Alberto Cascajo

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Work Experience

Post-Doctoral Researcher, University Carlos III of Madrid

Feb 2022 - Present

- Computational epidemiology
- High-Performance Computing
- Dynamic Resource Management features on HPC platforms
- Monitoring large-scale platform
- Developing railway simulators in cooperation with a specialized company
- Edge computing

Associate Professor, University Carlos III of Madrid

July 2016 - present

- Computer Architecture: The main objective of this course is to know the basic concepts about the architecture of a computer and its impact on the performance of applications and computer systems. In its practical part, this knowledge should be applied using lock-free programming (lower-level parallelism). The language used is C/C ++.
- Operating Systems: The main objective of this subject is to know the function of the operating system as an extended machine, the services it offers to the rest of the system, and its main components and entities (processes, memory, files, etc.), the concepts of concurrency, and the relationships of the operating system with the rest of the computer software and hardware. We focus on understanding the functionality that the operating system includes and that the applications can use. In addition, we teach how task schedulers work, how programs interact and communicate with each other, and how the application threads work in concurrent programming. The language used is C.
- Computer Structure: The main objective of this subject is to understand basic concepts about the organization and structure of a computer, such as data representation, basic arithmetic, execution of instructions, assembly programming, main memory, cache and virtual memory, and I/O systems. The practical environment in this subject includes the RISC-V architecture for assembly programming and microprogramming (implementing the micro-code of the instructions).

Software developer, University Carlos III of Madrid

May 2013 - Aug 2017

- Software developer in different languages for different applications (C/C++, C#, Python, Shelscripts).
- Development and maintenance of simulation software for companies (C#).

Education

Doctorate in Computer Science and Technology

University Carlos III of Madrid
Dec 2021 - Cum Laude

Thesis title: New cross-layer techniques for multi-criteria scheduling in large-scale systems

Master in Computer Science and Technology

University Carlos III of Madrid
Sep 2017 - Excellent

Thesis title (es): Optimización de herramientas de simulación científica: HidroGeoSphere. Thesis title (en): Optimization of scientific simulation tools: HidroGeoSphere.

Bachelor degree in Computer Science

University Carlos III of Madrid
Sep 2016 - 8/10

Thesis title (es): Optimización de aplicaciones de cálculo estructural y generación automática de informes. Thesis title (en): Optimization of structural calculation applications and automatic report generation.

Projects

MADE: Multiple Access to eDElivery

Jan 2017 - Dec 2018

Participation: Member of the working group

eID@Cloud: Integrating de eIdentification in European cloud Platform according to the EIDAs Regulation

May 2017 - Sep 2018

Participation: Member of the working group

ADMIRE: Adaptive multi-tier intelligent data manager for Exascale

Apr 2021 - Mar 2024

Participation: Member of the working group

Servicio para el desarrollo de una herramienta de predicción de escenarios epidemiológicos y de vacunación frente a COVID-19

Aug 2021 - Nov 2021

Participation: Member of the working group

eID4Spain: Connecting Regional and Local Administrations to Spanish eIDAS Node

Sep 2018 - Feb 2020

Participation: Member of the working group

SIRTE: Simulación de la Interacción y Replanteo de Trazados Electrificados y Pórticos y Agujas

Feb 2010 - Dec 2013

Participation: Internship

Estudio y realización de programas de cálculo de pórticos rígidos de catenaria (CALPOR) y de Sistemas de simulación de montaje de agujas aéreas de línea aérea de contacto (SIA)

Feb 2007 - Jan 2011

Participation: Internship

Mantenimiento del programa: Sistema de análisis y cálculo de suministro de energía

Apr 2021 - Dec 2021

Participation: Member of the working group

Nuevos métodos en High-end y Edge Computing para la computación intensiva en datos

Jun 2020 - Feb 2024

Participation: Member of the working group

Hacia la unificación de paradigmas HPC y Big Data

Dec 2016 - May 2020

Participation: Member of the working group

Projects of the Spanish Supercomputing Network (Red Española de Supercomputación - RES)

Jul 2021 - Nov 2023

Participation: Member of the working group

- BCV-2021-2-0011 - Evaluation of COVID19 mitigation and vaccination strategies.
- BCV-2021-3-0007 - Evaluation of COVID19 mitigation and vaccination strategies.
- BCV-2022-1-0005 - Analysis tool for COVID-19 vaccination scenarios.
- BCV-2022-1-0004 - Multi-source and multi-method prediction to support COVID-19 policy decision making.
- BCV-2022-2-0010 - Analysis tool for COVID-19 vaccination scenarios.
- BCV-2022-3-0004 - Modelling COVID-19 propagation scenarios for health authority decision making.
- BCV-2023-1-0005 - Modelling COVID-19 propagation scenarios for health authority decision making.
- BCV-2023-2-0012 - Fine-grained COVID-19 forecasting.
- BCV-2023-3-0004 Fine-grained COVID-19 forecasting.

Technical Reports elaboration – European Centre for Disease Prevention and Control (ECDC)

Dec 2021 - Jan 2022

Participation: Member of the working group

- European Covid-19 Forecast Hub. Duración: del 1/12/2021 a la actualidad.
- European Covid-19 Scenario Hub. Duración: del 1/1/2022 a la actualidad.

Nuevas técnicas escalables de E/S para cargas de trabajo híbridas de HPC e intensivas en datos.

Sep 2023 - Aug 2026

Participation: Member of the working group

Monitorización y Evaluación en Tiempo Real de Infraestructuras Cloud y HPC mediante IA - METRIC-AI

Jan 2025 - Dec 2025

Participation: IP - Main researcher

Languages

- English: Fluent
- Spanish: Native
- German: Beginner

Skills

- Data Analysis: C/C++, Python, SQL, scripting
- Visualization Tools: Grafana, Kibana
- Machine Learning: Scikit-learn, TensorFlow
- AI: neural networks
- High-Performance Computing: remote work in clusters, cluster configuration and maintenance

Certifications

- Mobile application developement (40h) Certificate - 2017
- Personal productivity course in the Digital Era - 2017
- Cloud computing course (40h) - 2017
- Improving your English-Speaking Skills (B2/C1) Certificate - 2021

Interests

- Technology
- Sports (soccer, tennis, padel)
- Cars and motorbikes
- Photography