

**Part A. PERSONAL INFORMATION**

**CV DATE**

22/10/2023

First and Family name	JOSÉ LUIS GUZMÁN SÁNCHEZ		
ID Number		Age	
Researcher codes	Scopus ID	34769939300	
	ORCID Code	0000-0001-5312-0776	
	WoS	K-9608-2014	
	Google Scholar	gGhx0WgAAAAJ	

**A.1. Current position**

Institution	UNIVERSIDAD DE ALMERÍA		
Department	DEPARTAMENTO INFORMÁTICA		
Address and Country	CTRA. SACRAMENTO S/N, 04120, Almería, Spain		
Phone number	950214133	E-mail	<a href="mailto:joseluis.guzman@ual.es">joseluis.guzman@ual.es</a>
Current position	Full Professor	Since	17/09/2017
UNESCO codes	3311.01, 3311.02		
Keywords	PID control, feedforward control, predictive control, robust control, applications to energy, agriculture and biological processes, control education		

**A.2. Education**

Degree	University	Year
Technical Computer Science Engineer	Universidad de Almería	2000
Computer Science Engineer (best Master Thesis award)	Universidad de Almería	2002
Doctor form University of Almería (Extraordinary award)	Universidad de Almería	2006

**A.3. General indicators of quality and Scientific production**

Research/Transfer of knowledge merits	3 (2008-2020), 1 (2006-2012)		
H index	Scopus 32	Google Scholar 43	
Total cites	3506	6108	
Average total cites (last 5 years)	350,8	654,8	
Supervised PhD Thesis (last 10 years)	9	Total supervised PhD Thesis	11
Publications in Q1	69	Patents	5
Total journal papers	134 (69 Q1, 36 Q2, 10 Q3, 14 Q4, 6 no JCR)		
International books	3	National books	3
International book chapters	9	National book chapters	2
International conferences	142	National conferences	102
Main researcher in projects	7 (UE: 2, EEUU: 1, ESP: 4)		
Participation in research projects	32 (UE: 7, ESP: 15, REG: 4, OTHERS: 6)		
Main research in contracts	6	Participation in contracts	32
International research stays	7	Awards	20

**Part B. CV Summary**

**José Luis Guzmán Sánchez** was born in Almería, Spain, March 20, 1979. He received the Computer Science Engineering degree and the European Ph.D. degree (extraordinary doctorate award) from the University of Almería, Almería, Spain, in 2002 and 2006, respectively. He is Full Professor of automatic control and system engineering with the University of Almería, where he also belongs to the Automatics, Electronics and Robotic research group. His research interests are focused on the fields of MPC techniques, PID control, and robust control with applications to agricultural processes, solar plants, and biotechnology. He has authored and coauthored more than 370 technical papers in international journals and conferences. Furthermore, he has been a member of the Spanish IFAC association in Automatic Control since 2003, a member of the IEEE Control System

Society since 2006, and of the IFAC Technical Committee on Control Education and the IEEE Technical Committee on System Identification and Adaptive Control since 2008. Currently, he was also chair of the Control Engineering group of the “Comité Español de Automática” since 2018 to 2022 and currently is Vice-chair of the IFAC Technical Committee on Education since 2019.

