

Part A. PERSONAL INFORMATION

CV date

30/01/2022

First and Family name	Luis Orihuela Espina		
Social Security, Passport, ID number	48911083L	Age	37
Researcher codes	Open Researcher and Contributor ID (ORCID**)	0000-0002-1930-1909	
	SCOPUS Author ID (*)		
	WoS Researcher ID (*)	P-9387-2018	

(*) *Optional*

(**) *Mandatory*

A.1. Current position

Name of University/Institution	Universidad Loyola Andalucía		
Department	Ingeniería		
Address and Country	Avda. de las Universidades s/n, Dos Hermanas, Sevilla, España, CP: 41704		
Phone number	699337271	E-mail	dorihuela@uloyola.es
Current position	Profesor Titular (Profesor Titular de Universidad)	From	Agosto 2020
Key words	Distributed estimation, distributed control, asynchronous systems, networked control systems		

A.2. Education

PhD, Licensed, Graduate	University	Year
Doctorate in Telecommunications (PhD)	Universidad de Sevilla	2013

A.3. General indicators of quality of scientific production (*see instructions*)

Two research periods (Sexenio) achieved (2008-2013 and 2014-2019).

Principal investigator of 3 national projects funded by AEI, of 1 project for research infrastructures funded by Junta de Andalucía, of 1 international project for innovation for cooperation funded by AECID, and of 1 Grupo Operativo funded by Junta de Andalucía.

Total subsidy of the projects whose he is principal investigator: 950k€

He has supervised two PhD thesis (A.R del Nozal and C. Ierardi). He is currently supervising 4 PhD students (S. N-Yo 2023, T. Morel 2024, J.L. Román 2024, B. Sanabria 2024)

He has been cited 842/501 times (Google Scholar/Web of Science). His h-index is 16/11 (Google Scholar/Web of Science). Averages citation per year (2017-2021): 102.4 (Scholar)

He has published more than 70 papers including journals, conferences and book chapters. He has published 36 papers in journals, 19 Q1 and 5 D1.

He has been awarded two Best Paper Award in national conferences.

His PhD thesis was awarded with the Extraordinary Prize from Universidad de Sevilla.

His merits have allowed him to be recognized as Profesor Titular de Universidad (Associate Professor) by ANECA.

Part B. CV SUMMARY (*max. 3500 characters, including spaces*)

His overall activity includes research, teaching and management.

Concerning research, he's participated as researcher in 1 FP7 European project, and many national projects and regional projects. He was Principal Investigator of the Excellence project CyNEDIC funded by AEI/FEDER (38.962€, 2016-20), and of the project LaSSiC for scientific infrastructure funded by Junta de Andalucía (32.204€, 2019-21). He is currently PI of the innovation for cooperation project AGRICULTURE 4.0 funded by AECID (386.100€, 2021-23), of the Grupo Operativo DAMERA funded by Junta de Andalucía (299.766€, 2022-23), of the Knowledge Generation project METRICA funded by AEI-MCei (71.269€, 2021-24), and of the Proof of Concept project funded by AEI-MCei (126.500€, 2021-23). The total subsidy of the projects in which he is PI is more than 950k€, of which 635k€ are directly managed by him.



He is author of more than 70 publications in conferences and journals. In particular, he has published 36 papers in journals, 19 Q1 and 5 D1. The core of his research belongs to the study of distributed systems, in the estimation of internal variables from limited information as well as the control of them. He's made notable contributions to the field of networked control systems, in what refers to the impact of delays, packet dropouts and asynchronous communication in the stability of the system. He's been invited to participate in two Springer books, "Asynchronous Control for Networked Systems" and "Delays and Networked Systems". His h-index is 16, with 842 citations according to Scholar.

His research has been awarded with two Best Paper Award in national conferences and his PhD thesis was awarded the extraordinary prize of doctorate of Universidad de Sevilla.

He has supervised 2 PhD thesis (A.R del Nozal 2019, C. Ierardi 2021). He is currently supervising 4 more (S. N-Yo 2023, T. Morel 2024, J.L. Román 2024, B. Sanabria 2024)

He has been visiting researcher in University of Kent (Predoctoral, 12 weeks), TU Eindhoven (Postdoctoral, 1 week), Cork Institute of Technology (Postdoctoral, 6 weeks and 2 weeks), Rosenheim TU of Applied Sciences (Postdoctoral, 1 week), Universidad de Huelva (Postdoctoral, 8 weeks), and Universidad de Vigo (Predoctoral, 12 and 2 weeks). During those stays, he's taught seminars about model-based control, distributed and asynchronous estimation and control.

He's been recognized two research periods (Sexenio) from 2008 to 2013 and from 2014 to 2019. He has been member of the organizing comitee for the XXXII Jornadas de Automática, in Sevilla 2011.

