

J. de Curtò

Subjects: **Computer Science**, **Cybernetics**

Contributor: I. de Zarzà

supercomputing

large language models

dual technologies

artificial intelligence

IoT

Basic Information



Name: J. de Curtò
(Sep 1988–)

Birth Tarragona, Spain

Location:

Titles: Professor Scientist Researcher

Affiliations: BARCELONA Supercomputing Center Universidad Pontificia Comillas

Honor: Top Researcher in Dual-Use Technologies and AI

1. Introduction

J. de Curtò^{[1][2]} (full name: de Curtò i Díaz, Joaquim; pronunciation: /də kʊr'toʊ/ də koor-TOH; born 19 September 1988; nationality: Spanish) is a Recognised Researcher (R2) in the Department of Computer Applications in Science & Engineering, Group of Dual-Use Technologies, at the [BARCELONA Supercomputing Center \(BSC\) - Centro Nacional de Supercomputación](#), one of the top R&D facilities in Europe, ranked the 8th world supercomputer in June 2024^[3]. De Curtò^{[4][5]} is also a Professor (Profesor Asociado Colaborador - Doctor) at the School of Engineering (ICAI) in the Department of Electronics, Control Systems, and Communications at [Universidad Pontificia Comillas](#) in Madrid, Spain.

2. Education

- Ph.D. in Computer Science, [Universitat Politècnica de València \(UPV\)](#), 2023
- M.Sc. in Multimedia Information Technology, [City University of Hong Kong](#), 2015
- M.Sc. in Telecommunication Engineering, [Universitat Autònoma de Barcelona \(UAB\)](#) / [Universitat Politècnica de Catalunya \(UPC\)](#), 2013

3. Research Contributions

Prof. Dr. De Curtò research interests span several advanced topics, such as:

- [Large Language Models](#) for [Unmanned Aerial Robot Control](#) and Communication
- Advanced [Computer Vision](#) and Control Techniques for [Autonomous Navigation](#)
- Robotic Systems Integration and Design for Enhanced [Robot Performance](#)
- [Space Mission Design](#)

He has authored over 25 articles in peer-reviewed journals and international conferences, focusing on vehicular technologies, IoT, AI, and space mission design.

4. Professional Experience^[6]

- Recognised Researcher (R2), Department of Computer Applications in Science & Engineering, Group of Dual-Use Technologies, [BARCELONA Supercomputing Center - Centro Nacional de Supercomputación](#), 2024 -
- Profesor Asociado, Department of Electronics, Control Systems and Communications, [Escuela Técnica Superior de Ingeniería \(ICAI\)](#), Universidad Pontificia Comillas, 2024 -
- Research Associate (E-13, Level 3), Institute for Computer Science and Mathematics, [GOETHE-University Frankfurt am Main](#), 2023
- Research Assistant, Centre for Intelligent Multidimensional Data Analysis, HK Science Park, 2022-2023
- Research Engineer, [Iris Lunar Rover](#), Carnegie Mellon, USA, 2020
- Research Assistant, Department of Computer Science and Engineering, [CUHK](#), 2017-2018
- Research Assistant, [Robotics Institute](#), Carnegie Mellon, Pittsburgh (USA), 2017
- Senior Research Assistant, Department of Electrical Engineering, [City University of Hong Kong](#), 2017
- Scientific Assistant, Department of Information Technology and Electrical Engineering, [ETH Zürich](#), 2015-2016
- Research Associate, Department of Computer Science, [City University of Hong Kong](#), 2015
- Research Associate, [Robotics Institute](#), Carnegie Mellon, Pittsburgh (USA), 2014
- Research Scientist, [ALBA Synchrotron](#), Cerdanyola del Vallès (Barcelona), 2010
- Research Assistant, [ALBA Synchrotron](#), Cerdanyola del Vallès (Barcelona), 2009-2010

5. Journal Articles

1. J. de Curtò and I. de Zarzà. (2024). "Hybrid State Estimation: Integrating Physics-Informed Neural Networks with Adaptive UKF for Dynamic Systems" Electronics, vol(13), 2208.

