

# Louis Hildebrand

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## Education

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**McGill University** MSc Electrical Engineering

*Winter 2024–Winter 2026*

- 4.0/4.0 CGPA
- Thesis: “A Minimal Intermediate Language for Generating Streaming Accelerators”
- Supervised by Prof. Christophe Dubach (Compilers and Synthesis Lab)

**McGill University** B. Software Engineering

*Fall 2020–Fall 2023*

- 4.0/4.0 CGPA
- 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

## Projects

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**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 existing speedcubing app, e.g., a practice mode for blind-folded solving

**SH Prediction** (*Python command-line app*)

- Predicts players’ roles in the social deduction game “Secret Hitler”

**Pocket cube solver** (*Arduino project*)

- Robot to solve a  $2 \times 2 \times 2$  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

# Skills

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- **Formal languages:** Scala, Python, VHDL, C#, SQL (MS SQL Server, PostgreSQL), Java, C, Assembly (ARMv7, MIPS), Rust, OCaml, R, JavaScript, HTML, CSS
- **Natural languages:** English, French, Afrikaans
- **Frameworks:** Spring Boot, .NET (Framework, Core), Django, Vue.js
- **Other tools:** Git, GitHub (Actions, Projects, Wiki, etc.), Bash, Gradle, JUnit, L<sup>A</sup>T<sub>E</sub>X

# Work Experience

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<b>MDA Engineering Intern</b>	<i>Summer 2023</i>
<ul style="list-style-type: none"><li>• Implemented new features and fixed bugs in web services using ASP.NET MVC, Razor Pages, Telerik, and Kendo UI</li><li>• Optimized SQL queries and stored procedures</li></ul>	
<b>123Loadboard Backend Intern</b>	<i>Summers 2021, 2022</i>
<ul style="list-style-type: none"><li>• Independently implemented new microservices given a predefined specification</li><li>• Fixed bugs in and added new endpoints to the main API</li></ul>	
<b>Pierrefonds Day Camps Counselor</b>	<i>Summers 2017–2019</i>
<ul style="list-style-type: none"><li>• Supervised groups of children aged 5–12</li><li>• Worked in both French and English</li></ul>	

# McGill Teaching Assistant Experience

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<b>Computer Organization</b> (ECSE 324)	<i>Fall 2025</i>
<ul style="list-style-type: none"><li>• Delivered tutorials on computer organization (e.g., interacting with devices via memory-mapped I/O)</li><li>• Assisted students with lab work (writing C and ARM assembly programs)</li><li>• Answered students' questions on the online discussion board</li><li>• Graded assignments</li></ul>	
<b>Model-Based Programming</b> (ECSE 223)	<i>Winter 2025</i>
<ul style="list-style-type: none"><li>• Delivered weekly tutorials on model-based programming (e.g., UML class and state diagrams, Umple) and other tools (e.g., Git, JUnit, Gradle, Cucumber)</li><li>• Answered students' questions on the online discussion board</li><li>• Helped prepare assignments</li></ul>	
<b>Intro. to Software Engineering</b> (ECSE 321)	<i>Fall 2022–Winter 2025</i>
<ul style="list-style-type: none"><li>• Delivered weekly tutorials on developing a fullstack web app with PostgreSQL, Spring Boot, and Vue.js</li><li>• Held weekly office hours and answered questions on the online discussion board</li><li>• Graded deliverables and tests, helped write exam questions</li></ul>	
<b>Ordinary Differential Equations for Engineers</b> (MATH 263)	<i>Fall 2021</i>
<ul style="list-style-type: none"><li>• Delivered weekly tutorials on differential equations, including a summary of lecture content and practice problems</li><li>• Answered students' questions by email</li></ul>	

# Selected Courses

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<b>Language-Based Security (COMP 523)</b>	<i>Winter 2025</i>
<ul style="list-style-type: none"><li>Formally studied the syntax and semantics of programming languages and type systems</li><li><i>Project:</i> <code>chick</code>, a type checker for a dependently-typed language</li></ul>	
<b>Compiler Design (COMP 520)</b>	<i>Winter 2024</i>
<ul style="list-style-type: none"><li>Learned to implement a full compiler, including parsing, semantic analysis, register allocation, and code generation</li><li><i>Project:</i> compiler targeting MIPS assembly from a subset of C with pointers, arrays, structs, functions, “while” loops, “if” statements, etc.</li></ul>	
<b>Microprocessors (ECSE 444)</b>	<i>Fall 2023</i>
<ul style="list-style-type: none"><li>Programmed an STMicroelectronics B-L4S5I-IOT01A board using C and ARMv7 assembly</li><li><i>Project:</i> 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</li></ul>	
<b>Parallel Computing (ECSE 420)</b>	<i>Fall 2023</i>
<ul style="list-style-type: none"><li>Learned GPU programming with CUDA</li><li><i>Project:</i> CUDA implementation of a general 2D cellular automaton simulator, achieving 590× higher throughput than an equivalent sequential implementation in C</li></ul>	
<b>Operating Systems (ECSE 427)</b>	<i>Fall 2022</i>
<ul style="list-style-type: none"><li>Learned fundamental OS concepts: processes, threads, file system structures, memory management, etc.</li><li><i>Assignments:</i> implemented a simple shell, threading library, and file system (all in C)</li></ul>	