



Part A. PERSONAL INFORMATION

		CV date	21/1/2025
First name	RAMON		
Family name	COSTA CASTELLÓ		
Gender (*)	MALE	Birth date (dd/mm/yyyy)	08/06/1970
Social Security, Passport, ID number	43701845M		
e-mail	ramon.costa@upc.edu	URL Web	https://ramon-costa.staff.upc.edu/
Open Researcher and Contributor ID (ORCID)(*)	0000-0003-2553-5901		

(*) Mandatory

A.1. Current position

Position	Full Professor (Catedrático de Universidad)		
Initial date	18/9/2023		
Institution	Institut de Robòtica i Informàtica Industrial (IRI)		
Department/Center	Enginyeria de Sistemes, Automàtica i Informàtica Industrial (ESAI) Escola Tècnica Superior d'Enginyeria Industrial de Barcelona (ETSEIB)		
Country	Spain	Teleph. number	+34-934017290
Key words	Automatic Control, Energy Management, Hydrogen, Redox flow batteries, Control Education		

A.2. Previous positions (research activity interruptions, art. 14.2.b))

Period	Position/Institution/Country/Interruption cause
24/9/2008-18/9/2023	Titular de Universidad (UPC)
01/09/2005-23/9/2008	Profesor contratado doctor (Lector) at UPC
01/01/2001-31/08/2005	Profesor asociado tipo III at UPC

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Licenciado en Informàtica	Universitat Politècnica de Catalunya (UPC)	1993
Doctor en Informàtica	Universitat Politècnica de Catalunya (UPC)	2001

Part B. CV SUMMARY (max. 5000 characters, including spaces)

I was born in Lleida, in 1970, I obtained a degree in computer science in 1993 at the Facultat d'Informàtica de Barcelona (FIB) from Universitat Politècnica de Catalunya (UPC), in 2001 I got the doctorate in the Advanced Automation and Robotics (AAR) program at Institut de Cibernètica of the UPC.

Since September 2023 I am a Full Professor at the ESAI (Enginyeria de Sistemes, Automàtica, i Informàtica Industrial) department from UPC, I also belong to the IRI institute (Institut de Robòtica i Informàtica Industrial) from CSIC-UPC (which has given the Maria de Maezu Excellence seal in the period 01/07/2017- 31/12/2021).

My teaching activity is linked to Escola Tècnica Superior d'Enginyeria Industrial de Barcelona (ETSEIB) and currently to the degree in industrial technology engineering (GETI), the master's degree



in industrial engineering (MUEI) and the master's degree in Automation and Robotics (MUAR). I am currently the academic coordinator of the compulsory subjects 240EI011-Process Control, 240AR013 Modelling, Identification and Simulation of Dynamical Systems and 240AR021 - Nonlinear Control Systems. It should be noted that 240EI011 is a multigroup subject with 8 groups (5 in the fall and 3 in the spring) while 240AR013 and 240AR021 are subjects taught entirely in English.

During these years I have supervised many final degree projects, PFC (pre-Bologna), (36), final degree projects (44) and final master's theses (36) and 11 doctoral theses (one of them an extraordinary doctoral award). I am currently supervising 3 doctoral theses.

In the different subjects I have developed different teaching material, highlighting the publication of two books.

I have also participated in numerous teaching innovation projects aimed at developing virtual/remote labs and introducing interactivity as a teaching tool. I would like to highlight the participation in the Automatl @ bs project.

My teaching duties have been positively evaluated in 5 five-year periods (quinquenios, 1998-2003,2003-2008,2008-2011,2011-2016,2016-2021).

My research focuses on the development of control techniques and their application to different systems of interest in the field of engineering. This research is currently being carried out within the framework of the Advanced Control Systems group (SAC, 2017 SGR 482) and the IRI fuel cell group.

In recent years my research has focused on the development of digital control techniques for monitoring/rejecting periodic signals (repetitive control and resonant control), the development of techniques for state and parameter estimation, and its application to energy management systems. Recently focused on the modeling and control of electrochemical energy storage systems (hydrogen, redox flux batteries). As a result of this research, I have participated in a good number of regional, national and European projects.