## Part C. RELEVANT CONTRIBUTIONS

### C.1. Publications

1. R. Nordio, F.J. Delgado, A. Sánchez-Zurano, J. González-Hernández, E. Rodríguez-Miranda, **J. L. Guzmán**, T. Lafarga, and F.G. Acién. Long-term assessment of the nutrient recovery capacity and biomass productivity of *Scenedesmus almeriensis* in raceway reactors using unprocessed urban waste- water. **Bioresource Technology**, 369, 128374, 2023 (Impact factor: 11.4, 11/158 **Q1** (Biotechnology & Applied Microbiology), 1/14 **Q1** Agricultural Engineering).
2. P. Otálora, J. L. Guzmán, F.G. Acién, M. Berenguel, A. Reul. Microalgae classification based on machine learning techniques **Algal Research**, 55, 102256, 2021. (Impact factor: 5.276, 40/158 **Q1** (Biotechnology & Applied Microbiology)).
3. E. Rodríguez-Miranda, J. L. Guzmán, F.G. Acién, M. Berenguel and A. Visioli. An direct regulation of temperature in raceway reactors by optimal management of culture depth. **Biotechnology and Bioengineering**, 1186-1198, 118(3). 2021 Impact factor: 4.395, 41/167 **Q1** (Biotechnology & Applied Microbiology).
4. E. Rodríguez-Miranda, F.G. Acién, J. L. Guzmán, M. Berenguel and A. Visioli. A new model to analyze the temperature effect on the microalgae performance at large scale raceway reactors. **Biotechnology and Bioengineering**, 877-889, 118(2). 2021. Impact factor: 4.395, 41/167 **Q1** (Biotechnology & Applied Microbiology).
5. C. Rodríguez, E. Aranda-Escolástico, J. L. Guzmán, M. Berenguel and T. Hägglund. Revisiting the simplified IMC tuning rules for low-order controllers: 2DoF feedback controller. **IET Control Theory & Applications**, 14(13), 1700-1710, 2020. Impact factor 3.343, 14/64 **Q1** (Instruments & Instrumentation), 23/63 **Q2** (Automation & Control Systems).
6. C. Rodríguez, E. Aranda-Escolástico, J. L. Guzmán, M. Berenguel and T. Hägglund. Revisiting the simplified IMC tuning rules for low-order controllers: Feedforward controller. **IET Control Theory & Applications**, 14(12), 1612-1618, 2020. Impact factor 3.343, 14/64 **Q1** (Instruments & Instrumentation), 23/63 **Q2** (Automation & Control Systems).
7. F. García-Mañas J. L. Guzmán, M. Berenguel, F.G. Acién. Biomass estimation of an industrial raceway photobioreactor using an T extended Kalman filter and a dynamic model for microalgae production. **Algal Research**, 37, 103-114, 2019. Impact factor: 3.994, 27/158 **Q1** (Biotechnology & Applied Microbiology).
8. M. Barceló-Villalobos, J. L. Guzmán, I. Martín, J. Sánchez, F.G. Acién. Analysis of mass transfer capacity in raceway reactors. **Algal Research**, 35, 91-97, 2018. Impact factor: 3.994, 27/158 **Q1** (Biotechnology & Applied Microbiology)
9. G. A. Andrade, G.A., D.J. Pagano, J.L. Guzmán, M. Berenguel, I. Fernández, F.G. Acién. Distributed sliding mode control of pH in tubular photobioreactors. **IEEE Transactions on Control Systems Technology**, 24(4), 1160-1173, **2016**. Impact factor: 3.882, 9/60 **Q1** (Automation & Control Systems).
10. I. Fernández, I., F.G. Acién, J.L. Guzmán, M. Berenguel, J.L. Mendoza. Dynamic model of an industrial raceway reactor for microalgae production. **Algal Research**, 17, 67-78, **2016**. DOI: 10.1016/j.algal.2016.04.021. Impact factor: 3.994, 27/158 **Q1** (Biotechnology & Applied Microbiology).

