Nessma Mohdy

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TECHNICAL SKILLS

Coding Languages: C/C++, Python, Java, SQL, Arduino, JavaScript, HTML, MATLAB, C#, ROS, RISCV Assembly
Platforms: Linux, Windows, Mac OS
Tools: Git, CAD, Unity, VS Code, Blender, MySQL, Quartus, MPLAB X, XML, UTM, TCP communication, Microcontrollers, RTOS, UART, GUI, Azure, Jira, Docker, Terraform, Ansible, Kubernetes, Excel

EDUCATION

Bachelor of Engineering in Software, Minor in Mechatronics Engineering
- Key Courses: Embedded & Hardware Systems, Networking, Data Structures & Algorithms, Linear Algebra, Applied Operating Systems, Machine Learning, Digital Circuits, Control Systems, Signals & Transforms

PROJECTS

LED Controller | *C*
- Engineered an embedded pulse width modulation system for LED lights, programmed for a PIC24 microcontroller. Led circuit design for the purposes of a controlled light modification system, responsive to buttons through interrupts. Utilized Spyder's IDE for Python and UART communications to graphically display the light intensity.

Simple Processor | *Verliog*
- Designed and initiated a basic processor a logic unit, control unit, registers adapting on what was learnt in class.

Neural Network Enhancer | *C++, Python, Verliog*
- Utilized PyTorch to train a neural network, extracting weights for further application in custom neural network development using C++. Employed Verilog on the FPGA DE10-Lite board to enhance neural network creation efficiency and eliminate iterative processes, resulting in accelerated development.

AI Obituary | *HTML, CSS, JavaScript*
- Innovated a React Full Stack web application enabling users to create their own collection of GPT-4 AI generated obituaries with Amazon Polly voice feature. Developed a terraform configuration to connect to AWS Lamba and DynamoDB to ensure an optimal user experience.

LongTimeNoCrypto | *C++*
- Modified the open source sha256 encryption and created a Cipher Hill cryptic algorithm to create respective hash blocks. Utilized problem-solving skills to create a networking P2P system that sends a secrete message, added to a blockchain

Flight Booking Simulator | *Java, SQL*
- Created a Java application capable of querying SQL databases to establish a comprehensive booking center. Ensured reliability by meticulously attending to details, including UML diagrams and JUINT tests.

EXPERIENCE

Haptic Robotic Arm & Data Analyst Researcher @ University of Calgary   May – August 2023
- Enhanced supervised machine learning methods in MATLAB with an analytic mindset that aided in the publication of a research paper on long COVID effects.
- Oversaw PCB design, 3D printing of the open-source THOR robot on Autodesk Fusion, assembled around the inverse kinematics, and dealt with soldering.

Controls Engineering Team Member @ Schulich Space Rover   October 2023 – Present
- Utilized Phidget encoders and STM Cubic micro-controller to manage an entire rover's electrical system and create a comprehensive diagnostic hub.
- Executed PID control algorithms to regulate motor speed, enhancing precision and stability in control systems through feedback loops and OP-AMPS.
- Created firmware scripts using Phidget library to produce an emergency stop button that resets the position of the arm.

Computer Vision Engineer @ AiRM   October 2022 – May 2023
- Integrated OpenCV linear algebra functions to create a precise recognition of moving objects through a live feed camera.

Full Stack Intern @ Luminous Energy Solutions LTD.   January – April 2023
- Developed a full stack sponsorship website using node.js and AWS that increased client satisfaction by 24%.
- Articulated a proposition outlining the benefits of collaborating with our company, based on my analysis of energy consumption trends that could result in a 15% decrease in CO_2 emissions.