

Rui Alberto Conduto Xavier

Setúbal, Portugal | ra.xavier@campus.fct.unl.pt | +351 934 020 714 | rui-xavier.com | LinkedIn | GitHub

Personal Profile

A motivated and ambitious student with a strong aspiration to pursue a Master's in Computer Science, specializing in Programming Languages and Formal Software Verification. Currently completing my undergraduate studies, I am deeply intrigued by the potential of formal methods to revolutionize the design of robust and secure software systems. My recent exploration of strongly-typed programming languages has reinforced my passion for developing tools and frameworks that elevate software reliability, security, and maintainability.

Education

NOVA School of Science and Technology, Universidade Nova de Lisboa Sept 2022 – Present
Bachelor's in Computer Science and Engineering
(Expected Graduation July 2025)

- **Final GPA:** 90% (or 18 out of 20) (Expected)
- **Current Overall GPA:** 85.5% (or 17.1 out of 20)
 - **Year 3, First Semester:** 89% (or 17.8 out of 20)
 - **Year 2:** 89% (or 17.8 out of 20)
 - **Year 1:** 80% (or 16 out of 20)

(Note: All these GPAs were calculated using my University's GPA formula, $\frac{\sum(\text{course credits} \times \text{course grade})}{\text{total credits}}$, without considering any grade improvements. The GPAs were rounded up before being converted to a percentage. The three GPAs above reflect only the corresponding year or semester.)

- **Relevant Coursework:** Theoretical Computer Science, Object-Oriented Programming, Computer Architecture, Algorithms and Data Structures, Operating System Fundamentals, Probability and Statistics, Discrete Mathematics, Introduction to Programming, Computational Logic, Programming Languages and Environments, Software Engineering, Artificial Intelligence, Computer Graphics and Interfaces, Computer Networks.

Experience

Research Project: Formal Verification of OCaml Programs with Dynamic Memory – Nova School of Science and Technology, Universidade Nova de Lisboa Feb 2025 – Present

- Researching the formal verification of an OCaml library implementing doubly linked lists, incorporating classical mathematical problems (the Josephus Problem) and algorithmic techniques (Dancing Links). Ensuring implementation soundness through rigorous correctness proofs.
- Designing logical API specifications using **GOSPEL** and verifying implementation correctness with **CFML** and **Separation Logic**, bridging abstract specifications and concrete OCaml code using formal proofs.

Supervised by Mário Pereira mjp.pereira@fct.unl.pt.

Freelance Full-Stack Developer – Lisbon, Portugal Sept 2024 – Present

- Developed and delivered multiple web projects for clients, handling end-to-end development, project management, and technical consulting.
- Built and optimized **Next.js** applications that scaled to **10,000** daily active users while maintaining 99.9% uptime.
- Designed and implemented full-stack solutions using **React**, **Tailwind CSS**, and **Firebase**, incorporating secure user authentication, seamless **Stripe** payment integration, and robust database structures.
- Improved user experience and monetization strategies, achieving a **10 - 15%** conversion rate and up to **200%** increase in monthly recurring revenue for clients.

Assistant Math Tutor, Aluno Top – Setúbal, Portugal Oct 2022 – Mar 2023

- While working as a math tutor for high school students, I not only helped them understand challenging concepts but also deepened my own understanding of the subject. This experience significantly enhanced my mathematical proficiency, teaching abilities, and interpersonal communication skills, equipping me to effectively convey complex ideas and engage with diverse audiences.

Projects

Portfolio Website

rui-xavier.com

- Designed and developed a modern, responsive personal portfolio website showcasing professional experience, technical skills, and project accomplishments.
- **Tools Used:** Framer-motion, GSAP, JavaScript/TypeScript, Next.js, React, Tailwind CSS

Technologies

Languages and Frameworks: Assembly, Bash, C, Clingo, Coq, CSS, Flutter, GLSL, HTML, Java, JavaScript/TypeScript, Next.js, OCaml, Python, React, SQL, TailwindCSS

Tools and Technologies: AIDA64, CFML, Docker, Firebase, Git, GitHub, L^AT_EX, Linux (most proficient in Arch Linux), Microsoft Office Suite (Word, Excel, PowerPoint), OBS Studio, Photoshop, Postman, Sony Vegas 18, Visual Studio Code, Windows

Languages

Portuguese: Native Speaker

English: C2 (Cambridge CAE) - Score: 205/210

Key Accomplishments and Experiences

Guinness World Records™

Oct 2024

- Participated in the GUINNESS WORLD RECORDS™ for the World's Largest Programming Class, which gathered **1,668** students at Instituto Superior Técnico Innovation Center in Lisbon, Portugal.

3rd Place - Winter Hackathon

2023

- Participated in the Winter Hackathon organized by the Informatics Student Group at Nova School of Science and Technology, Universidade Nova de Lisboa.
- Secured 3rd place by developing an online forum designed to introduce Portuguese teenagers to fundamental political concepts and provide a concise summary of each party's key policies, making them easier to access and understand.

Participant in the first phase of the "Cosmic Ray: Development of Museological Modules for Dissemination Through Participatory Design" Outreach Project

2022

- The primary objective of this project was to design museological modules for implementation at Lousal's Live Science Center, aimed at promoting awareness of muography and its modern applications.

International Physics Masterclass - Hands-On Particle Physics

2022

- Participated in a Masterclass led by Professor Pedro Abreu from L.I.P., covering foundational topics in Particle Physics, including particle accelerators and detectors.
- Collaborated in group data analysis to identify particle types within provided samples, gaining practical experience in particle identification techniques.
- Concluded with an insightful video conference featuring members from CERN, Fermilab, and GSI, fostering a deeper understanding of current advancements in high-energy physics research.