JUnit(Java), Ability to Use Debugger
Relevant Coursework: Data Structures & Algorithms, Operating Systems, Object Oriented Programming, Real-Time Concurrent Systems (Multithreading)
Other: MS Office Suite(Excel, Word, Teams, PowerPoint), MATLAB, Jira, Fusion 360

Projects

IoT Autonomous Robotic Shoveler **Project Link**

- Designed and implemented server-side systems, integrating the python-weather API to monitor weather forecasts, triggering SMS notifications via Twilio API to inform users about upcoming snowfall and snow shoveling reminders. Also implemented SQL database insertion and MQTT publishing/subscriber software for real-time communication between the server and the shoveler robot.
- Designed the shoveler robot's control system with three core programs: a subscriber program that starts or stops the main programs operation, a main program for autonomous navigation and snow clearing, and a publisher program that reports operational data back to the server.
- 3D printed and designed the shovel using Fusion 360, optimizing its design for robot chassis and snow removal in simulated environments.

Multi-Elevator-Thread-Based-Simulation **Project Link**

- Collaborated on developing a multi-threaded elevator control system in C++ with separate Elevator, Floor, and Scheduler subsystems communicating via UDP.
- Optimized elevator coordination for minimized wait times and implemented fault detection (e.g., stuck doors, elevator malfunctions).
- Managed real-time constraints, elevator capacity limits, and system scalability.
- Contributed to iterative development, adding features like error handling, system distribution, and a real-time UI for monitoring elevator status.

Google Clone Website Simulator **Project Link**

- Developed static web pages replicating Google's UI design, simulating search functionality, using HTML, CSS.
- Created a fully responsive web interface using HTML5 and CSS3, optimized for various screen sizes and browsers.
- Utilized Git and GitHub for collaborative version control, maintaining a clear commit history, and structured project organization.

Command-Line Book Management Tool **Project Link**

- Designed and developed a Python-based TUI program for searching, storing, and manipulating book records from CSV files with dynamic dictionary-based data structures.
- Implemented file manipulation and CSV parsing in Python, utilizing nested dictionaries to support efficient lookups and data storage.
- Applied Big O notation principles to optimize file parsing algorithms, improving processing speed for large CSV datasets.

Engineering Club Involvement

CU InSpace — Rocket Engineering Design Team **Feb 2025 – Present**
Avionics Sub Team Member

- Developed a custom UART driver in C for the Quectel L86-M33 GPS module on the rocket's flight computer
- Implemented real-time data communication and NMEA sentence parsing following Apache NuttX RTOS driver development standards

Work Experience

Fedex **Nov 2023 – Present**
D3 Driver

- Deliver up to 100 packages per shift across Ottawa, ensuring on-time and accurate deliveries with efficient route planning.

Noreast Electronics **May 2022 – Sep 2022**
Electronics Assembler

- The main duties included wire winding,wire coil wrapping, and soldering.
- Tested and assembled over 100 electronic components weekly, collaborating with a team to consistently exceed company quality and efficiency goals.