

Pedro M. F. Pereira, PhD – Curriculum Vitae

Personal Profile

Age: 29; **Nationality:** Portuguese; [My GitHub](#)

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I am a art, cinema, literature, and music enthusiast that has dedicated a decade to studying Physics before shifting my career focus towards Blockchain, Smart Contracts, and Software Development.

This recent passion has not only invigorated my professional pursuits but also positioned me to leverage my extensive background in Physics. My experience in this field has endowed me with a robust set of skills that are invaluable in software architecture and development, including analytical and critical thinking, as well as proficiency in programming languages such as C, C++, and Python, complemented by a strong knowledge of Linux and scripting.

My career transition is driven by an eager commitment to immerse myself further into the blockchain ecosystem, seeking to innovate and expand my expertise in this dynamic field. Having extensively presented my work and discussed complex topics during my PhD, I excel in communicating intricate concepts in an accessible manner—an ability further refined through several positive teaching experiences. I am enthusiastic about continuing to learn and evolve within the software and blockchain landscapes, aiming to contribute significantly to their advancement.

Work Experience

2023-

Blockchain Developer at [Celfocus](#) - Hybrid, Lisbon

- Gained expertise in Decentralized Identifiers (DIDs) and Verifiable Credentials (VCs) while working on **Identity and Credential Management**. This project involved utilizing technologies such as Hyperledger Besu, Quorum, KILT, React, Node.js, and Express.js.
- Developed smart contracts in Solidity for an **NFT-based Carbon Credit Marketplace**, enhancing my experience with Ethereum, Polygon, and EVM networks. This role also involved using Hardhat, Metamask, Truffle, and Foundry, as well as developing serverless REST APIs using Node.js, TypeScript, and Azure Functions. The Solidity contracts were designed to be pausable and included access control with three distinct roles. Interactions among the four contracts were managed through interfaces and trigger functions. Each contract utilized a library containing stateless definitions and pure logic functions. Additionally, the contracts featured numerous mappings and handled various events.
- Contributed to a **Token-based Loyalty System Project** within a Hyperledger Fabric framework, where I wrote smart contracts (chaincodes) in Golang and developed Fabric applications in Java to enable communication between the chaincodes and the backend.

Throughout these projects, I collaborated in a team environment adhering to an agile framework, employing tools such as GIT, Jira, and Jenkins for version control, task management, and CI/CD processes.

2021-2023

Teaching Assistant of [Physics of Continuous Media](#) at [Instituto Superior Técnico](#), Lisbon

- Responsible for teaching classes on problem sets within the “Physics of Continuous Media” course. I won the award for the best teaching assistant of the 3rd year of the bachelor’s in Physics, awarded by the students.

2017-2020

Teacher of Programming and Technology at [Happy Code Lumiar](#), Lisbon

- Taught app and game development to students aged 7-16. Used Unity, C# and Java.

Private Tutor of High School Mathematics and Physics, Lisbon

Academic Education

2019-2023

PhD in Theoretical Particle Physics - [Instituto Superior Técnico](#), Lisboa

- [Thesis available here](#)
- [My Physics Publications](#)

2016-2018

Master Degree in Theoretical Particle and Nuclear Physics - [Instituto Superior Técnico](#), Lisboa

- Exchange Semester in Theoretical Particle Physics at [University of Amsterdam](#)

2013-2016

Undergraduate Degree in Physics Engineering - [Instituto Superior Técnico](#), Lisboa

Courses & Certifications

A selection of the most relevant, see full list at [my LinkedIn](#).

- **2023:** Certified Quorum Developer - [Blockchain Council](#) - [my notes](#).
- **2023:** Ethereum and Solidity: The Complete Developer's Guide - [Udemy](#) - [my notes](#).
- **2023:** Full Web3 Website Course - [Learn Web3 with EdRoh](#) - [my notes](#).
- **2023:** Ethereum and Solidity Course - [CryptoZombies](#) - [my notes](#).
- **2022-2023:** Cardano Developer Course - [Gimbalabs](#) - [my notes](#).
- **2022-2023:** IOG Haskell Course & Haskell on Exercism - [IOG](#) - [my notes](#).

Skills

Machine Learning/AI

- Fitting a model to experimental data via Loss function minimization, see [this repository](#).
- Basic Understanding of Reinforcement Learning, see [this repository](#).

Programming Languages

- C, C#, C++, Python, Haskell, Java, Javascript, Typescript, Golang.

Blockchain

- Cardano/Plutus, Ethereum/Solidity, Polygon and EVM networks, Hardhat, Ethers, Truffle + Ganache, Foundry, KILT, Hyperledger Besu, Hyperledger Fabric, Quorum.

Web Development

- Backend: Node.js, Express.js, Azure Functions.
- Frontend: React, CSS, HTML.

Software Miscellaneous

- Git, Jira, Postman API, REST APIs, Markdown, CERN's ROOT, Linux, Bash Scripting, Mathematica, LaTeX, Unity, MIT App Inventor.

Languages

- Portuguese (Native), English (Fluent), Spanish (Intermediate), Italian (Beginner), French (Beginner).