ALEXANDRE MARMEN

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Web Portfolio: https://portfolio-m4rmens-projects.vercel.app/

EMBEDDED DEVELOPMENT TECHNICAL SKILLS

Programming Languages	C, C++, Python, Java, Assembly, VHDL
Frameworks	ROS 2, OpenCV, PyTorch, Flask
APIs	OpenMP, TBB, POSIX, OpenCL, MPI

EXPERIENCE

Design Project of an Information System - Polytechnique Montréal — January 2024 – April 2024
Developing Team Member — *Montréal, QC*

· Created a ROS 2 package in C++ to enable mobile robots to navigate autonomously in both simulated and real environments.
· Managed node architecture and frame transformations (TF Tree) to ensure robust communication among ROS components.
· Designed a web interface to monitor robot status and dispatch commands.
· Developed a Python Flask API to relay web commands to the robots via ROS 2 topic publishing.
· Containerized both the Python server and the web server to streamline deployment.

Ultrapark Science and Technology Center — May 2024 – August 2024
Web Software Developer — Intern — *Costa Rica*

· Designed and developed a user registration system to streamline gym enrollment processes.
· Created intuitive user interfaces for mobile and desktop platforms using ReactJS & NodeJS.
· Reduced human errors in data transcription through automation.
· Built a containerized server with MSSQL normalized databases using Docker.
· Collaborated with stakeholders to define functional and legal requirements.

RELEVANT COURSES

Embedded Systems
Design of embedded software components, real-time operating systems, microcontrollers, VHDL, High Level Synthesis (HLS) Pragma, Xilinx Vivado.

Parallel Computer Systems
Advanced multiprocessor architectures, memory hierarchy and cache coherence protocols, multithreaded parallelism, MPI, OpenCL, TBB, OpenMP.

Microcomputer Architecture
Microcomputer organization, instruction set architectures, assembly programming, and microprocessor optimization (pipelining).

EDUCATION

Polytechnique Montréal, Montréal — *May 2025*
Bachelor's in Computer Engineering
Specialization in Security and IT Mobility