Muthana Alhabian

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Education

McMaster University, Hamilton **2020 - 2025**

Bachelor of Engineering, Computer Engineering

- Courses of interest: Logic Design, Principle of Programming, Microprocessor Systems Project, Data Structures, Algorithms and Discrete Mathematics, Advanced Internet Communications, Advanced Internet Communications
- Earned McMaster University Honor Award Scholarship for outstanding academic performance

Technical Skills

Languages: Python, Java, C++, JavaScript, C Sharp
Frontend: HTML, CSS, Bootstrap
Clouds & Databases: PostgreSQL(fundamentals)
Developer Tools: MS Office Suite and Power Platform, VS Code, GitHub, MATLAB, Simulink, .NET Framework, MVC, Autodesk Inventor

Work Experience

Software Developer **May 2023 – August 2024**

Ministry of Children, Community and Social Services

- Developed OPSGPT, a large language model for internal knowledge retrieval. OPSGPT utilizes uploaded documents for information retrieval, improving data privacy and security.
- Designed and implemented AIRE, a task management tool for architects, streamlining daily workflows and improving efficiency.
- Contributed to the development of ALDA, a platform for capturing and disseminating project lessons learned, fostering knowledge sharing and best practices.
- Explored the potential of Metaverse and SharePoint integration through a Proof-of-Concept (PoC) project, investigating its impact on user engagement.
- Conducted a Proof-of-Concept (PoC) project to evaluate the effectiveness of blockchain technology for various applications, assessing its potential benefits.

Projects

2024 OPS Microsoft AI Phenomenal Hackathon Source Code

- **Objective:** Implement a comprehensive mental health app to empower OPS employees in managing their well-being
- **Technical Challenge:** Developed a comprehensive mental health app (OPS AI Wellness Companion) using **Microsoft Power Platform** to support employee well-being within the organization

Real-time SDR for mono/stereo FM and RDS

- **Objective:** Led the development of a real-time embedded system for a form factor-constrained environment. Analyzed complex specifications and identified key challenges for successful implementation
- **Technical Challenge:** Developed a software-defined radio **(SDR)** system using **Python** and **C++** for real-time reception of FM mono/stereo audio and Radio Broadcast Data System **(RBDS)** information on a **Raspberry Pi 4** with an **RTL-SDR dongle**

Mortgage Management Portal Source Code

- **Objective:** An application that creates an amortization schedule for a fixed loan payment
- **Technical Challenge:** Develop a web application in **MVC** design in **C Sharp** using **JS** and **HTML**

Community Blog Portal Source Code

- **Objective:** A web application that allows users to look-up or create blogs with the ability to interact with other users through post comments
- **Technical Challenge:** Develop a web application using **MVC** design in **C Sharp** with the ability to retrieve data from a database

Health Monitoring System using Pacemaker DCM Source Code

- **Objective:** A Device-Controller Monitor (DCM) that allows for the remote transmission of commands and information from a pacemaker
- **Technical Challenge:** Engineer a **GUI** using **Python** that allows users to login, keep track, and control communication with a pacemaker

Hardware Implementation of Image Decompressor

- **Objective:** A circuitry will read compressed image, recover its custom digital circuit, store to the SRAM, and display using a VGA controller
- **Technical Challenge:** Write a program using **Verilog**, to decompress an image using lossless decoding, dequantization, inverse signal transform, interpolation, and colourspace conversion