## C.2. Projects

1. Reusing effluents from Agriculture to Unlock the potential of microalgae (REALM). Proyecto Europeo, HORIZON-CL6-2021-CIRCBIO-01-09 (8.955.900€ - 515.000 € para UAL). IP. José Luis Guzmán, 07/2022-07/2026.
2. Control híbrido y optimización de una biorrefinería sostenible para la producción industrial de microalgas (HYCO2BIO). Proyecto del Plan Nacional. Ministerio de Ciencia e Innovación. PID2020-112709RB-C21 (186.340 €). IP. José Luis Guzmán, 09/2021-09/2024.
3. A knowledge-based training network for digitalisation of photosynthetic bioprocesses - DIGITALGESTION. Proyecto Europeo H2020-MSCA-ITN-2020 (4.043.982,24 e). IP F.G. Ación, 01/2021- 12/2023.
4. Modelado y Control del proceso combinado de producción de microalgas y tratamiento de aguas residuales con reactores industriales. Proyecto del Plan Nacional. Ministerio de Economía y Competitividad. DPI2017-84259-C2-1-R (178.000 €). IP. José Luis Guzmán, 01/2018-12/2020.
5. Control y optimización de la producción de biomasa con microalgas como fuente de energía renovable. Proyecto del Plan Nacional. Ministerio de Economía y Competitividad. DPI2014-55932-C2-1-R (123.000 e). IP. José Luis Guzmán, 01/2015-12/2017.
6. Modelado, simulación, control y optimización de fotobioreactores. Proyecto del Plan Nacional. Ministerio de Ciencia e Innovación. DPI2011-27818-C02-01 (144.000 €). IP. José Luis Guzmán, 01/01/2012- 31/12/2014.
7. CO2ALGAEFIX: CO<sub>2</sub> capture and bio-fixation through microalgal culture. Proyecto Europeo LIFE + Environment Policy and Governance. ENV/ES/000496 (2.980.594 €). IP. Augusto Rodríguez-Matons, IP (UAL) Francisco Gabriel Ación, 11/2011-03/2014.
8. Meeting the challenges of the farm of tomorrow by integrating farm management information systems to support real-time management decisions and compliance to standards – FUTUREFARM. Proyecto Europeo FP7-KBBE-2007-1 (3.000.000 €). IP. Simon Blackmore, IP (UAL) José Luis Guzmán, 01/2008-01/2011.

## C.3. Contrats

1. Desarrollo de estrategias de control avanzadas para procesos producción de biofertilizantes a partir de microalgas (ECOLAGA). Proyecto UAL-Transfiere, TRFE-I-2021/014, con Microalgas Carboneras S.L. (23.500 €). IP: José Luis Guzmán, 09/2021-09/2022.
2. Asesoramiento al desarrollo de modelos para el diseño de invernaderos fotovoltaicos a partir de las condiciones externas en el marco del Proyecto Europeo SUN4GREEN GA nr. 756006. RUFEPA (79.925 €). IP: Jorge A. Sánchez Molina, 01/11/2018-01/03/2019.
3. MODEL CROP: Desarrollo tecnológico de un prototipo de modelo de previsión de producción en cultivo de tomate bajo invernadero. Grupo HISPATEC Informática Empresarial S.A. (Referencia 001173, 227.182,3 €). IP Francisco Rodríguez Díaz, 15/04/2015-15/10/2016.
4. BIOGREEN: Modelo Avanzado de Producción en Invernaderos. Proyecto de la Corporación Tecnológica de Andalucía. Primaram (39.924€). IP. Manuel Berenguel, 20/01/2014-31/03/2015.
5. Asesoramiento, diseño y desarrollo de un sistema integrado de información con asesoramiento en línea para PYMES. CADIA ingeniería S.L. (79.650 €). IP José Luis Guzmán, 11/2010-09/2011.
6. Asesoramiento al desarrollo de un sistema de aprovechamiento de biomasa de invernadero con recuperación de calor y CO<sub>2</sub>. BESEL S.A. (29.000 €). IP Francisco Rodríguez y Gabriel Ación, 06/2008-06/2010.
7. Almacenamiento de sales en torre central. Gemasolar (350.000 €). IP Manuel Berenguel, 05/2008-05/2010.

