Louis Hildebrand

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Education

McGill University MSc Electrical Engineering *Winter 2024–Winter 2026*
- **GPA:** 4.0/4.0
- **Thesis:** "A Minimal Intermediate Language for Generating Streaming Accelerators"

McGill University B. Software Engineering *Fall 2020–Fall 2023*
- **GPA:** 4.0/4.0
- Dean's Honour List: 2020/2021, 2021/2022, 2022/2023
- British Association Medal (highest final exam grades)

John Abbott College Honours Science *Fall 2018–Winter 2020*
- Valedictorian
- Dean's List: Fall 2018, Winter 2019, and Fall 2019

Selected Courses

Compiler Design (COMP 520) *Winter 2024*
- Learned to implement a compiler, including parsing, semantic analysis, register allocation, and code generation
- **Project:** compiler targeting MIPS assembly from a subset of C

Microprocessors (ECSE 444) *Fall 2023*
- Programmed an STM32 B-L4S5I-IOT01A board using C and ARMv7 assembly
- **Project:** memory game that plays a series of tones (high or low), detects user inputs via accelerometer (up or down), and provides feedback via a speaker

Parallel Computing (ECSE 420) *Fall 2023*
- Learned GPU programming with CUDA
- **Project:** CUDA implementation of a general 2D cellular automaton simulator, achieving 590× higher throughput than an equivalent sequential implementation in C

Operating Systems (ECSE 427) *Fall 2022*
- Learned fundamental OS concepts: processes, threads, memory management, etc.
- **Assignments:** a simple shell, threading library, and file system (all in C)

Skills

- **Formal languages:** C, Assembly (ARMv7, MIPS), Rust, Python, Scala, Java, C#, SQL (MS SQL Server, PostgreSQL), VHDL, OCaml, JavaScript, HTML, CSS
- **Natural languages:** English, French, Afrikaans
- **Frameworks:** Spring Boot, .NET (Framework, Core), Django, Vue.js
- **Other tools:** Git, Bash, Valgrind, Gradle, JUnit, LaTeX, etc.

McGill Teaching Assistant Experience

Computer Organization (ECSE 324) *Fall 2025*
- Delivered tutorials on computer organization (e.g., interacting with devices via memory-mapped I/O)
- Guided students in lab work (writing C and ARM assembly programs)
- Answered students' questions on the online discussion board
- Graded assignments

Model-Based Programming (ECSE 223) *Winter 2025*
- Delivered weekly tutorials on model-based programming (e.g., UML class and state diagrams, Umple) and other tools (e.g., Git, JUnit, Gradle, Cucumber)
- Answered students' questions on the online discussion board
- Helped prepare assignments

Intro. to Software Engineering (ECSE 321) *Fall 2022–Winter 2025*
- Delivered weekly tutorials on developing a fullstack web app with PostgreSQL, Spring Boot, and Vue.js
- Held weekly office hours and answered questions on the online discussion board
- Helped write and grade tests

Industry Experience

MDA Space Engineering Intern, DevOps *Summer 2023*
- Implemented new features and fixed bugs in web services using ASP.NET MVC, Razor Pages, Telerik, and Kendo UI
- Optimized SQL queries and stored procedures

123Loadboard Backend Intern *Summers 2021, 2022*
- Independently implemented new microservices given a predefined specification
- Fixed bugs in and added new endpoints to the main API

Projects

Sirop (*Scala app; master's thesis project*)
- Programming language and optimizing compiler
- Generates VHDL description of hardware accelerator from high-level source code

Twisty Timer (*Java Android app*)
- Contributed new features to an existing Rubik's Cube app (e.g., a practice mode for blindfolded solving)

Pocket cube solver (*Arduino project*)
- Robot to solve a $2\times2\times2$ Rubik's Cube
- Presented at the 2018 Montreal Regional Science and Technology Fair
- Awarded the Intel Excellence in Computer Science Award and the McGill University School of Computer Science (Robotics) Award