The results of my research have been published in 107 JCR journal publications (Q1:53, Q2: 24, Q3:21, Q4: 9). H-index (Scholar Google: 35, ResearchGate: 30, Scopus: 27, WOS: 24).

The webpage:

<https://ramon-costa.staff.upc.edu>

contains detailed information on these publications.

My research has been positively evaluated in 4 six-year periods (sexenios, 2000-2005,2006-2011,2012-2017,2018-2023). I also have a six-year period for technology transfer (2003-2018).

I regularly collaborate with different scientific organizations: I am a Senior Member of the IEEE.

Since 1998 I have been an active member of the Spanish Automation Committee (CEA), and its thematic groups in Control Engineering and Automatic Education. From 09/2016 to 9/2024 I have been the secretary of the association and a member of the CEA Directive Board.

Additionally, I am an IFAC (International Federation of Automatic Control) affiliate member, especially active in 2 technical committees of the (TC 7.1 on “Automotive Control” and TC 9.4 on “Control Education”).

I am a regular reviewer of various prestigious international journals and conferences, and I work as a reviewer with the AEI and ANECA.

Part C. RELEVANT MERITS (sorted by typology)

C.1. Publications (recent ones)

1. Design and experimental validation of an optimal remixing procedure for vanadium flow batteries affected by faradaic imbalance. T. Puleston, A. Trovò, G. Marini, M. Serra, R. Costa-Castelló, M. Guarnieri. Journal of Power Sources. 2024. DOI: 10.1016/j.jpowsour.2024.235487.
2. Sensitivity analysis and calibration for a two-dimensional state-space model of metal hydride storage tanks based on experimental data. M. Chen, C. Batlle, B. Escachx, R. Costa-Castelló, J. Na. Journal of Energy Storage. 2024. DOI: [10.1016/j.est.2024.112316](https://doi.org/10.1016/j.est.2024.112316).
3. Nonlinear observer for online concentration estimation in vanadium redox flow batteries based on half-cell voltage measurements. 2024. T. P. Puleston, A. Cecilia, R. Costa-Castelló, M. Serra. Computers and Chemical Engineering. DOI: [10.1016/j.compchemeng.2024.108664](https://doi.org/10.1016/j.compchemeng.2024.108664).
4. Online estimation of the state of charge and state of health of a vanadium redox flow batteries. A. Clemente; M. Montiel; F. Barreras; A. Lozano; B. Escachx; R. Costa-Castelló. Journal of Power Sources. DOI: [10.1016/j.jpowsour.2024.234181](https://doi.org/10.1016/j.jpowsour.2024.234181).

