Simone Testino

I study mathematical logic in Amsterdam and use Isabelle/HOL to investigate how proofs and their assumptions translate between formal theories.

CONTACT

Contact Simone
Research in logic

WORKING LANGUAGES

Italian Native
English C1
German C1

PROFILES & WEBSITES

GitHub
LinkedIn
simonetestino.pages.dev

01 MSc thesis 02 Proof assistants 03 Education

Theory translation in Isabelle/HOL

University of Amsterdam · ILLC · MSc thesis in progress

Mechanising Structuralism: Structural Languages and Theory Translation in Isabelle/HOL

> If a theory describes objects through their relations, which statements about those objects remain true when the relations are expressed in a different language?

Research paper

In my MSc research paper, Defining Structuralism, I studied how a first-order language can distinguish objects through their relations. This led to my thesis question about the meaning of a translated formula.

Current development

My private Isabelle/HOL files contain an initial encoding of first-order terms, formulas, free variables and translations of predicate symbols.

Next proof obligation

I am preparing to check the definitions in Isabelle and state the conditions under which a translation preserves the truth of a formula in a model.

For example, in ∀x R(x, y), the variable y is free. Translating R must account for binding. If the translation captures y, the resulting formula can have a different truth value under the same assignment.

Proof assistants in practice

Planned six-month research project · University of Bologna

I plan to extend the Isabelle development and practise writing proofs in Lean 4 through a separate series of mathematical exercises.

> I aim to publish a first thesis draft on GitHub and on my website in late January or early February 2027. The current development is private.

Programming

Python LaTeX SQL

Learning in progress · Lean 4 · Isabelle/HOL · Rust · Aeneas

Academic background

2024–present
Amsterdam

University of Amsterdam · Institute for Logic, Language and Computation

MSc in Logic

I completed all required taught courses in one academic year. Proof Theory, Structures for Semantics and Dynamic Epistemic Logic inform my thesis. I also took Knowledge Representation and Reasoning and the Mathematical Logic seminar. I expect to graduate in July 2027.

LMU Munich · In two academic years I completed my Philosophy BA and most of the coursework for my Mathematics BSc, studying both in German.

BA in Philosophy

Awarded July 2024, with a mathematics minor. In my thesis on syntactic structures I approached linguistic theory through mathematical logic. This work prompted my interest in how a formal language represents the structure of its subject matter.

BSc in Mathematics

Degree in progress. My mathematics thesis, a distinct treatment of formal syntax, was assessed and recorded in December 2024. My coursework includes model theory, advanced set theory, commutative algebra and measure theory.

Further coursework at LMU included Constructive Analysis with Helmut Schwichtenberg, using Minlog (winter 2023/24).

Selected work

Forcing with urelements

For a set theory presentation, I examined how a forcing name can denote different atoms in different generic extensions, and where the proof uses the Collection axiom.

Computational finance

I implemented Fourier–cosine pricing for Bermudan put options in Python and examined how truncation, series length and exercise dates affect the price.

ColivingLiguria SRL · Founder · Company incorporated March 2026

I began developing the venture in June 2025 by preparing my application for Liguria's ERDF start-up grant (Action 1.3.3). I build Python and SQL tools that make operational rules explicit and keep the source of each record traceable.

Living Register

People, spaces, applications and API-backed exports.

Business Register

Delegated access and revision histories for SQL records.

Financial Register

Double-entry records linked to supporting documents.