Luís Mário Macedo Ribeiro

Software Engineer & Architect

Where you can find me

- LinkedIn
- GitHub
- Medium
- Personal website

A very short bio

Software Engineer and Architect with a strong focus on software configuration and safety-critical systems. Passionate about applying Formal Methods to bridge theory with real-world software development.

I am always open to new opportunities and committed to continuously expanding my skills and expertise.

Personality

- Enthusiastic and proactive team contributor

- Reliable and accountable

- Motivated by teaching and mentoring

Interests

- Formal Methods

- Embedded Systems

Hobbies

- Sports fan who's always up for a game — and usually won't say no to a beer on the side.

- Reader of all sorts, with a soft spot for philosophy.

- Photography enthusiast, especially fond of film cameras.

My work experience

Research Collaborator @INESCTEC   March 2022 - August 2022

- Applied model-checking to detect inconsistencies and improve system robustness.
- Demonstrated how formal methods can enhance the dependability of any distributed system.

    Skills Alloy, TLA+, Researching

Software Engineer & Architect @Bosch   February 2023 - Now

- Architect for an entire software cluster, contributing to the development and maintenance of safety-critical software for the airbag system.

- Primary owner and point of contact for software configuration management.

- Delivered hands-on training on configuration management and pure::variants to more than 100 colleagues across the organisation.

- Supported and coached regional teams on modelling and requirements engineering.

- Regional process expert, successfully conducting process assessments and driving continuous improvement initiatives.

- Successfully applied model-checking techniques to validate the functional behaviour of the airbag system, significantly improving its correctness and reliability.

  Skills pure::variants, SysML, TLA+, C

Where I study at

Software Engineering @Universidade do Minho   2017-2022
Formal Methods and Language Processing

- Developed a strong understanding of operating systems and distributed computing.

- Designed and implemented mobile and web applications, integrating REST APIs and modern development frameworks.

- Engineered language processing solutions, including lexical and parsing analysers.

- Mastered formal modeling and verification techniques, applying mathematical rigor to software correctness.

  Skills Formal Methods, Language Processing, Programming, Software Design

Some projects I contributed to

svROS
Command-line tool for verification of ROS-based systems using model-checking over hyperproperties.

    Technologies: Alloy, TLA+, Python

raiML Utilities
Modeling and analysis of railML diagrams to catch miss specifications, with the help of Alloy model-checker.

    Technologies: Alloy, Python, Java, JavaScript, Bash

Software Calculi
Modeling and analysis of cyber-physical systems with UPPAAL and Monads.

    Technologies: UPPAAL, CTL *Temporal logic*, Haskell

CocktailDB
Web application that provides useful and organized information about Cocktails, based on a well-formed cocktails ontology database.

    Technologies: Python, Protege, ExpressJS, JavaScript, MongoDB, GraphDB

GUIDEme
Mobile application that enables users to book experiences within a location context, orientated by a self-promoting tourist guide.

    Technologies: Python, Django, PostregreSQL, Docker, Heroku, React