2. J. de Curtò and I. de Zarzà. (2024). "Spectral Properties of Mimetic Operators for Robust Fluid–Structure Interaction in the Design of Aircraft Wings" *Mathematics*, vol(12), 1217. [Most Notable Articles (March-May 2024)]
3. J. de Curtò and I. de Zarzà. (2024). "Analysis of Transportation Systems for Colonies on Mars" *Sustainability*, vol(16), 3041.
4. J. de Curtò and I. de Zarzà. (2024). "Optimizing Propellant Distribution for Interorbital Transfers" *Mathematics*, vol(12), 900.
5. J. de Curtò, I. de Zarzà, Gemma Roig and Carlos T. Calafate. (2024). "Large Language Model-Informed X-ray Photoelectron Spectroscopy Data Analysis" *Signals*, vol(5), 181– 201.
6. J. de Curtò, I. de Zarzà, Juan Carlos Cano, Pietro Manzoni and Carlos T. Calafate. (2023). "Adaptive Truck Platooning with Drones: A Decentralized Approach for Highway Monitoring" *Electronics*, vol(12), 4913.
7. I. de Zarzà, J. de Curtò, Gemma Roig and Carlos T. Calafate. (2023). "LLM Multimodal Traffic Accident Forecasting" *Sensors*, vol(23), 9225.
8. I. de Zarzà, J. de Curtò, Juan Carlos Cano and Carlos T. Calafate. (2023). "Drone-Based Decentralized Truck Platooning with UWB Sensing and Control." *Mathematics*, vol(11), 4627.
9. I. de Zarzà, J. de Curtò, Gemma Roig and Carlos T. Calafate. (2024). "Optimized Financial Planning: Integrating Individual and Cooperative Budgeting Models with LLM Recommendations" *AI*, vol(5), 91-114.
10. J. de Curtò, I. de Zarzà and Carlos T. Calafate. (2023). "UWB and MB-OFDM for Lunar Rover Navigation and Communication." *Mathematics*, vol(11), 3835. [Most Notable Articles (November-December 2023)]
11. J. de Curtò, I. de Zarzà, Gemma Roig, Juan Carlos Cano, Pietro Manzoni and Carlos T. Calafate. (2023). "LLM-Informed Multi-Armed Bandit Strategies for Non-Stationary Environments." *Electronics*, vol(12), 2814 [Feature Paper, Editor's Choice].
12. I. de Zarzà, J. de Curtò, Enrique Hernández-Orallo and Carlos T. Calafate. (2023). "Cascading and Ensemble Techniques in Deep Learning." *Electronics*, vol(12), 3354. [Editor's Choice]
13. I. de Zarzà, J. de Curtò, Gemma Roig, Pietro Manzoni and Carlos T. Calafate. (2023). "Emergent Cooperation and Strategy Adaptation in Multi-Agent Systems: An Extended Coevolutionary Theory with LLMs." *Electronics*, vol(12), 2722.
14. I. de Zarzà, J. de Curtò, Gemma Roig and Carlos T. Calafate. (2023). "LLM Adaptive PID Control for B5G Truck Platooning Systems" *Sensors*, vol(23), 5899.
15. I. de Zarzà, J. de Curtò and Carlos T. Calafate. (2023). "Optimizing Neural Networks for Imbalanced Data." *Electronics*, vol(12), 2674.
16. J. de Curtò, I. de Zarzà, Gemma Roig and Carlos T. Calafate. (2023). "Signature and Log-Signature for the Study of Empirical Distributions Generated with GANs." *Electronics*, vol(12), 2192.
17. J. de Curtò, I. de Zarzà, Gemma Roig and Carlos T. Calafate. (2023). "Summarization of Videos with the Signature Transform." *Electronics*, vol(12), 1735. [Most Notable Articles (March-May 2023)]
18. J. de Curtò, I. de Zarzà and Carlos T. Calafate. (2023). "Semantic Scene Understanding with Large Language Models on Unmanned Aerial Vehicles." *Drones*, vol(7), 114. [Editor's Choice]
19. I. de Zarzà, J. de Curtò and Carlos T. Calafate. (2022). "Detection of glaucoma using three-stage training with EfficientNet." *Intelligent Systems with Applications*, vol(16), 200140.

