Marc-Antoine Manningham

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WORK EXPERIENCE

Nuvu Cameras **Montréal, Canada**

Embedded Software Development Intern May 2024 - Aug 2024

- Developed testbenches for over **30 000 lines** of VHDL code to ensure the correct behavior of the new camera generation's FPGA with VUnit.
- Deployed a full CI/CD pipeline on Jenkins to automate the testing of the FPGA firmware and ensure code quality.
- Covered **95%** of the codebase with the testbenches to ensure the reliability of the code and discovered many bugs before they could reach the hardware.
- Developed a RAM AXI4 Master controller in VHDL to interface the Microchip's FPGA with DDR3 and DDR4 RAM and reach debit over **128 Gb/s** to write a circular buffer of images taken by the camera.

Polytechnique Montréal **Montréal, Canada**

Teaching Assistant Aug 2023 - Present

- Taught the following courses: object-oriented programming (INF1010) and digital systems design (INF3500)
- Provided technical support and guidance to students, fostering a deeper understanding of course material.
- Evaluated assignments, offering detailed feedback to promote student improvement.

Lainco **Terrebonne, Canada**

Software Developer Intern May 2023 - Aug 2023

- Produced powerful and user-friendly scripts to automate steel beam placement in CAD software that followed the mechanical engineer's specification automatically and saved up to **several weeks** of repetitive work for CAD designer on several projects.
- Rewrote an entire legacy codebase from Python2 to Python3 to improve maintainability and readability.
- Built a steel placement efficiency estimator in **Rust** to reduce the steel loss by **15%**.

EDUCATION

Polytechnique Montréal **GPA: 3.71/4.00 ◇ 64/120 credits**

Computer Engineering Aug 2022 - Present

PROJECTS

AEP Schedule Generator v2 **Montréal, Canada**

beta.horaires.aep.polymtl.ca

- Replaced the old AEP schedule generator, a web application that helps students at Polytechnique Montréal to generate their schedule for the semester.
- Implemented a new algorithm to generate schedules that are more balanced and optimized for students while being **up to 100x faster** for generating schedule than the previous algorithm enabling generation.
- Improved the user interface to make it more user-friendly and accessible to all students.
- Used a full stack Rust framework with **Leptos**, **Tailwind** and **WebAssembly** to build the application and allow to generate schedule locally instead of on the server.

AWARDS

CS Games 2024 **Montréal, Canada**

1st place overall. Mar 2024

- Won the 1st place overall at the CS Games 2024, a competition that gathers more than 300 students from 20 universities across Canada to compete in various computer science challenges.

SKILLS, LANGUAGES, AND INTERESTS

- **Programming languages:** Rust, Python, C/C++, JavaScript/Typescript, VHDL, Verilog
- **Technology**: Docker, STM32, FPGA, FreeRTOS, Node.js, Cargo, CMake, Makefile, RTIC, Embassy-rs, Linux, VUnit, OpenGL, WebGPU, WebAssembly, TailwindCSS
- **Languages**: English, French