

# YAHYA ABOUELMAGD

[Link to my website with all my contact info, links and other projects!](#)

## Skills

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**Languages :** Python, Java, C/C++, SwiftUI, PHP, HTML/CSS, NodeJs, ReactJs, SQL, Ladder-Logic, ARM64 Assembly, Verilog

**Development Skills:** Data Structures and Algorithms, Web Development, Object-Oriented Programming, Embedded System Development, Remote System Development, Networking, Digital Design, Debugging, and Version Control

## Education

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**University of British Columbia**

**September 2021 – May 2026**

*Bachelor of Applied Science in Computer Engineering*

*Vancouver, BC*

## Work Experience

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**Terraforma Systems Inc.**

**September 2024 – Present (Expected: 4 months)**

*Intern*

*Pytorch, Java, PHP, JavaScript, SQL, Networking*

- Implemented REST backend endpoints to receive JSON formatted sensor data and images from machines.
- Developed templates and visualized received data on them through jquery.
- Leveraged AWS services by deploying backend solutions on EC2 and deployed MySQL database on Aurora.
- Speeding up database communication for users' web tools by implementing caching strategies, reducing query load.
- Utilizing the Ewon Java Toolkit to develop the 'Smart Lifter', enabling remote tag management and event log viewing.
- Training machine learning models using Pytorch for material classification, and testing them in real-world environments.

## DELL Technologies

**July 2024 – August 2024 (2-months)**

*Intern*

- Participated in designing and implementing a new TCP communication protocol suited for DELL's PowerEdge Servers.
- Specifically worked on developing an acknowledgment (ACK) mechanism and timeout handling.
- Led the testing and shadowed the rollout of the protocol, boasting a 35% decrease in packet loss and network traffic.

## Projects

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**Text Messaging Application** | *Full-Stack Development, RESTful API, NodeJS, MongoDB, WebSocket, JavaScript, Ollama*

- Designed a web application enabling users to create profiles and chat rooms.
- Implemented live chat functionalities and room updates via AJAX requests and WebSocket communication.
- Implemented an MVC pattern for dynamic client-side rendering of chat and profile pages.
- Set up a MongoDB database with collections to store and manage chat messages and user information.
- Developed a Data Access Object (DAO) layer to read/write conversations and user information. Including robust user authentication and authorization mechanisms
- Protected the server from Cross-Site Scripting (XSS) attacks by sanitizing messages.
- Implemented a NodeJS server, with RESTful API server-side endpoints to allow for profile creation, messaging, etc.
- Hosted a language AI model locally and provided users with an advanced autocorrect feature.

**Video Game Library DBMS (CPSC 304), UBC** | *OracleSQL, PHP, Oracle, Github*

- Designed a relational database to describe a video game library with tables like Player, Game Series, Tournament.
- Enhanced data model complexity by defining one-to-one and one-to-many relationships, such as distinguishing recreational and professional players, and linking companies to game series.
- Designed and implemented a PHP front-end, enabling users to remove or update entries by invoking OracleSQL calls following their interaction.
- Implemented dynamic database querying features for real-time data updates and tailored user information retrieval.

**Large-scale Twitter Proxy Service** | *Back-End Development, Apache Tomcat, AWS, Java, IntelliJ, JUnit, Git/Github*

- Designed a thread-safe service able to proxy up-to a 1000 requests to Twitter concurrently, using their API SDK.
- Setup an Apache Tomcat server to expose API endpoints for users and manage threads.
- Implemented the twitter action proxy layer responsible for forwarding requests to Twitter.
- Load-tested the application on a remote EC2 instance on AWS to ensure it can handle the expected load.
- Achieved 95% code coverage using a suite of unit tests, evaluating server capabilities at different capacities.

## Other Programming Experience

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### Networking

- In-depth knowledge of each of the OSI model, helping me build and test - on WireShark - a TCP-like reliable data transfer instance, with less than 10% packet loss and congestion control
- Designed, implemented, and tested scalable distance-vector and link-state routing protocols.

### Embedded Systems(C/C++)Concurrency, Synchronization, Virtual memory, System calls, and File systems.

- Built a small bash shell, able to run Unix commands, and control processes running in the foreground and background.
- Enhanced Harvard's OS161 with synchronized multi-threading and multiprocessing capabilities, filesystem and process system calls, and memory virtualization. Optimizing physical memory allocation and making it able to withstand 2000 concurrent processes.