Part A. PERSONAL INFORMATION

First name	José Luis		
Family name	Calvo Rolle		
Gender (*)	Man	Birth date	
Social Security, Passport, ID number			
e-mail	jlcalvo@udc.es	URL Web: https://pdi.udc.es/es/File/Pdi/VU59E	
Open Research and Contributor ID (ORCID)(*)	0000-0002-2333-8405		

(*) Mandatory

A.1. Current position

Position	Catedrático de Universidad (CU) / Full Professor		
Initial date	15/09/2022		
Institution	Universidade da Coruña		
Departament/Center	Industrial Engineering/EPF (Faculty of Engineering)		
Country	SPAIN	Teleph. number	(+34) 696809033
Key words	Modeling, Fault detection, Intelligent systems, Control, Virtual Instr.		

A.2. Previous positions (research activity interruptions, art. 45.2.c))

Period	Position/Institution/Country/Interruption cause
04/09/2018 - 14/09/2022	Profesor Titular de Universidad(TU) / Tenured Professor
21/12/2009 - 03/09/2018	Profesor Contratado Doctor (PCD) – Associated Professor with PhD/ UDC / SPAIN.
01/10/2005 - 21/12/2009	Profesor Colaborador (COL) – Associated Professor / UDC / SPAIN. (From 2007 with PhD)
03/02/2000 - 30/09/2005	Profesor Asociado – Adjunct Professor / UDC / SPAIN.

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Phd Engineering Intelligent Systems	University of León	2007
Ms Industrial Engineering	University of León	2004
Bs Industrial Engineering	University of A Coruña	1998

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

He is currently Full Professor, in System Engineering and Automatic Control area at the Dep. of Industrial Engineering of the Univ. of A Coruña (UDC). He belongs to the Centre for Information and Communications Technology Research, UDC. Along his academic career, he has published many papers in national and int. scientific journals and several book chapters. As far as research activity is concerned, it is worth highlighting his publication activity; over the last 21 years, 153 research papers in journals indexed with relative quality index, 107 of them in the JCR, and 3 in the SJR. Around 70% of them have been published in journals located in the first two quartiles of their categories. In addition, six more papers have been accepted for publication in journals indexed in the JCR (in the 1st and 2nd quartile). Also, he published 46 more papers in other kind of journals, all of them endorsed by institutions of recognized national or int. prestige and indexed in different databases of an int. nature. He published 16 complete books and 10 chapters with important int. publishers. The applicant is also the editor of two books that are included in the ISI database. His participation in conferences has been very extensive, which is demonstrated by more than 179 contributions presented, of which around 65%-70% are int. The conferences in which he has participated fall within the area of Systems Eng. and Automation and Computer Science applied to industry. Among their organizers can be found important associations and institutions. In addition, he has attended many conferences, demonstrating its involvement with research. Also, he has received two awards for the best papers at two int. conferences. His main contributions have been focused on the application of artificial intelligent techniques in different fields (industry, engineering, medicine,

energy, etc). He has worked in and led several national, int. and European projects, focused on intelligent control. He collaborates with national and int. researchers from different countries; he has done several int. research internships, specifically it carries out several national (Univ. of León) and many int. ones (Univ. do Minho - PT / Czech Tech. U. in Prague - CZ / Tech. U. Ostrava - CZ / FH Joanneum – U. of App. Sciences - AT / Pol. Inst. of Bragança - PT / U. da Beira Interior - PT / U. Le Havre - FR / Budapest U. of Tech. and Eco. - HU).
The last decade he has worked especially on industrial, medical and energy applications. He has also developed soft computing applications for making decision systems and has applied machine learning techniques for pattern recognition in different fields. He is now focused on modeling of complex systems, digital twin development, and anomaly and fault detection; the most of the cases with the aim of optimizing systems.
He has participated in many public funding projects and various contracts with companies (projects and research contracts (28 competitive (5 IP), 23 noncompetitive (19 IP), three institutions agreements). He has got a knowledge transfer segment as a result. He has carried out dissemination activities on TV, radio and in other spaces and outreach forums. He has been invited to different forums to give talks and lectures. It is also worth highlighting the collaboration in two activities of the artistic and professional creations type.
He currently serves as member of the editorial board of several indexed journals (three). He serves as Co-PC and PC of numerous int. conferences, and the chair of a national conference. He has got different awards at conferences. He has participated in a large number of conferences as a member of the organizing com. (16), scientific com. (84) and advisory com. (8). Also, he has received two awards for the best papers at two int. conferences. He has been invited as plenary speaker to some int. congresses. He has also given several courses and seminars at different universities, some of them abroad. He has supervised 12 PhDs and more than 100 Master and Bachelor projects. One of his PhD students has got the Best Intelligent Control Doctoral Thesis award, and two of them have been the extraordinary doctorate award. He has chaired one institutional Doctoral Program, and he is coordinator of two master degree programs. He has a long and extensive career in teaching, in various degrees and masters. In twenty years of teaching and research career, he achieved recognition for his teaching work, research work, as well as curricular and research excellence awarded by the ACSUG (Quality Agency of the Galician U. System).
He is a member of national and int. committees (IEEE Systems Man and Cybernetics, Control Spanish Association, CEA, where he vocal member of the directive). He has been part of the local organizing committee of national and int. conferences, organized special sessions, and has been guest ed. of several special issues in indexed scientific journals.
As result of his research activity, he achieves 3 Research six-year terms (2 of research (2013, 2019) and 1 of transference in 2011).

