Mark-Ryan Quinonez

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Education

St.Michael's College School **Sep. 2015 – June 2019**
Ontario Secondary School Diploma *Toronto, ON*

Toronto Metropolitan University **Sep. 2019 – June 2023**
Bachelor of Engineering in Computer Engineering *Toronto, ON*

Relevant Coursework

- Data Structures
- Digital Signal Processing
- Digital Systems Engineering
- Embedded Systems Design
- Intelligent Systems
- Digital Image Processing
- System-on-Chip Design
- Advanced Computer Architecture

Technical Skills

Languages: Python, Java, C/C++, HTML/CSS/JavaScript, VHDL
Developer Tools: VS Code, Eclipse, MATLAB, Intel Quartus, Xilinx Vivado & ISE
Technologies/Frameworks: Linux, GitHub, FPGA Development, Embedded Systems Design, Signal Processing, Hardware-Software Integration

Experience

The Learning Network **December 2023 – Present**
XR Support Specialist *Remote / Toronto, ON*

- Delivered on-site presentations and demos of XR projects to clients and prospects, helping drive engagement and gather actionable feedback.
- Diagnosed and repaired XR headsets to ensure optimal performance and seamless use with client applications, enhancing overall user experience and satisfaction.

Projects

Capstone Project: System-on-Chip Design and Implementation for ECG Analysis | *Python, C++, VHDL, Vivado*

- Designed and implemented an ECG signal analysis system on an FPGA-based System-on-Programmable Chip (SoPC), utilizing skills in C++, VHDL, and hardware-software co-design.
- Implemented signal processing algorithms for ECG signal analysis, including beat detection and R-peak detection, and finding abnormalities.
- Utilized hardware acceleration techniques to increase processing speed and efficiency.
- Collaborated effectively within a team, demonstrating strong teamwork and communication abilities.

HPS/FPGA Based MD5 Decryption System-on-Chip | *C, VHDL, Quartus*

- Designed and implemented a custom MD5 decryption system using a HPS/FPGA platform, utilizing skills in VHDL, Avalon Memory Map (MM) interface, and C programming.
- Developed a serial implementation of the MD5 algorithm and integrated it into the system, with successful data and control assertions and transfers, demonstrating strong problem-solving and debugging skills.
- Leveraged the DE1 SoC (System-on-Chip) platform as the foundation for the HPS/FPGA-based MD5 decryption system, harnessing its integrated Cyclone V FPGA, ARM Cortex-A9, and wide range of peripherals.

Media Center on MCB1700 Board | *C, MCB1700, uVision IDE, RTOS*

- Designed and implemented a modular embedded media center using C on the MCB1700 ARM Cortex-M3 board, integrating an LCD display, joystick, LEDs, and USB peripherals through direct register-level programming and hardware abstraction.
- Developed multitasking functionality with state-machine logic to manage a graphical menu system, enabling real-time user interaction for photo viewing (BMP decoding), MP3 playback (audio streaming over UART or USB), and gameplay with input responsiveness.
- Applied embedded concepts including interrupt-driven I/O, peripheral driver development, memory-constrained programming, and user feedback systems (LEDs, screen updates) to build an interactive and responsive interface under tight hardware limitations.

Pong Recreation on an Embedded System | *C, Embedded Systems*

- Developed pong on an LPC1768 embedded system, featuring scoring system, controls, and game mechanics.
- Leveraged C programming and hardware skills to efficiently configure and utilize peripherals on the LPC1768 board, ensuring seamless playback and user interaction.
- Prioritized resource optimization to enhance system performance and responsiveness, taking into account memory management and power efficiency.