# HASLEY William

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## Education

**Diplôme de l'École Normale Supérieure** — *École Normale Supérieure de Rennes* *(2024 - Currently)*

- **Second Year (+ M1 SIF at Rennes University)** — *2025 - 2026 (Currently)*
- **First Year (+ L3 SIF at Rennes University)** — *2024 - 2025*

Generalist courses in Computer Science : Foundations of CS, Semantics, Logic, Assisted and automated proofs, Computational Complexity, Information Theory, Computer Architecture, Algorithmics, Compilation.
Complementary courses in Mathematics : Lebesgue integration, Abstract algebra, Differential calculus, Finite fields and applications in Cryptosystems.

**Classe Préparatoire aux Grandes Écoles (Preparatory classes)** — *Lycée Faidherbe, Lille* *(2021 - 2024)*

**MP2I/MPI*** — Intense classes in Mathematics, Computer Science and Physics.

**Baccalauréat Général (A-LEVEL)** — *Lycée Édouard Branly, Boulogne-sur-mer* *(2018 - 2021)*

**Specialization in Mathematics, Computer Science, Physics** — Mention Très Bien - Félicitations du Jury.

## Experience

**Research Project** — *IRISA / INRIA - Rennes* *(Sept. 2025 - April 2026, Currently)*

*Solvability of the Linear Complementarity Problem.* Under the supervision of Khalil Ghorbal .

**Research Internship** — *LIX Laboratory - École Polytechnique* *(May - July 2025)*

*Coherence and Rewriting in Homotopy Type Theory.* Under the supervision of Samuel Mimram.

## Profile

I'm mainly interested in the theoretical and fundamental questions of computer science, as well as mathematics. Some of the topics i'm interested in include Logic, Automated and Assisted proofs and Computational Complexity theory. I hope to contribute in many areas, as I find the interactions between fields to lead to the most beautiful ideas.

## Projects

**Minimal Absent Word Finder** — *Python (2025)*

Development of a theoretical method to compute Minimal Absent Words from a genomic dataset and Implementation in Python.

**Operating System** — *C (+ Classes) (2025)*

From a basic Kernel skeleton, Addition of synchronization, parallelism, memory management, pagination, swap management, and mapped files.

**PROLOG Interpreter** — *OCaml (2024)*

Development of an efficient program able to read an abstract set of rules in PROLOG form, and determine whether a given proposition is true, false, or requires instantiation.

**Neural Network error detection for ChessBoxing** — *C++ (2023-2024)*

Implementation of Neural Networks from scratch : Deep learning and evolutive algorithms. Added the possibility of internal node failure, and developped methods to minimize such node-based errors. Instigated theoretical bounds and limits in a Complexity-theoretical setting (No litterature on such errors existed).

**Geodesic Computation** — *C++ (2022 - 2023)*

Characterization of Geodesic paths over a curved surfaces with differential equations, Implementation of numerical methods in a standalone progam able to generate / load continuous surfaces and to find the shortest continuous path between two given points.

**3D Rendering engine** — *Java (2020 - 2021)*

An implementation of 3D Rendering pipelines on CPU in Java.