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Antonio Payá González

> Software Architect · Professor at UNIR · PhD

antoniopaya@outlook.com
+34 678 25 96 67
antoniopaya22.github.io
linkedin.com/in/antoniopaya22
github.com/antoniopaya22
orcid.org/0000-0003-3733-3805
Gijón, Asturias, Spain

01 Profile

Software Architect and PhD in Computer Science with over 8 years of experience designing secure, scalable cloud architectures, bringing AI models into production and automating infrastructure. Researcher in Software-Defined Perimeters, Zero Trust and defences against Adversarial Machine Learning, with 4 JCR articles as first author. Since 2026, Professor in the Cybersecurity Bachelor's and Master's degrees at UNIR.

02 Experience

Professor
Sept 2026 — Present

UNIR — International University of La Rioja · University teaching

- Bachelor's Degree in Cybersecurity.
- Master's Degree in Cybersecurity.
- Master's Degree in Digital Transformation through Disruptive Technologies.

Software Architect
Sept 2021 — Present

TheNextPangea S.L. · Full-time

- Technical and strategic leadership across the digital product lifecycle.
- Defining software development methodologies (SDLC) and technology stacks.
- Designing scalable cloud architectures on AWS, Azure and GCP.
- Productionizing AI models in production environments.
- Infrastructure automation with Terraform (IaC) and Security by Design.

R&D Software Engineer
Oct 2019 — Sept 2021

Icube SL · Full-time

- Design, management and deployment of DevOps environments; full stack development.
- Research and development in additive manufacturing techniques in collaboration with ArcelorMittal R&D.

Blockchain Researcher
Apr 2018 — Aug 2019

University of Oviedo Foundation · Scholarship

- Research on blockchain technologies and their market impact, focused on Hyperledger Fabric.

Junior Software Developer
Jan 2019 — Mar 2019

ArcelorMittal · Internship

- Blockchain deployment in a real industrial environment: smart contracts and DLT.

EXPERTISE

Architecture & Cloud
Distributed systems on AWS, Azure and GCP. IaC with Terraform.

Cybersecurity & Zero Trust
SDP, IDS and Security by Design.

AI in production
MLOps, model productization and Adversarial ML.

University teaching
Cybersecurity and digital transformation at UNIR.

TECHNICAL SKILLS

Cloud & DevOps
AWS · Azure · GCP · Docker · Kubernetes · Terraform · Ansible · CI/CD

Architecture
Microservices · DDD · Event-Driven · REST · GraphQL · gRPC

Cybersecurity
Zero Trust · SDP · IDS / IPS · Hardening · Pentesting

AI / ML
scikit-learn · TensorFlow · PyTorch · Adversarial ML · MLOps

Backend
.NET · Python · Go · Rust · Node.js · Spring

Frontend & Desktop
TypeScript · Astro · Angular · React · Vue · Tauri

Data & Messaging
PostgreSQL · MongoDB · Redis · Kafka · RabbitMQ

Blockchain
Hyperledger Fabric · Solidity · Smart Contracts

LANGUAGES

Spanish — Native

English — Professional

03 Research

DOCTORAL THESIS

Diseño de estrategias de refuerzo para sistemas basados en Perímetros Definidos por Software mediante mecanismos de seguridad inteligentes

University of Oviedo · 2021 — 2025 · Cum Laude · original title (Spanish)

4 JCR articles **200+** Citations (Scholar) **4** h-index

04 Publications

2025 **Enhancing Software-Defined Perimeters with Integrated Identity Solutions and Threat Detection for Robust Zero Trust Security**
International Journal of Information Security · Springer · 11 citations
doi.org/10.1007/s10207-025-01099-9

2024 **SecureSDP: A Novel Software-Defined Perimeter Implementation for Enhanced Network Security and Scalability**
International Journal of Information Security · Springer · 11 citations
doi.org/10.1007/s10207-024-00863-7

2024 **Apollon: A Robust Defense System against Adversarial Machine Learning Attacks in Intrusion Detection Systems**
Computers & Security · Elsevier · 105 citations
doi.org/10.1016/j.cose.2023.103546

2023 **Securing the Software-Defined Perimeter Framework with Automated Security Configuration Deployment Systems**
SSRN Electronic Journal · preprint · 1 citation
doi.org/10.2139/ssrn.4326496

2022 **Egida: Automated Security Configuration Deployment Systems with Early Error Detection**
Computers & Security · Elsevier · 4 citations
doi.org/10.1016/j.cose.2022.102638

05 Education

PhD in Computer Science — 2021 — 2025
University of Oviedo · **Cum Laude**

Thesis on Software-Defined Perimeter, Intrusion Detection Systems and Adversarial Machine Learning.

Master's in Web Engineering — 2019 — 2021
University of Oviedo

Advanced web development and modern architectures.

★ Distinctions: Master's Thesis

BSc in Computer Science (Software Engineering) — 2015 — 2019
University of Oviedo

Software engineering, algorithms, databases and distributed systems. Final year project: 10/10.

★ Distinctions: OS & Network Administration, Computability, Final Year Project, Industrial Placement, Distributed Systems & Internet, Operating Systems, Robotics Software, Programming Technology & Paradigms

OPEN SOURCE

go-rest-template
Go · ★ 176
Modern Go 1.26 REST API template: chi, OpenAPI 3.1 contract validation, JWT, PostgreSQL/SQLite, Prometheus metrics and CI.

proteus
Python · ★ 0
Certified network intrusion detection: monotone detection over per-entity counters that evasion can only increase; one extra evaluation certifies each alert.

apollon
Jupyter Notebook · ★ 6
Defence against Adversarial Machine Learning attacks on IDS: Thompson-sampling selection over a pool of classifiers.

Secure-SDP
Go · ★ 0
Software-Defined Perimeter in Go with Bridge-model controllers, fwknop SPA and dynamic hardening with Egida.

AWARDS

Top 3, INNCYBER Innovation Hub
INCIBE · 2020

HP Hackathon Winner
HP Inc. · 2019

Salesforce Hackathon Winner
Salesforce · 2019

Capgemini Hackathon Winner
Capgemini · 2018

COURSES & CERTIFICATIONS

AI & Machine Learning
AWS Innovate · 2023

Deep Learning & Neural Networks with Keras
IBM · 2021

Machine Learning
Stanford · Coursera · 2020

AWS Cloud Practitioner
AWS

Software Defined Networking
The University of Chicago

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$ open
antoniopaya22.github.io
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