Part C. RELEVANT MERITS

C.1. Publications

1 Jove, E., Casteleiro-Roca, J. L., Quintián, H., Méndez-Pérez, J. A., & Calvo-Rolle, J. L. (2021). A new method for anomaly detection based on non-convex boundaries with random two-dimensional projections. Information Fusion, 65, 50-57.

2 Jove, E., Casado-Vara, R., Casteleiro-Roca, J. L., Pérez, J. A. M., Vale, Z., & Calvo-Rolle, J. L. (2021). A hybrid intelligent classifier for anomaly detection. Neurocomputing.

3 Jove, E., Casteleiro-Roca, J. L., Quintián, H., Zayas-Gato, F., Vercelli, G., & Calvo-Rolle, J. L. (2021). A One-class Classifier Based on a Hybrid Topology to Detect Faults in Power Cells. Logic Journal of the IGPL.

4 Casteleiro-Roca, J. L., Jove, E., Gonzalez-Cava, J. M., Pérez, J. A. M., Calvo-Rolle, J. L., & Alvarez, F. B. (2020). Hybrid model for the ANI index prediction using remifentanil drug and EMG signal. Neural Computing and Applications, 32(5), 1249-1258.

5 Luis Casteleiro-Roca, J., Quintián, H., Luis Calvo-Rolle, J., Méndez-Pérez, J. A., Javier Perez-Castelo, F., & Corchado, E. (2020). Lithium iron phosphate power cell fault detection system based on hybrid intelligent system. Logic Journal of the IGPL, 28(1), 71-82.

6 Gonzalez-Cava, J. M., Arnay, R., León, A., Martín, M., Reboso, J. A., Calvo-Rolle, J. L., & Mendez-Perez, J. A. (2020). Machine learning based method for the evaluation of the

Analgesia Nociception Index in the assessment of general anesthesia. Computers in Biology and Medicine, 118, 103645.

7 Montero-Sousa, J. A., Aláiz-Moretón, H., Quintián, H., González-Ayuso, T., Novais, P., & Calvo-Rolle, J. L. (2020). Hydrogen consumption prediction of a fuel cell based system with a hybrid intelligent approach. Energy, 117986.

8 Casteleiro-Roca, J. L., Gomes, M., Méndez-Pérez, J. A., Alaiz-Moretón, H., del Carmen Meizoso-López, M., Rodríguez-Gómez, B. A., & Calvo-Rolle, J. L. (2020). Electromyogram prediction during anesthesia by using a hybrid intelligent model. Journal of Ambient Intelligence and Humanized Computing, 11(11), 4467-4476.

9 Bruno Baruque; et al. 2019. Geothermal heat exchanger energy prediction based on time series and monitoring sensors optimization. Energy. Elsevier Ltd. 171-15 March 2019, pp.49-60. ISSN 0360-5442.

10 Jove, E., Casteleiro-Roca, J. L., Quintián, H., Méndez-Pérez, J. A., & Calvo-Rolle, J. L. (2019). Virtual Sensor for Fault Detection, Isolation and Data Recovery for Bicomponent Mixing Machine Monitoring. Informatica, 30(4), 671-687.

C.2. Congress

1. Michelena, Á., Zayas-Gato, F., Jove, E., Casteleiro-Roca, J. L., Quintián, H., Fontenla-Romero, Ó., & Calvo-Rolle, J. L. A Novel Proposal for Estimating PID Parameters Based on Centroids. CONTROLO 2022 (pp. 532-541). Springer.
2. Simić, D., Calvo-Rolle, J. L., Villar, J. R., Ilin, V., Simić, S. D., & Simić, S. Fine-Tuning of Optimisation Parameters in a Firefly Algorithm in Inventory Management. SOCO 2022 (pp. 645-654). Springer.
3. Fernandez-Serantes, L. A., Casteleiro-Roca, J. L., Novais, P., Simić, D., & Calvo-Rolle, J. L. Hybrid Intelligent Model for Classification of the Boost Converter Switching Operation. In Hybrid Artificial Intelligent Systems. HAIS 2022, (pp. 481-493). Springer.
4. Jove, E., Lozano, A., Manso, Á. P., Barreras, F., Costa-Castelló, R., & Calvo-Rolle, J. L. A Virtual Sensor for a Cell Voltage Prediction of a Proton-Exchange Membranes Based on Intelligent Techniques. SSCt 2021 (pp. 240-248). Springer.
5. Porras, S., Jove, E., Baruque, B., & Calvo-Rolle, J. L. Analysis of the Seasonality in a Geothermal System Using Projectionist and Clustering Methods. HAIS 2021 (pp. 500-510). Springer.
6. Fernandez-Serantes, L. A., Casteleiro-Roca, J. L., Berger, H., Simić, D., & Calvo-Rolle, J. L. Dimensional Reduction on an Intelligent Model for Efficiency Improvement of Switching Modes Detection. SOCO 2021 (pp. 14-23). Springer.
7. Jove, E., Casteleiro-Roca, J. L., Quintián, H., Zayas-Gato, F., & Calvo-Rolle, J. L. A Fault Detection System for Power Cells During Capacity Confirmation Test Through a Global One-Class Classifier. IDEAL 2020 (pp. 477-484). Springer.
8. Baruque, B., Jove, E., Porras, S., & Calvo-Rolle, J. L. Small-wind turbine power generation prediction from atmospheric variables based on intelligent techniques. SOCO 2020 (pp. 33-43). Springer.

