Curriculum Vitae

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November 2026

Abstract

Full-stack software engineer (TypeScript, React/Next.js, Node.js, Python, PostgreSQL) with an M.Sc. in signal processing from Instituto Superior Técnico. I ship products end to end: web applications and dApps, real-time data pipelines and dashboards, backend services, and smart-contract systems in Solidity and Rust. Built and launched a blockchain game that reached a $12M market capitalisation, trading systems running live on Hyperliquid and Binance, and three ETHGlobal projects, two of them awarded. Comfortable owning a feature from design to production and working remotely across European time zones.

1 Education

1.1 Instituto Superior Técnico *2020–2021*

M.Sc. Electronics & Telecommunications, Digital Signal Processing

Coursework in statistical signal processing, time-series analysis and optimisation algorithms.

1.2 Instituto Superior Técnico *2015–2018, 2022*

B.Sc. Electrical & Electronics Engineering (2015–2018); Postgraduate Specialisation, Game Development Theory (2022)

2 Professional Experience

2.1 r00t.fund *2025–present*

Founder; Quant & Protocol Engineer

- Accepted into the IAPMEI Startup Voucher (2026), the Portuguese government programme supporting early-stage ventures.
- Architected a ReFi capital-allocation launchpad combining Chainlink CRE for cross-chain data and automation, ZK-SNARK verification, World ID proof-of-personhood and satellite-derived NDVI signals.
- Designed RegenArbHook, a Uniswap v4 hook that arbitrages a shielded pool against a public one and routes the spread to land regeneration; 3rd place at ETHGlobal Lisbon 2026.[1]
- Built quantitative risk-scoring and capital-allocation models, data-ingestion pipelines and risk dashboards with reproducible, auditable outputs.

2.2 Independent Quantitative Developer *2024–present*

Systematic Trading

- Designed and deployed automated trading systems for cryptocurrency perpetual futures, with walk-forward backtesting, real-time execution, reconciliation and performance monitoring.
- Lead developer of xQuant (xquant.fund): DSP-based EMA-ribbon and wavelet-decomposition signals, dynamic position sizing and live risk/P&L dashboards across Hyperliquid and Binance.
- Systematic strategies for Polymarket prediction-market contracts with binary and options-like payoffs.

2.3 Gnomeland *2024–2025*

Founder; CEO, CTO & Marketing Lead

- Founded and led a blockchain game integrating NFTs and DeFi; reached a $12M market capitalisation and over $500K in liquidity.
- Directed smart-contract architecture, tokenomics, product development (Next.js/React front end, Node.js services), marketing and community growth.

2.4 Eleven Yellow Ltd *2021–2023*

Web3 Software Developer

- Built decentralised worlds and NFT experiments within a 30-person software lab; smart contracts and token systems in Solidity and Rust, front ends and services in TypeScript.

2.5 ATCENTRO, Formação Aeronáutica *2019–2020*

Laboratory Associate

Electronic-systems testing and circuit maintenance.

[1] https://ethglobal.com/showcase/r00t-fund-p536c

3 Research

3.1 Cross-Platform Arbitrage in Cryptocurrency Prediction Markets *2026*

An empirical analysis of 6.4M trades in short-dated BTC markets on Polymarket, Kalshi and Binance (23 pages).[2] Twenty-nine wallets reach win rates above 98% through latency arbitrage in the final 15 seconds of 5-minute markets; 161,577 same-second trade pairs link Polymarket and Kalshi; and a 5.7% disagreement rate between Chainlink and CF Benchmarks oracles makes cross-venue hedges lose both legs roughly 1 time in 18.

Source	Trades	Markets
Polymarket 5-min BTC	2,182,329	642
Polymarket 15-min BTC	2,536,367	672
Kalshi KXBTC15M	1,680,127	672

Table 1: Dataset, 19–25 February 2026.

4 Projects and Hackathons

4.1 ETHGlobal Lisbon: r00t.fund *2026*

Uniswap Foundation, Best Uniswap Stack Contribution, 3rd place. RegenArbHook with Groth16 proofs and CREATE2-mined hook permissions.

4.2 ETHOnline: Uniswap v4 token machine *2026*

A single v4 hook running a full token lifecycle: NFTs minted from trading volume, keeperless perpetual swaps against a community vault, guild fee-sharing and permissionless relaunch.

4.3 ETHGlobal London: Gnomeland *2024*

LayerZero, Best OFT Implementation; Arbitrum qualifying prize. Cross-chain hybrid NFT/token across Ethereum, Arbitrum and Base.[3]

4.4 Uniswap Hook Incubator *2024*

Atrium Academy and the Uniswap Foundation: eight weeks on v4 hooks, capstone presented at an investor-judged demo day.

4.5 EigenSwarm *2026*

Autonomous AI market-making agents with isolated vaults; a Chainlink CRE workflow evaluates each trade with an LLM before execution (Chainlink Convergence Hackathon).

5 Technical Skills

Area	Tools
Software	TypeScript, React, Next.js, Node.js, Go, PostgreSQL, GraphQL, Docker, Linux, Git
Quantitative	Python, pandas, NumPy, SciPy, ccxt, TA-Lib; backtesting, time-series modelling, DSP
Trading	REST/WebSocket APIs, execution engines, market data, risk, P&L attribution, reconciliation
Blockchain	Solidity, Rust, Foundry, Hardhat, EVM, Uniswap v4, Chainlink CRE, ZK-SNARKs, World ID, LayerZero
Scientific	MATLAB, Mathematica, optimisation, statistical modelling

Table 2: Tools by area.

6 Languages and Awards

Portuguese (native), English (fluent), French (intermediate), Spanish (basic).

- 2026: ETHGlobal Lisbon, 3rd place, Best Uniswap Stack Contribution; IAPMEI Startup Voucher (r00t.fund).
- 2024: ETHGlobal London, LayerZero Best OFT Implementation; Arbitrum prize.
- 2019: Crypto, The Blocks Awards, blockchain innovation certificate. 2016: EDP / IST Management Challenge, Best of Class team.

References

[1] Fernando Manuel Bernardo Pereira, Senior Researcher, Instituto de Telecomunicações. `fp@lx.it.pt`, +351 218 418 460.

[2] José Selo, CEO & Founder, Eleven Yellow Ltd. `selo@elevenyellow.com`.

[2] https://github.com/OffGridOxDAO/cross-platform-arbitrage

[3] https://ethglobal.com/showcase/gnomeland-9ov1p