5. Parameter Estimation of Two Classes of Nonlinear Systems with Non-separable Nonlinear Parameterizations. R. Ortega, A. Bobtsov, R. Costa-Castelló, N- Nikolaev. *Automatica* 2024. DOI: [10.1016/j.automatica.2024.111559](https://doi.org/10.1016/j.automatica.2024.111559).
6. Cancelling output disturbances in observer design through internal model filters. A. Cecilia, D. Astolfi, M. Bin, R. Costa-Castelló. *Automatica* 2024. DOI: [10.1016/j.automatica.2024.111529](https://doi.org/10.1016/j.automatica.2024.111529).
7. *Fuel cell module control based on Switched/Time-Based Adaptive Super-Twisting Algorithm: design and experimental validation*. J.L Anderson., J.J. Moré, P.F. Puleston and R. Costa-Castelló. *IEEE Transactions on Control Systems Technology*. 2022. DOI: [10.1109/TCST.2022.3169441](https://doi.org/10.1109/TCST.2022.3169441).
8. *Addressing the relative degree restriction in nonlinear adaptive observers: A high-gain observer approach*. A. Cecilia, R. Costa-Castelló. *Journal of the Franklin Institute* 2022. DOI: [10.1016/j.jfranklin.2022.03.020](https://doi.org/10.1016/j.jfranklin.2022.03.020).
9. *Adaptive Nonlinear Parameter Estimation for a Proton Exchange Membrane Fuel Cell*. Y. Xing, J. Na, M. Chen, R. Costa-Castelló and V. Roda. *IEEE Transactions on Power Electronics* 2022. DOI: [10.1109/tpel.2022.3155573](https://doi.org/10.1109/tpel.2022.3155573).
10. *On Addressing the Security and Stability Issues Due to False Data Injection Attacks in DC Microgrids – An Adaptive Observer Approach*. A. Cecilia, S. Sahoo, T. Dragicevic, R. Costa-Castelló and F. Blaabjerg. *IEEE Transactions on Power Electronics* 2022. DOI: [10.1109/TPEL.2021.3114990](https://doi.org/10.1109/TPEL.2021.3114990).
11. Nonlinear Adaptive Observation of the Liquid Water Saturation in Polymer Electrolyte Membrane Fuel Cells. A. Cecilia, M. Serra, R. Costa-Castelló. *Journal of Power Sources*. DOI: [10.1016/j.jpowsour.2021.229641](https://doi.org/10.1016/j.jpowsour.2021.229641).
12. Energy management strategy for fuel cell-supercapacitor hybrid vehicles based on prediction of energy demand. Mauro G. Carignano; R. Costa-Castelló; V. Roda; N.M. Nigro; S. Junco; D. Feroldi. *Journal of Power Sources*. ISSN: 0378-7753. Volume 360, 31 August 2017, Pages 419–433. DOI [10.1016/j.jpowsour.2017.06.016](https://doi.org/10.1016/j.jpowsour.2017.06.016).

C.2. Congress (10 recent ones)

1. [On State-Estimation in Weakly-Observable Scenarios and Implicitly Regularized Observers](#). Andreu Cecilia, Ramon Costa-Castelló (December 2021). 60th IEEE Conference on Decision and Control (CDC). Oral presentation.
2. [Library-based adaptive observation through a sparsity-promoting adaptive observer](#). A. Cecilia and R. Costa-Castelló. European Control Conference 2021. June 29-July 2, 2021. Oral presentation.
3. [SOC and diffusion rate estimation in redox flow batteries: An I&I-based high-gain observer approach](#). A. Clemente, A. Cecilia and R. Costa-Castelló. European Control Conference 2021. June 29-July 2, 2021. Oral presentation.
4. [Adaptive Parameter Estimation-based Observer Design for Nonlinear Systems](#). Yashan Xing, Jing Na, Ramon Costa-Castelló and Guanbin Gao. 59th Conference on Decision and Control. Jeju Island. December 8th-11th 2020 . Oral presentation.
5. [Adaptive Online Parameter Estimation Algorithm of PEM Fuel Cells](#). Yashan Xing, Jing Na, Ramon Costa-Castello. European Control Conference (ECC'19), June 25-28, 2019. Naples (Italy). Oral presentation.
6. [Configurations of model predictive control to exploit energy flexibility in building thermal loads](#). Thibault Péan, Jaume Salom, Ramon Costa-Castelló. IEEE Conference on Decision and Control (CDC). 2018. Miami Beach, FL, USA. Dec. 17-19. Oral presentation.
7. [Chattering Free High Order Sliding Mode Observer for Estimation of Liquid Water Fraction in a Proton Exchange Membrane Fuel Cell](#). Julio Luna, Ramon Costa-Castelló. European Control Conference (ECC '2018). Limassol, Cyprus, June 12-15, 2018. Oral presentation.
8. [Temperature Control of Open-Cathode PEM Fuel Cells](#). Stephan Strahl, Ramon Costa-Castelló. 20th IFAC World Congress. Toulouse. 9-14 July 2017. Oral presentation.

9. [Different Architectures to Develop Repetitive Controllers](#). Víctor Sanz i López, Ramon Costa-Castelló, German Andres Ramos. 20th IFAC World Congress. Toulouse. 9-14 July 2017. Oral presentation.
10. [A Novel Energy Management Strategy for Fuel-Cell/Supercapacitor Hybrid Vehicles](#). Mauro Guido Carignano, Ramon Costa-Castelló, Norberto Marcelo Nigro, Sergio Junco. 20th IFAC World Congress. Toulouse. 9-14 July 2017. Oral presentation.