He coordinates the research group Optimization&Control of Distributed Systems in Universidad Loyola Andalucía, with 14 full-time members, 5 lab technician and 8 PhD students. The research group is currently managing grants (direct subsidy) for more than 1.1M€.

Concerning teaching, the candidate started with laboratory ECTS while he enjoyed an FPU grant in Universidad de Sevilla. Later, he joined Universidad Loyola Andalucía in 2013. The assessment of his teaching activity has been positive for the last 8 years (>7 over 10). He's taught 9 courses in different engineering bachelor and master degrees. He has coordinated three teaching innovation projects (2.600€) funded by Universidad Loyola Andalucía.

Concerning management, he has been Secretario of the Department of Engineering at Universidad Loyola Andalucía from 2016 to 2020. He coordinates a term (two semesters) in the Electromechanical Engineer Degree from 2014, in the Industrial Engineer Degree from 2016, and in the Mechatronics and Robotics Engineer Degree from 2018. He is member of the *Comisión de Garantía de Calidad* of the degrees from 2014. He is member of the *Comisión Académica del Programa de Doctorado Ciencia de los Datos* from 2020.

Part C. RELEVANT MERITS (sorted by typology)

C.1. Publications (see instructions)

1. G. Bejarano; S. N. Yo; **L. Orihuela**. Velocity and disturbance robust nonlinear estimator for autonomous Surface vehicles equipped with position sensors. IEEE Trans. Control Systems Technology, Early Access, 2022.
2. C. Ierardi, **L. Orihuela**, I. Jurado. A distributed set-membership estimator for linear systems with reduced computational requirements. Automatica, 132, 109802, 2021.
3. A. R. del Nozal, P. Millán, **L. Orihuela**, A. Seuret, L. Zaccarian. Distributed estimation based on multi-hop subspace decomposition. Automatica. 99, 213-220, 2019.
4. **L. Orihuela**; P. Millán; S. Roshany-Yamchi; R.A. Garcia. Negotiated distributed estimation with guaranteed performance for bandwidth-limited situations. Automatica. 87, 94-102, 2018.
5. **L. Orihuela**; S. Roshany-Yamchi; R.A. Garcia; P. Millán. Distributed set-membership observers for interconnected multi-rate systems. Automatica. 85, 221-226, 2017.
6. **L. Orihuela**; P. Millán; C. Vivas; F. R. Rubio. Suboptimal distributed control and estimation: application to a four coupled tank system. International Journal of Systems Science. 47(8), 1755-1771, 2016.
7. **L. Orihuela**; A. Barreiro; F. Gómez-Estern; F. R. Rubio. Periodicity of Kalman-based scheduled filters. Automatica. 50(10), pp. 2672 - 2676. 2014.

8. P. Millán; **L. Orihuela**; I. Jurado; F. R. Rubio. Formation control of autonomous underwater vehicles subject to communication delays. IEEE Trans. Control Systems Technology. 22 - 2, pp. 770 - 777. 2014.
9. P. Millán; **L. Orihuela**; C. Vivas; F.R. Rubio; D.V. Dimarogonas; K.H. Johansson. Sensor-network-based robust distributed control and estimation. Control Engineering Practice, 21(9), 1238-1249, 2013.
10. **L. Orihuela**; P. Millán; C. Vivas; F. R. Rubio. Reduced order H2/Hinf distributed observer for sensor networks. International Journal of Control. 86 - 10, pp. 1870 - 1879. 2013.

C.2. Research projects

1. Algoritmos predictivos basados en datos para la mejora del riego agrícola (DAMERA, GOPG-CO-20-0011)
PI: Luis Orihuela. Dates: 2022-2023 **Funding:** Junta de Andalucía. **Subsidy:** 299.766€
2. Market advancement of Smart Distributed monitoring algorithms for agriculture (SMADIS, PDC2021-121312-I00)
PI: Luis Orihuela. Dates: 2021-2023 **Funding:** AEI-MCél. **Subsidy:** 126.500€
3. Hacia la monitorización espacio-temporal en sistemas ciberfísicos cambiantes (METRICA, PID2020-117800GB-I00)
PI: Luis Orihuela. Dates: 2021-2024 **Funding:** AEI-MCél. **Subsidy:** 71.269€
4. Apoyo a la producción familiar campesina ecológica en Paraguay mediante una red de dispositivos inteligentes basada en IoT (AGRICULTURA 4.0, 2020/ACDE/000192)
PI: Luis Orihuela. Dates: 2021-2023 **Funding:** AECID. **Subsidy:** 386.100€
5. Despliegue y Control de una Red Inteligente de Vehículos Autónomos Acuáticos para la Monitorización de Recursos Hídricos Andaluces (PY18-RE-0009)
PI: Isabel Jurado (Universidad Loyola). **Dates:** 2019-2022
Funding: Junta de Andalucía-FEDER. **Subsidy:** 184.100€
6. Nuevos horizontes del Laboratorio de Simulación hardware-in-the-loop para Sistemas Ciberfísicos (LaSSiC, 0056)
PI: Luis Orihuela. Dates: 2019-2021 **Funding:** Junta de Andalucía. **Subsidy:** 32.204€
7. Cooperación y negociación entre agentes para la estimación distribuida en sistemas ciberfísicos (CyNEDIC, TEC2016-80242-P)
PI: Luis Orihuela. Dates: 2016-2020 **Funding:** AEI-FEDER **Subsidy:** 38.962€
8. Estimación y predicción distribuida de la radiación para control de campos solares. (CODISOL, DPI2013-44135-R)
PI: Francisco R. Rubio (Universidad de Sevilla) **Dates:** 2014-2016
Funding: MEdC-FEDER. **Subsidy:** 177.870€
9. Control Realimentado de sistemas integrados en redes inalámbricas (CONRED, DPI2010-19154)
PI: Francisco R. Rubio (Universidad de Sevilla) **Dates:** 2010-2013
Funding: MEdC-FEDER. **Subsidy:** 195.000€
10. Feedback design for wireless networked systems (FeedNetBack, 223866)
PI: Carlos Canudas de Wit (INRIA). **Dates:** 2008-2012
Funding body: European Commission. **Amount of subsidy** 2.900.000€