#### C.4. Patents

1. J. Sánchez-Hermosilla, A. Sánchez-Gimeno, F. Rodríguez, L. Amate, J.L.Guzmán. Máquina clasificadora de frutas y hortalizas. N. de patente: ES 2 318 987. País de prioridad: España. Fecha de expedición: 28/07/**2016**. Entidad titular: Universidad de Almería. Países: España.
2. J. Sánchez-Hermosilla, F. Rodríguez, J.L.Guzmán, M. Berenguel, A. Sánchez. Mecanismo portador articulado para equipos de clasificación. N. de patente: ES 2 409 229 A1. País de prioridad: España. Fecha de expedición: 21/12/**2012**. Entidad titular: Universidad de Almería. Países: España. Empresa/s explotan: CADIA INGENIERÍA S.L.
3. F. Rodríguez, J. García, R. González, A. Pawlowski, J. Sánchez-Hermosilla, J.L. Guzmán, M. Berenguel, J.C. López, E. Baeza, J.C. Gázquez, V. Plaza. Sistema de guiado para movimiento autónomo de vehículos en entornos estructurados. N. de solicitud: P201101119. País de prioridad: España. Fecha de prioridad: 05/10/**2011**. Entidad titular: Universidad de Almería.
4. F. Rodríguez, J. Sánchez-Hermosilla, A. Sánchez, R. González, J.L. Guzmán, M. Berenguel. Vehículo autónomo polivalente para trabajos en invernaderos. Number: ES 2 329 107 B1, 05/19/**2008**. País de prioridad: España. Entidad titular: CADIA INGENIERÍA S.L., Universidad de Almería.

#### C.5. Research stays

1. Research stay at Departamento de Informática y Automática de la UNED (Madrid, España), con profesor Sebastián Dormido. Period: 01/11/2003-01/02/2004.
2. Research stay at Department of Automatic Control de la Lund University (Lund, Suecia 2005), con profesores Karl Johan Aström y Tore Hägglund. Period: 01/09/2005-19/12/2005.
3. Research stay of 3 weeks Department of Chemical Engineering de la Arizona State University (Tempe, USA), con profesor Daniel Rivera. Period: 13/10/2008- 03/11/2008.
4. 3 research stays of 3 weeks each at Department of Automação de la Federal University of Santa Catalina (Florianópolis, Brasil), con profesor Julio Elias Normey Rico. Period: 07/08/2010-28/08/2010; 18/02/2011-18/03/2011 y 22/07/2013-12/08/2013.
5. Research stay of 12 days at the National Engineering Research Center for Information Technology in Agriculture (NERCITA), Beijing, China. Period: 20/11/2018-31/11/2018.

#### C.6. Awards and others

He has obtained 19 awards, highlighting the **Medalla Agustín de Betancourt y Molina** from the Royal Academy of Engineering in **2016** and the 1st UNACOMA Vision Event Award by the European Society of Agricultural Engineers in **2006**. He is co-author of the books "Modeling and Control of Greenhouse Crop Growth" (Springer 2015), "Control con Herramientas Interactivas" (Pearson, 2012), and "Automatic Control with Interactive Tools" (Springer, 2023).

He is very active in the development of educational resources as support to engineering education and research activities, such as interactive tools, simulators, and virtual labs. Some of the resources developed can be found in: [https://w3.ual.es/personal/joguzman/material\\_docente.shtml](https://w3.ual.es/personal/joguzman/material_docente.shtml)

He is coordinator of the Erasmus program and was also coordinator of the Máster of Industrial Engineering at Universidad de Almería since 2015 to 2021. He has participated in several Master programmes and doctorate activities at Universidad de Almería, Universidad Politécnica de Barcelona, Sevilla, UNED, Universidad Politécnica de Valencia, Universidad Federal de Santa Catarina (Brasil), University of Nantes (Francia) y Universidad de Brescia (Italia). He has also participated in the following networks related with control education: Docenweb (DPI2002-11505-E), Educ@ (DPI2004-20970-E) and E-Automatica (DPI2006-27217-E).

See more at: <https://w3.ual.es/personal/joguzman/curriculum.shtml>