C.3. Research projects (last 10 years)

- SINGLE: Electrified Single Stage Ammonia Cracking to Compressed Hydrogen. HORIZON-101112144-SINGLE. PI: Maria Serra Prat. 196,250 € [01/05/2023-05-30/04/2026]
- MASHED: Efficient Management of Energy Systems including Hybrid Electrochemical Energy Storage using Digitalisation Technologies. TED2021-129927B-I00. PI: Ramon Costa Castelló and Vicenç Puig. 247,480 € [01/12/2022-30/11/2024]
- PTI+ TRANS-ENER: Fabricación del módulo BFR 50W. CSIC Project TRE2103000. PI Ramon Costa [15/04/2021-31/12/2022]
- MAFALDA: Manufacture, automation and integration of vanadium redox flow batteries in renewable energy systems. PID2021-126001OB-C31. 150,887 €. PI: Ramon Costa and Maria Serra. [01/01/2022-31/12/2024]
- PTI+ TRANS-ENER - Renewable 60 kg/day hydrogen station. CSIC (TRE2103000). PI: Maria Serra. 86.000,00 €. [1/1/2021-31/12/2022]
- AFC4Hydro: Active flow control system for improving hydraulic turbine performances at off-design operation. PI: Xavier Escaler. Commission of European Communities H2020-814958-AFC4Hydro. 1.084.861,25 € [01/06/2019-31/05/2023]
- Study and development of high efficient Hydrogen storage System Based on solid oxide Cells and reNewable energy sources (Hy-BCN). Barcelona Council (19S01452-006). PI: Maria Serra. 30.900,00 €. [27/12/2019- 26/06/2021]
- Control and energy management in hybrid electric vehicles with fuel cells (DOVELAR). MINECO (RTI2018-096001-B-C32). PI: Ramon Costa and Maria Serra. 139.750,00 €. [1/1/2019-31/12/2021]
- INN-BALANCE: Innovative cost improvements for balance of plant components of automotive PEMFC systems. Commission of European Communities. H2020-735969-INN-BALANCE. PI: Maria Serra Prat. 240.125,00 €. [01/01/2017-31/12/2019]
- MICAPEM: Parameter estimation, diagnosis and control for the improvement of efficiency and durability of PEM fuel cells. MIN DE ECONOMIA Y COMPETITIVIDAD. DPI2015-69286-C3-2-R. PI : Maria Serra Prat and Ramon Costa Castelló. 171.820,00 € [01/01/2016-31/12/2016].
- INCITE: Innovative controls for renewable sources integration into smart energy systems. Commission of European Communities. H2020-675318-INCITE. PI: Carlos Ocampo-Martinez. 229.337,24 €. [01/12/2015-30/11/2019].
- COSIN: Synthetic fuels. ACC10. RIS3CAT COMRDI15-1-0037-06. PI: Maria Serra Prat. 40.002,99 €. [01/11/2016-31/10/2019].
- REFER: Energy reduction and flexibility in buildings in rehabilitation. ACC10. RIS3CAT COMRDI15-1-0036-11. PI: Maria Serra Prat. 24.998,13 €. [01/06/2016-31/12/2018].
- SAC: Advanced Control Systems. Sistemes Avançats de Control. AGAUR. 2017 SGR 482. PI : Vicenç Puig. 62.280,00 €. [01/01/2017-31/12/2019].
- ACES : Advanced Control of Energy Systems. AGAUR. 2014 SGR 267. PI : Josep M. Olm. 30.000,00 €. [01/01/2014-30/04/2017].
- MESPEN : Development of control systems for efficiency and durability improvement in PEM fuel cell based systems. Ministerio de Ciencia e Innovación (MICINN). DPI2011-25649. PI: Maria Serra Prat. 130.680,00 €. [01/01/2012-30/06/2015].