Arthur De Belen

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EDUCATION

Massachusetts Institute of Technology **August 2024**

Bachelor of Science (S.B.) & Master of Engineering (MEng.), Computer Science and Engineering *Cambridge, MA*

- **GPA: 4.9/5.0** (undergraduate cumulative), **5.0/5.0** (graduate cumulative).
- Master's thesis title: "Feasibility of Vector Instruction-Set Semantics Using Abstract Monads".
- President/Producer (2023-2024), MIT Musical Theater Guild; Puzzle Team (2021-2022), Next Haunt (escape room-designing club); Next House Campus Preview Weekend / Residence Exploration Chair.

WORK EXPERIENCE

Computer Science and Artificial Intelligence Laboratory (CSAIL @ MIT) **Sep. 2022 - May 2024**

Undergraduate / Graduate Research Assistant *Cambridge, MA*

- Used knowledge of Coq, RISC-V, and Haskell.
- Worked in the Programming Languages and Verification Lab under Adam Chlipala.
- Implemented compiler optimizations for research language Bedrock2, a C-like programming language with a compiler written in Coq.
- A couple of the optimizations written, in tandem, reduce the number of assembly instructions generated by a specific form of source language statement by 50%.

Astranis **Jun. 2021 - Aug. 2021**

Intern, Flight Software Team *San Francisco, CA*

- Used knowledge of C++ and Python.
- Astranis makes low-earth-orbit satellites and, in 2024, announced a $200M Series D round.
- During my internship, I rewrote sections of the satellite's power management and control code to reduce blocking on certain tasks.

Massachusetts Institute of Technology (MIT) **Sep. 2021 - May 2022**

Grader, 6.046/6.1220 [Design and Analysis of Algorithms] *Boston, MA*

- Graded homework for roughly 20-30 students, for 5 hours a week, for the second in a three-semester series of algorithms courses.

PROJECTS

GitHub repository: github.com/0adb

CSV Parser

- Worked with three other students for a class project to implement a CSV parser for Python3 using extension modules and CPython's C/Python interop.
- Interpreted and applied techniques developed by prior academic research to explore if these techniques could make querying CSV's more efficient.

RISC-V Vector Instruction Formalization

- Worked with a professor and a PhD student for my Master's thesis to extend a formalization of RISC-V assembly semantics (intended for computer-assisted reasoning) to support the instruction set's vector extension.

SKILLS & INTERESTS

- **Skills:** Logistics & Scheduling; C++; Python; Java; Rust; Go
- **Interests:** Compilers; automata theory; weightlifting; musical theater; *Minecraft*