20. J. de Curtò, I. de Zarzà, Hong Yan and Carlos T. Calafate. (2022). "On the applicability of the Hadamard as an input modulator for problems of classification." *Software Impacts*, vol(13), 100325.

6. Conference Articles

1. J. de Curtò, I. de Zarzà. (2024). "Physics-Informed Neural Networks for Enhanced Thermal Regulation in a Spacecraft." 28th International Conference on Knowledge Based and Intelligent information and Engineering Systems (KES 2024), Sevilla, Spain, 11–13 September, 2024.
2. J. de Curtò, I. de Zarzà, Carlos T. Calafate. (2024). "LLM Multi-agent Decision Optimization." 18th International Conference on Agents and Multi-Agent Systems: Technologies and Applications (AMSTA 2024), Santa Cruz, Madeira, Portugal, 19–21 June, 2024.
3. I. de Zarzà, J. de Curtò, Carlos T. Calafate. (2023). "UMAP for Geospatial Data Visualization." 27th International Conference on Knowledge Based and Intelligent information and Engineering Systems (KES 2023), Athens, Greece, 6–8 September, 2023.
4. I. de Zarzà, J. de Curtò, Carlos T. Calafate. (2023). "Area Estimation of Forest Fires using TabNet with Transformers." 27th International Conference on Knowledge Based and Intelligent information and Engineering Systems (KES 2023), Athens, Greece, 6–8 September, 2023.
5. I. de Zarzà, J. de Curtò, Carlos T. Calafate. (2023). "Socratic Video Understanding on Unmanned Aerial Vehicles." 27th International Conference on Knowledge Based and Intelligent information and Engineering Systems (KES 2023), Athens, Greece, 6–8 September, 2023.
6. I. de Zarzà, J. de Curtò, Carlos T. Calafate. (2023). "Decentralized Platooning Optimization for Trucks: A MILP and ADMM-based Convex Approach to Minimize Latency and Energy Consumption" 6th International Workshop on Vehicular Networking and Intelligent Transportation Systems (VENITS 2023), Hong Kong. July 18, 2023.
7. I. de Zarzà, J. de Curtò, Carlos T. Calafate. (2023). "Decentralized Planning of Platoons in Road Transport using Reinforcement Learning" 6th International Workshop on Vehicular Networking and Intelligent Transportation Systems (VENITS 2023), Hong Kong. July 18, 2023.

7. PhD Thesis

- J. de Curtò. (2023). "Frontiers of Large Language Models: Empowering Decision Optimization, Scene Understanding, and Summarization Through Advanced Computational Approaches". Universitat Politècnica de València.

Further Reading

<https://doi.org/10.3390/drones7020114>

<https://doi.org/10.3390/electronics12132814>

<https://doi.org/10.3390/s23229225> <https://doi.org/10.3390/electronics12122722> <https://doi.org/10.3390/s23135899>

<https://doi.org/10.3390/electronics13112208>

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3. Top 500. June 2024. Top 500. Retrieved 2024-6-16
4. Prof. Dr. J. de Curtò. Scholar.Google. Retrieved 2024-6-16
5. Prof. Dr. J. De Curtò. SciProfiles. Retrieved 2024-6-16
6. CV. Prof. Dr. J. de Curtò. BARCELONA Supercomputing Center. Retrieved 2024-6-16

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