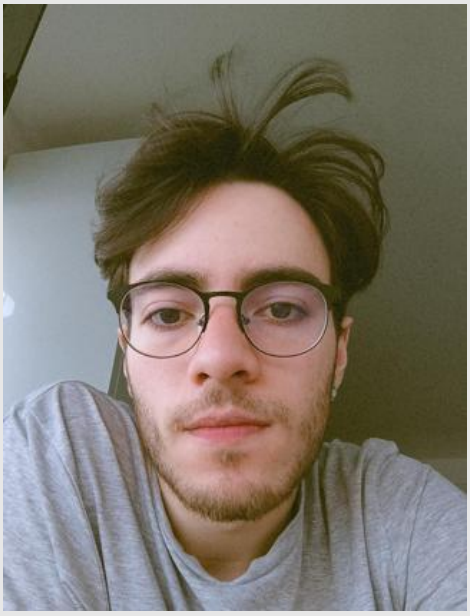

Luiz G. Mugnaini A.

Internship, data science

São Paulo, Brasil
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Skills

Python

Rust

GNU/Linux

English

Mathematics

Research

Scale: 0 (basic skills) - 6 (proficient).

About me

I'm an undergraduate student in Molecular Sciences at the University of Sao Paulo specialising in mathematics and computer science. Together with my adviser Ivan Struchiner we are currently studying abstract homotopy theory via model categories.

Interests

As a scientist I'm eager to build bridges between the abstract realm of *mathematics* and *computer science*, more specifically in the field of *machine learning* and *data science* at large. Aside from academic research, I'm looking forward for an *internship* where I would be able to *learn* how to *apply* these techniques at the *industry* level.

Education

2020-2024 — B.Sc. Molecular Sciences — University of Sao Paulo

Molecular Sciences is a bachelor degree at the University of Sao Paulo for specially selected students focusing on the interplay of computer science, mathematics, physics, biology and chemistry. The structure of the course is build so that the students have the freedom of research by combining multiple topics of interest. My weighted average grade is 9.2/10.

Projects

Since 2022 — Simplicial & Dendroidal Homotopy Theory

My *undergraduate research* project focuses on the study of *homotopy theory* via the lenses of simplicial sets, dendroidal sets and model categories. Most of my progress can be found in my publicly available research notes.

University of Sao Paulo - IME

2022 — 2D Topological Quantum Field Theory & Frobenius Algebras

As a final project for my *mathematical-physics class*, I decided to study the categorical equivalence between 2-dimensional topological quantum field theories and the category of commutative Frobenius algebras. The paper can be found here.

University of Sao Paulo

2022 — Numerical Methods

As a final project for my *numerical methods* class, I've developed together with two colleagues an *open source Python package* `numerical`.

University of Sao Paulo

2022 — CHIP-8 interpreter

As a personal project aiming to know the ways of *hardware emulation*, I developed a CHIP-8 interpreter in *Rust*—the project can be found here.

2022 — Ray tracing

Wishing to understand more about *computer graphics* and rendering techniques, I implemented a ray tracer in *Rust*—the project can be found here.