Melissa Martin

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EDUCATION

Bachelor of Science, Computer Engineering
University of Manitoba, Canada   GPA: 4.1/4.5

EXPERIENCE

Computer Engineer-In-Training   May 2023 - Present
Manitoba Hydro - Energy Operations Planning   Winnipeg, Canada
- Used Python and Bash to integrate a stochastic modeling program with an established deterministic modeling system to improve the reliability of the hydroelectric utility's water management operation by 12%. Model integration will increase corporate revenue by up to $50 million over the span of 3 operating years.
- Reduced annual licensing expenses by $16 thousand through replacing C proprietary library functions with open-source library functions. Implemented efficient multithreading techniques to maintain low run times, ensuring cost savings without sacrificing performance.
- Used data analysis and deterministic modeling to determine the essential operational requirements necessary to meet peak yearly energy load demands for the next 5 years, considering typical operating conditions and extreme edge cases to ensure system reliability in challenging conditions.
- Developed, tested, and deployed modeling system improvements in a CI/CD environment.

Electric FSAE Software Systems Member   Oct 2020 - Jan 2023
University of Manitoba - Student Chapter of SAE International   Winnipeg, Canada
- Programmed STM32 microcontrollers using C, applying FreeRTOS, CAN, SPI, and UART protocols.
- Developed SPI to CAN communication firmware to enable considerable future improvements to the electric race car design, such as dual motor control and all-wheel drive.
- Tested and troubleshot race car low voltage loop functionality on test bench, utilizing soldering skills and electronic test equipment, including oscilloscopes.

Digital Logic Teaching Assistant   Sep 2022 - Dec 2022
University of Manitoba - Faculty of Engineering   Winnipeg, Canada
- Provided guidance and lab instruction to students on the fundamental concepts of computer logic, the operation of the Terasic DE10-Standard Development Board, and Verilog programming.
- Evaluated students' understanding of course materials through grading lab reports and course assignments, and reviewing design project reports and presentations.

Distribution Engineering Aid   May 2021 - Aug 2021, May 2022 - Aug 2022
Manitoba Hydro - Distribution Engineering   Winnipeg, Canada
- Developed a Python desktop application for automated aggregation to reduce time spent on manual data analysis. Conducted software and user acceptance testing to determine application data accuracy and usability.
- Programmed and configured settings for multiple remote automation devices for power outage visibility, automatic load transfer, and other system reliability applications.

Electrical Engineering Aid   Aug 2020 - Apr 2021
KGS Group - Hydroelectric Consulting   Winnipeg, Canada
- Assisted hydroelectric engineers with project tracking documentation, single line drawing mark-ups, and acquiring product information from suppliers.

PROJECTS

The Design and Implementation of an Autonomous Tennis Ball Collecting Robot   Sep 2022 - Apr 2023
Undergraduate Capstone Project, University of Manitoba   github.com/mlmartin99/Capstone
- Performed integration of autonomous, embedded system, and UI modules of the robot project using ROS and Docker.
- Completed embedded system design of the robot, including budgeting, construction of robot chassis, configuration of drivetrain electronics, and interfacing with the motor controller and motor encoders to move the robot.

Other Projects
- **Project 4 :** Electric FSAE CAN to SPI Communication Firmware
- **Project 4 :** Verilog Stopwatch on DE10 Standard Board
- **Project 5 :** Communication Device for Hard of Hearing Curlers

TECHNICAL SKILLS

Programming languages: C, Python, Java	**Web Technologies:** HTML, CSS, JavaScript
OS: Windows, Linux	**Miscellaneous:** Git, Bash, ROS, Docker, Power BI, Latex