

Education

PhD in Computer Science	University of Málaga , Computer Science	Málaga, Spain
Com-puter Science	- Thesis: Integrados: facilitating the adoption of the internet of things through the integration of technologies - Supervisors: Manuel Díaz and Bartolomé Rubio Extraordinary PhD thesis award for course 2018/2019 at UMA.	2015 – 2018
Master's Degree	University of Málaga , Software Engineering and Artificial Intelligence	Málaga, Spain
	Thesis: λ -CoAP: An Internet of Things and Cloud Computing Integration based on the Lambda Architecture and CoAP	2014 – 2015
Master's Degree	University of Málaga , Computer Science	Málaga, Spain
	Thesis: RFID-system management, monitorization and control	2009 – 2014

Experience

University of Málaga , Associate Professor	Málaga, Spain
Research on composable, scalable and distributed digital twins; and streaming machine learning with continuous, federated, TinyML and semi-supervised learning.	2024 – present 2 years
University of Málaga , Assistant Professor	Málaga, Spain
Research on open-source frameworks for the definition of digital twins (OpenTwins), and streaming machine learning (Kafka-ML).	2022 – 2024 2 years
University of Málaga , Postdoctoral Researcher	Málaga, Spain
Research on continuous and distributed machine learning with data streams (Kafka-ML)	2021 – 2022 1 year
University of Málaga , Substitute Professor	Málaga, Spain
Department of Languages and Computer Science	2020 – 2021 1 year
University of Málaga , Postdoctoral Researcher	Málaga, Spain
Research on IoT systems and structural health monitoring. Definition of the FogPI infrastructure.	2019 – 2020 1 year
University of Málaga , PhD Student	Málaga, Spain
My thesis was focused on the Internet of Things (IoT), specially on resource-constrained devices, cloud integration, application development frameworks, sensor and actuator deployment, and blockchain integration. Recipient of the 2017 Best Survey Paper Award at JNCA.	2016 – 2019 3 years
University of Málaga , Research Assistant	Málaga, Spain
Research Assistant at the ERTIS research group, focusing on IoT and cloud computing. Contributed to highly cited research and designed, analyzed, and developed the Lambda-CoAP architecture, later incorporated into my PhD thesis. Also participated in an ERTIS–Indra collaboration project.	2015 – 2016 1 year

AIDA CENTRE, S.L., Technical Engineer

Worked remotely for nearly two years at Aida RFID Solutions while completing my degree, contributing to the specification, design, development, and testing of RFID systems. Developed RFID middleware and a network management system, and participated in automating vehicle identification using RFID in the automotive industry.

Spain
2012 – 2013
1 year

Projects

Opentwins-FED: Open Digital Twin Platform for Cross-Domain Simulation and Analytics of Federated and Collaborative Digital Twins

University of Málaga
2026 – present

Spanish AEI Generacion Conocimiento 2025 project. Funding €152k + FPI.

- *Principal Investigators: Cristian Martin and Manuel Diaz*

GEDICAM: Multi-paradigm digital twin compositional platform. Use case of the Integrated water cycle.

University of Málaga
2026 – present

Andalusian government R&D&I project. Funding €77K.

- *Principal Investigators: Cristian Martin and Manuel Diaz*

TRIATHLON: TRIhAlomeTHanes control thrOUGH AI-based techNologies

University of Málaga
2024 – present

Spanish AEI Colaboración Público-Privada project. UMA share: €152,000.

- *Principal Investigators: Cristian Martin and Manuel Diaz*

EVOLVE: Electric Vehicles pOint Location optimization via VEhicular communications

University of Málaga
2023 – present

Horizon Europe MSCA Staff Exchange project. UMA share: €150,000.

- *Principal Investigator and Coordinator: Cristian Martin*

DiTaS: A framework for agnostic compositional and cognitive digital twin services

University of Málaga
2023 – 2026

Spanish AEI Generacion Conocimiento 2022 project. Funding €137,500.

- *Principal Investigators: Cristian Martin and Manuel Diaz*

5G+Tactile2: Digital twins of verticals for B5G/6G networks

University of Málaga
2022 – 2024

UNICO I+D 5G Avanzado y 6G. Funding €554,194.

