

Luis Fernández Couñago

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Cybersecurity and cryptography specialist with a strong focus on digital identity, decentralized trust frameworks, and secure system design. As a Research Engineer at Gradiant, I contribute to advanced R&D projects involving applied cryptography, HSM-based key management, SSI, DIDs, and Verifiable Credentials. With a background in both a B.Sc. and M.Sc. in Cybersecurity. Hands-on experience building high-assurance, interoperable, and security-critical solutions.

Education

M.S. in Cybersecurity, University of Vigo Sept 2024 – Mar 2026

- Final Thesis: *Design and Implementation of a Self-Sovereign Identity System for Digital Product Passports on EBSI*
- Coursework: Cybersecurity Management and Legislation, Advanced Cybersecurity Techniques, Information and Application Security, Privacy, Industrial/IoT Cybersecurity, Smart Contracts, DLT and Blockchain

B.S. in Computer Science Engineering, University of Vigo Sept 2020 – Jun 2024

- Final Thesis: *Development of an immutable database for audit logging in a certificate management application.* 9.8/10.0
- Coursework: Computer Architecture, Operating Systems, Distributed Systems, Networks, Software Systems, Databases, Programming

Experience

Cybersecurity Engineer-Researcher, Gradiant – Vigo, Spain Mar 2024 – Present

- Engineer-Researcher in Security and Privacy, contributing to the development of the code and the research of new technologies
- Related projects: IDHub, SecBluRed, CRITIC, GC4SHEEP, JANUS and DPP.

Bachelor Thesis Internship, Gradiant – Vigo, Spain Sept 2023 – Feb 2024

- *Development of an immutable database for audit logging in a certificate management application*
- I immersed myself in the creation of a database infrastructure that guarantees immutability for audit logging in the specific context of a certificate management application.

Security and Privacy Internships, Gradiant – Vigo, Spain Jun 2023 – Aug 2023

- I actively contributed to the idHub project of Gradiant, focused on the development of the functionality to manage Hardware Security Modules (HSM) through REST API, as well as the implementation of a new backend.
- In this challenging environment, my focus was on the integration of advanced technologies to strengthen the security and efficiency of the system.

Projects

DPP Developed with Gradiant
Design and Implementation of a Self-Sovereign Identity System for Digital Product Passports on EBSI Sep 2025 – Mar 2026

- End-to-end design and implementation of an SSI system for DPPs on EBSI, including Issuer, Holder (self-custodial wallet), and Verifier components. Built following W3C standards (VCs JSON-LD/JWT, DID:ebsi).
- Integrated with official EBSI services, improving interoperability, auditability, and eliminating single points of failure compared to traditional PKI models.
- Tools Used: Python, SSI, W3C (VC, DID, JWT, JSON-LD), EBSI, FasrAPI, React.

JANUS Developed with Gradiant
Cryptocurrency Tracking, Logging and Analysis | European Project Jun 2025 – Feb 2026

- Research and development of Bitcoin de-anonymization capabilities using heuristic clustering, graph analysis, OSINT, and network-level data correlation. Built tooling to link wallets to real-world entities and detect illicit activity, supporting cybercrime investigations.
- Tools Used: Python, C, FastAPI, Selenium, MongoDB, Bitcoin Node Core, Docker,

CRITIC

Disruptive technologies for the protection, evaluation and safe operation of Connected Industrial devices | European Project

Developed with Gradiant
Feb 2025 – Present

- Integration and validation of PQC algorithms in Utimaco HSMs, bringing post-quantum schemes from theory to real industrial deployments. Assessment of feasibility, performance, and security impact to strengthen OT systems against future quantum threats.
- Tools Used: Java, SpringBoot, Utimaco.

SecBluRed

Holistic approach to cybersecurity in the industrial IoT | European Project

Developed with Gradiant
Jun 2024 – Jun 2025

- Design and implementation of identity and traceability mechanisms for IIoT using Hyperledger Fabric.
- Developed APIs for secure device interaction and administrative management (permissions, rules, smart contracts).
- Conducted a state-of-the-art analysis of blockchain applications in OT cybersecurity.
- Tools Used: Go, Hyperledger Fabric, Smart Contracts and Docker.

IDHub

Robust and reliable solution for digital identity management using HSMs cloud

Developed with Gradiant
Jun 2023 – Present

- Development of an enterprise-grade platform for centralized certificate and digital identity management, integrating cloud and on-prem HSMs (Azure Key Vault, Thales, Utimaco).
- Responsible for secure backend (Java, Spring Boot) and cross-platform frontend (Kotlin Multiplatform), cryptographic engineering, immutable audit logging, API design, CI/CD automation, and performance optimization.
- Key contributor to a high-assurance identity solution compliant with eIDAS, PSD2, and GDPR.
- Tools Used: Java, Spring Boot, Gradle, Docker, ImmuDB, PKCS#11, CNG, HSM, Azure, Thales, Utimaco, Kotlin Multiplatform.

GC4SHEEP

Federated Data Cloud Platform with Artificial Intelligence Layer for the Genetic and Reproductive Improvement of the National Dairy Sheep | European Project

Developed with Gradiant
Jul 2024 – Apr 2025

- Development of identity management and digital certificate mechanisms to ensure integrity and non-repudiation across the platform.
- Tools Used: Python, PKI, PKCS#11, Trino.

Technologies

Security and Cryptography: PKI, HSM (Azure Key Vault, Thales, Utimaco), PKCS#11, CNG, TLS/SSL, symmetric/asymmetric cryptography, digital signatures, X.509 certificates, post-quantum cryptography (PQC), Blockchain/DLT (Hyperledger Fabric, Ethereum, Bitcoin), SSI, W3C Verifiable Credentials, DID (did:ebsi, did:key), OSINT

Programming Languages: Python, Java, Go, Kotlin Multiplatform, JavaScript/TypeScript, C, Rust, Bash/Shell, SQL (MySQL, PostgreSQL)

Frameworks and Libraries: Spring Boot, FastAPI, React, Node.js/Express, gRPC, Selenium

Tools, Infrastructure and DevOps: Git, IntelliJ, VSCode, Postman, Wireshark, SonarQube, Docker, Kubernetes, GitHub Actions, Linux (Ubuntu), Nginx, Azure, AWS

Databases: MongoDB, PostgreSQL, MySQL, ImmuDB, SQLite, Trino

Languages: Spanish (native), Galician (native), English (B2)