JOÃO ALVIM

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EDUCATION

University of Minho — **October 2020 - October 2025**
Bachelors and Masters in Computer Engineering, thesis in Formal Methods — *Portugal*

Thesis: *[Abstract Debugging for WebAssembly]*

Ghent University, Belgium — **October 2024 - March 2025**
Masters - Erasmus+ (1 semester) — *Belgium*

WORK EXPERIENCE

INVISIBLE LAB — **January 2026 - Present**
Backend Software Engineer
Developed robust backend services in Golang backed by PostgreSQL. Designed external API integrations and delivered key features for Infocarro and a non-profit association platform.

DESY — **June 2024 - August 2024**
Summer Internship — *Hamburg, Germany*
Developed a monitoring dashboard with Grafana for ASAPO – high performance distributed streaming platform for DESY a German research center operating particle accelerators.

Programming Tutoring to Undergraduates — **2022 - 2025**
Taught Haskell and C to 4 and 5 students, Natural Language Processing with Python to 1 student, and statistics with R.

PUBLICATIONS

- Online Abstract Debugging - Out of the loop no more. SLATE 2026 – A debugging framework that allows abstract interpretation to be applied on-demand, gaining precision at specific points of program analysis before obtaining the full static results. It allows the user to unroll loops and explore intermediate states where one would normally lose precision. https://doi.org/10.4230/OASIcs.SLATE.2026.20

PROJECTS

pocket-cube-solver pocket-cube-solver
- Haskell solution to the Pocket Cube from Justin.

cbirds cbirds
- Python module demonstrating combinator birds in point-free style.

QForms QForms
- QuickForms is a self-hosted local form generation tool designed as an alternative to proprietary services like Google Forms. I've used Flask and my Python module is on PyPI.

vscode-ipma vscode-ipma
- VS Code extension that shows a popup with a beautiful IPMA's weather map.

shipslogs shipslogs
- Python tool that simplifies keeping records of screenshots taken during events such as talks, meetings or online classes.

Chess-Heatmaps Chess-Heatmaps
- Represent chess moves as heat maps in Python.

chessredditstories chessredditstories
- Automated content creation that generates reels combining chess gameplay with Reddit stories using Python.

TECHNICAL SKILLS

Languages: Portuguese (fluent), English (B2 exam)
Programming: Go, PostgreSQL, Haskell, C, C++, Python, Java, TypeScript, JavaScript, LaTeX, SQL, Linux, VIM, WebAssembly, Machine Learning

AWARDS

- **2nd place:** SEI 2021 Hackathon (shipslogs)
- **1st place:** SEI 2025 Programming Competition

VOLUNTEER

Camerata Minhota **January 2023 - 2025**
Co-founded a chamber music group at the University of Minho, performing as pianist at university and public events.

Coderdojo **January 2020 - January 2023**
Mentored children learning to code

Recriativo, Núcleo de Estudantes de Engenharia Informática **2021 - 2022**
Collaborator

EXTRA-CURRICULAR

- Conservatório Bomfim - September 2017 - June 2020 - Secondary Education, Music – 8th Grade in Piano
- Led a cat rescue from a 15 meter tree: Climber rescues cat trapped in 15 meter tree for six days
- Attended IFL 2023 – Implementation and Application of Functional Languages conference, SLATE 2026
- Federated chess and climbing athlete
- Chess Coach - 2022 - 2024 - University of Minho Chess Club & Tempos Brilhantes: Taught weekly lessons analyzing classic positions and organized tournaments for the university chess club; taught bi-weekly extracurricular chess classes to primary school students.
- Seasonal Outdoor Work - 3 weeks - High-Altitude Work Technician; Monitor & Diver at Lanhoso Adventure Park