C.3. Contracts, technological or transfer merits

1. IFAPA – Centro Alameda del Obispo
Project: INNOREGA: rlego sosteNible basado en moNItORización distribuida e intEliGencia Artificial. **Reference:** AVA.AVA2019.024 **Dates:** 2019-2021. **Amount of contract:** 27.000€.

C.4 Scientific management

- **Coordinator** of the research group *Optimization&Control of Distibuted Systems* [Link](#)
Center: Universidad Loyola Andalucía. **Full-time members:** 14.

C.5 Research stays

1. Universidad de Huelva (Spain). **Postdoctoral researcher** in the Department of Agroforestry Sciences. *Dec. 2019 - Jan. 2020*
2. Rosenheim Technical University of Applied Sciences (Germany). **Postdoctoral researcher** in the School of Engineering. *Jun. 2019*
3. Cork Institute of Technology (Ireland). **Postdoctoral researcher** in the NIMBUS Centre for Embedded Systems Research. *Oct. 2015 – Nov. 2015 and Nov 2016*
4. TU Eindhoven (Netherlands). **Postdoctoral researcher** in the Department of Mechanical Engineering. *Jun. 2015*
5. Universidad de Vigo (Spain). **Predoctoral researcher** in the Department of Systems and Automation Engineering. *Sep. 2011 - Dec. 2011 and Sep. 2012*
6. University of Kent (United Kingdom). **Predoctoral researcher** in the School of Engineering and Digital Arts. *Sep. 2010 - Dec. 2010*

C.6 Direction of works

1. PhD thesis

Distributed observers for LTI systems: An approach based on subspace decomposition

PhD student: A. R. del Nozal. **Advisors:** P. Millán and L. Orihuela. **Date:** 03/2019

Link: <http://hdl.handle.net/20.500.12412/2168>

Distributed estimation techniques for cyber-physical systems

PhD student: C. Ierardi. **Advisors:** L. Orihuela and I. Jurado. **Date:** 09/2021

Link: <http://hdl.handle.net/20.500.12412/2375>

2. Master and bachelor's degree

- a. 2017: Luis Miguel Bellido Ruz
- b. 2018: José Aranda Álvarez
- c. 2019: María Andrade Cozar; José Luis de Casas.
- d. 2020: Álvaro Perea; Juan Manuel Márquez.
- e. 2021: Germán Vega, Jean Baptiste Sams

C.7 Scientific awards

1. Best Paper Award in Control Engineering in XXXIII Jornadas de Automática

Title of contribution: ¿La gestión óptima del canal de comunicaciones para la estimación implica un patrón de muestreo periódico? **Location:** Vigo, España. **Date:** 09/2012

2. Best Paper Award in Control Engineering in XXX Jornadas de Automática

Title of contribution: Control óptimo de sistemas de control a través de redes mediante funcionales de Lyapunov-Krasovskii **Location:** Valladolid, España. **Date:** 09/2009

3. Extraordinary Prize of Doctorate from University of Sevilla

Title of thesis: Model-based estimation and control for systems over communication networks. **Advisors:** F.R. Rubio and F. Gómez-Estern. **Date:** 2013

C.8 Assessment tasks

He serves as reviewer in the next journals: Automatica, IEEE Transactions of Automatic Control, IEEE Transactions on Control of Network Systems, International Journal of Control, International Journal of Systems Science, Optimal Control Applications and Methods, International Journal of Robust and Nonlinear Control.

He has served as project reviewer for the next institutions:

- Spanish Ministry of Economy, Industry and Competitiveness
- University of Alcalá