# Filipe Marques

Curriculum Vitae

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#### Experience

2022 – Present	First Stage Researcher, INESC-ID, Portugal
Unit	ARSR: Automated Reasoning and Software Reliability
Supervisors	José Fragoso Santos and Nuno Santos
2024 – 2024 June September	Software Engineer Intern, OCamlPro, Paris, France
Topic	Owi: A Symbolic Analysis for Web Technologies
Supervisors	Pierre Chambart and Léo Andrès
2021 – 2022 December September	Early Stage Researcher, INESC-ID, Portugal
Project	INFOCOS: Intelligent Feedback for Content Students
Supervisor	José Fragoso Santos

#### Education

2022 – Present Ph.D. in Computer Science and Engineering, Instituto Superior Técnico, Portugal October Supervisors Profs. José Fragoso Santos (IST), Limin Jia (CMU), and Nuno Santos (IST) 2019 - 2021 M.Sc. in Computer Science and Engineering, Instituto Superior Técnico, Portugal, September December GPA: 17/20 Thesis Robust Symbolic Execution for WebAssembly Supervisor Profs. José Fragoso Santos and Nuno Santos José Borbinha (DEI), José Fragoso (DEI), Mikoláš Janota (CIIRC) Jury 2016 - 2019 B.Sc. in Computer Science and Engineering, Instituto Superior Técnico, Portugal, September July GPA: 16/20

# Honors & Awards

- 2022 CMU Portugal Affiliated Ph.D. Program Scholarship
- 2018 2020 Academic Merit Diploma, Instituto Superior Técnico, Universidade de Lisboa

## Publications

PLDI'25 Automated Exploit Generation for Node.js Packages

F. Marques<sup>\*</sup>, M. Ferreira, A. Nascimento, M. Coimbra, N. Santos, L. Jia, and J. Fragoso Santos In Proc. of Conf. on Programming Language Design and Implementation. 2025. (Conditionally Accepted)

#### Programming'25 Owi: Performant Parallel Symbolic Execution Made Easy, an Application to WebAssembly

L. Andrès, F. Marques\*, A. Carcano, P. Chambart, J. F. Santos, and J.-C. Filliâtre In The Art, Science, and Engineering of Programming Journal. 2025.

KLEE'22 Poster: Empirical Study on Applying Program Analysis and Testing Tools to Student Code

F. Ramos, F. Marques\*, P. Adão, N. Santos, and J. F. Santos. In KLEE Workshop 2022

# RV'22 TestSelector: Automatic Test Suite Selection for Student Projects F. Marques\*, A. Morgado, J. F. Santos, and M. Janota In Proc. of Intl. Conf. on Runtime Verification. 2022. ECOOP'22 Concolic Execution for WebAssembly

# F. Marques<sup>\*</sup>, J. F. Santos, N. Santos, and P. Adão. In Proc. of European Conference on Object-Oriented Programming. 2022.

## Software

- **Owi OCaml Wasm Interpreter**, Owi is a toolkit to work with WebAssembly within the OCaml ecosystem. During this year, I've worked to extend Owi's symbolic analysis with the ability to reason about programs that handle dynamically allocated structures, such as lists or trees.
- Role Contributor
  - Url https://github.com/OCamlPro/owi
- Smt.ml Smt.ml is a multi backend frontend for SMT solvers in OCaml.
  - Role Creator and Maintainer
    - Url https://github.com/formalsec/smtml

# Other Skills

- Programming OCaml, Rust, Python, C/C++, JavaScript, WebAssembly, Haskell
  - Scripting Bash, Python, Perl (basic)
    - Linux CLI (intermediate), Revision Control Tools, Configuration Management Tools
- **Program Analysis** Formal Verification, Symbolic Execution, Type Checking, Testing, Program Synthesis, Abstract Interpretation, Satisfiability Modulo Theory Solvers
  - Languages Portuguese (Native), English (Fluent)