- *Principal investigator: Manuel Díaz*

GEDIER: Smart Farm Digital Twin Framework for Precision

University of Málaga
2022 – 2024

Spanish AEI Ecological Transition and Digital Transition Projects. UMA share: €149,500.

- *Principal investigator: Manuel Díaz and Bartolomé Rubio*

IntegraDos: Real-time services for the Internet of Things through sensor integration in the cloud

University of Málaga
2021 – 2023

Excellence projects, Andalusian Government. Funding €91,750.

- *Principal investigator: Manuel Díaz*

rFOG: Improving latency and reliability of delegated Fog computing for critical applications

University of Málaga
2019 – 2022

Spanish AEI Retos project. Funding €179,080.

- *Principal investigator: Manuel Díaz and Pedro Merino*

Preventive maintenance of wind turbines using deep learning in the Fog

University of Málaga
2020 – 2021

Spanish CEIATECH project. Funding €30,274.30.

- *Principal investigator: Manuel Díaz*

Advanced monitoring systems based on deep learning services in the Fog

University of Málaga
2019 – 2021

Andalusian government FEDER project. Funding €60,784.98.

- *Principal investigator: Manuel Díaz*

Energy balancing and resilience solutions for distribution grids (ebalance-plus) H2020 European Commission project. UMA share: €429,750. • Principal investigator: Manuel Díaz	University of Málaga 2020 – 2020
Wireless technologies for critical infrastructure monitoring (MIStica) Excellence projects, Andalusian Government. Funding €216,644. • Principal investigator: Bartolomé Rubio	University of Málaga 2014 – 2018
Balancing energy production and consumption in energy-efficient smart neighbourhoods (E-BALANCE) FP7 European Commission project. UMA share: €507,740. • Principal investigator: Manuel Díaz	University of Málaga 2013 – 2017

Supervision

- **2025-2028:** PhD thesis of **Mehmet Batuham**, *Multi-Agent Systems for Digital Twins*. Co-supervised with Daniel Garrido. University of Málaga.
- **2023-2027:** PhD thesis of **Antonio Jesús Chaves**, *Machine learning techniques using real-time data streams*. Co-supervised with Manuel Díaz. University of Málaga.
- **2023-2027:** PhD thesis of **Sergio Infante**, *Distributed digital twins*. Co-supervised with Bartolomé Rubio. University of Málaga.
- **2025:** PhD thesis of **Alejandro Carnero Hijano**, *Kafka-ML open-source framework using distributed, incremental, and federated machine learning techniques based on data streams*. Co-supervised with Manuel Díaz. University of Málaga, defended on December 16, 2025.

Awards

JNCA Best Survey Paper 2017 State-of-the-art, challenges, and open issues in the integration of Internet of Things and Cloud Computing.	2017
Best PhD thesis in Computer Science, academic year 2019/2020	2020
Spring 2022 Editor's Choice Kafka-ML: Connecting the data stream with ML/AI frameworks.	2022

Contracts

- **2022-2026: Modelling of the CEPESA MEK unit.** Compañía Española de Petróleos, S.A.
- **2023-2024: DELFOS: Design, Development and Implementation of a Tool for Optimising the Sizing of Energy Asset Plants.** Centro para el Desarrollo Tecnológico Industrial (CDTI). Principal investigator: Manuel Díaz.
- **2022: PEGASO, advanced industrially optimized prepreg technologies for lifting surfaces.** Tecnatom, S.A. Funding €45,000. Principal investigator: Manuel Díaz.

International Stays

- **2016: +3 months predoctoral research stay** (September-December), Ghent University, Ghent, Belgium.
- **2020: +5 postdoctoral research stay** (February-June), IHP research institute, Frankfurt (Oder), Germany.
- **2021: +2 months postdoctoral research stay** (June-July), IHP research institute, Frankfurt (Oder), Germany.
- **2022: +1 month postdoctoral research stay** (July-August), Incheon National University, Incheon, South Korea.
- **2023: +1 month postdoctoral research stay** (May), Université Paris Sorbonne Nord, Paris, France.
- **2025: +1 month postdoctoral research stay** (June), Ghent University, Ghent, Belgium