

HANA HASSAN

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EDUCATION

Bachelor of Science – Software and Mechatronics Engineering

Aug 2022 – April 2027 (Expected Graduation)

Schulich School of Engineering, University of Calgary

- **Courses:** Data Structures & Algorithms | Full-Stack Web Development | Computer Organization | Digital Circuits | Database Management | Object-Oriented Programing | Statistics and Machine Learning | C/C++ Programming
- **Honors and Awards:** Dean’s List (2024) | SSE Summer Undergraduate Research Program Award | Diversity Champions in Engineering Scholarship | Women in STEM Scholarship | Premier’s Citizenship Award | Nathan Shair Memorial Scholarship | Alexander Rutherford Scholarship | Scholars Academy Admission | Jason Lang Scholarship (2)
- **Global Experience:** Participated in a transformative program in Silicon Valley, focusing on valuable networking, leadership development, and proactive career advancement. Interacted with seasoned tech leaders and esteemed research professors, gaining insights into excelling in our careers and recognizing the profound impact I can make on the future.

CORE QUALIFICATIONS

Programming Languages C, C++, C#, Python, Java, NodeJS, RISC-V Assembly, Julia, GO

Technologies Unity, MySQL, Postgres, Xcode, Linux/Unix, MacOS Arduino, Jupyter Notebook, Junit Testing, DBeaver, Putty, Clickhouse, Git, Github, VSCode, IntelliJ, LaTeX, ROS2, Gazebo, Multi-Threading, Postman, MATLAB, BitBucket, Tensorflow, Pytorch

Web Development JavaScript, CSS, HTML, React (Three Fiber), Tailwind, Three.js

Soft Skills Analytical and Problem-solving, Project Management, Fast paced & Team-Based Environment, Debugging and Critical Thinking

EXPERIENCE

Bounty Hunter Software Developer

June 2024 – Present

UCalgary Blockchain Society, University of Calgary

- **Researching** on and development of Fintech, Blockchain & AI, and participating in hackathons to win prizes and recognition.
- Collaborating with companies for research and development opportunities.
- Writing technical articles and blogs on emerging technologies and innovative companies.

Undergraduate Decentralized Finance Research Assistant

Dec 2023 – Present

Schulich School of Engineering, University of Calgary

- Leveraging data from the Bitcoin node, utilizing RPC API to access and extract NFT storage mechanisms, subsequently storing it in a **Postgres SQL** database using multi-threading in **Julia** programming language, and improving daily insertion speed by **75%**
- Conducted in-depth user classification of Ethereum Blockchain, leveraging **database queries** and statistical measures to discern patterns in gas token usage and transaction behavior.
- Led cost analysis initiatives, employing miner loss calculations and user benefit assessments to enhance market efficiency.

Controls & Embedded Integration Developer

Oct 2023 – Present

Schulich Space Rover Team, University of Calgary

- Applied inverse kinematics to translate desired end-effector positions into precise joint angles, optimizing the control of the robotic arm for efficient task execution with **83%** improved accuracy.
- Using **ROS2** and **SLAM** algorithms for development of advanced control systems to create robust robotic systems in **Python**
- Ensuring precise navigation and operational functionality in simulated extraterrestrial environments utilizing **Gazebo**, **Rviz** and **Movelt** to craft immersive robot simulations.

Robocup Software Developer

Oct 2023 – Present

ACRobotics, University of Calgary

- Developing autonomous multi-robot systems, enhancing real-time data processing and algorithm optimization.
- Improving wireless communication by **0.53s** by switching from a Bluetooth (HC-05) module to a WIFI (ESP8266) module using Python with **data modeling, validation, and processing**
- Engaged in thorough research of **neural network architectures**, training **algorithms**, and **optimization** techniques.

PROJECTS

3D Portfolio Website

May 2024 - Jun 2024

- Developed an interactive 3D portfolio website using **React, Three.js, and React Three Fiber** to showcase projects and skills, and implemented 3D graphics and animations to integrate 3D models and scenes, enhancing the visual experience for users.
- Utilized modern **JavaScript** (ES6+) features to write clean, efficient, and maintainable code, ensuring the high performance and scalability of the application.
- Designed and optimized the **user interface** (UI) with responsive layouts ensuring a consistent experience across various devices.

Disaster Relief Service

April 2024

- Designed and implemented a disaster relief management system in **Java**, including modules for managing disaster victims, relief workers, and medical records.
- Utilized **object-oriented programming** principles and relational database integration to ensure efficient data handling and user-friendly interface.
- Created and optimized an **SQL database** to enhance data retrieval and storage efficiency.

Airline Information Management System

Dec 2023

- Developed a robust airline reservation system using advanced **C++** features such as **polymorphism** and inheritance, while applying object-oriented programming principles to design modular classes enhancing code maintainability and scalability.
- Implemented file handling techniques for data persistence, enabling seamless storage and retrieval of information.

Google Chrome Game Extension, TechStart Club Member

Nov 2022 - May 2023

- Developing software using **Unity** with **C#** to create a side-scrolling interactive game with a penguin attempting to avoid obstacles.
- Working in a cross-functional team using **GitHub** while creating multiple games to combine into one Chrome extension.