C.3. Research projects

1 SMART PRE2: Artificial intelligence applied to the prediction and prevention of professional illnesses. (Ref. 2021/C005/00152589). Coordinator: Dr. Jose Luis Calvo Rolle/Dr. Óscar Fontenla Romero. Funding entity: Ministerio de Asuntos Económicos y Transformación Digital. Duration: 01/09/2022 - 30/04/2024 Budget: 120.300,00 €

2 Ship without cables - Improvement and Optimization of the Electrical System (UMI UDC-Navantia «The shipyard of the future») – (Ref. IN853A2015/01) Coordinator: Dr. Jose Luis Calvo Rolle Participant entities: Navantia and University of A Coruña Funding entity: Xunta de Galicia / GAIN Duration: 01/05/2015 - 31/10/2018 Budget: 209.970,04 €

3 Environmental Radiological Surveillance Program, Network of Sampling Stations. Dense Network. – (Ref. CSN-INV00220/2020) Coordinator: Dr. Jose Luis Calvo RolleParticipant entities: University of A Coruña Funding entity: Nuclear Assurance Council – Spanish Govern Duration: 01/01/2020 - 31/12/2023 Budget: 218.405,28 €

4 Environmental Radiological Surveillance Program, Network of Sampling Stations. Dense Network. – (Ref. CSN- INV08116/2016) Coordinator: Dr. Jose Luis Calvo Rolle and Dr.

Jesús Manuel Castro Romero Participant entities: University of A Coruña Funding entity: Nuclear Assurance Council – Spanish Govern Duration: 01/01/2016 - 31/12/2019 Budget: 189.096,72 €

5 Environmental Radiological Surveillance Program, Network of Sampling Stations. Dense Network. – (Ref. CSN- INV01012/2012) Coordinator: Dr. Jose Luis Calvo Rolle and Dr. Jesús Manuel Castro Romero Participant entities: University of A Coruña Funding entity: Nuclear Assurance Council – Spanish Govern Duration: 01/01/2012 - 31/12/2015 Budget: 189.096,68 €

6 Energy consumption and technical economic analysis of the renewable energies incorporation in distributed generation systems in the tourism sector. – (Ref. 2016TUR17) Coordinator: Dr. Juan Albino Méndez Pérez Participant entities: University of La Laguna, Funding entity: CajaCanarias Found. Duration: 01/03/2017-28/02/2019 Budget: 32.000 €

7 Modeling intraoperative analgesia for the design of automatic drug infusion strategies. Canarian Foundation for Health Research (FUNCANIS). Coordinator: José Antonio Reboso Morales. (Canary Islands University Hospital Complex). 01/01/2019-31/12/2019. 19.297,6€.

8 Smart control thematic network. Ministry of Economy and Competitiveness. Coordinator: José Manuel Andújar Márquez. (University of Huelva). 01/07/2015-01/07/2017. 25.000 €.

9 Design and prototyping of a multivariable universal transmitter for industrial ethernet distributed industrial environments. Xunta de Galicia. Coordinator: Francisco Javier Pérez Castelo. (University of A Coruña). 01/01/2009-31/12/2012. 40.000 €.

10 Software tool to aid the design of controllers based on knowledge models. Ministry of Education and Science. Coordinator: Ángel Alonso Álvarez. (University of León). 01/10/2007-30/09/2010. 32.670 €.

C.4. Contracts, technological or transfer merits

1 Virtual sensors development for generating early alerts on: (i) contamination and (ii) appearance of anomalías in WWTP (Wastewater Treatment Plant). Coordinator: José Luis Calvo Rolle. 21/12/2022 - 21/03/2024. 54.241,36 €. Ref. INV17722 (Contract)

2 Study by means of machine learning and multi-criteria analysis techniques of a new management system for shippable spare parts on military vessels. Coordinator: José Luis Calvo Rolle. 01/10/2021 - 01/07/2022. 16.940,00 €. Ref. F21/38 *(Contract)*

3 Radioactivity analysis open agreement. Coordinator: José Luis Calvo Rolle. (Some Companies). 23/08/2019 -31/12/2020. 6.635,92€. Ref. INV09019 *(Contract)*

4 Machine learning for the optimization of automatic drilling machines. Coordinator: José Luis Calvo Rolle. (Foundation general university of Burgos). 10/06/2019-10/09/2019. 8.470€. Ref. F19/11 *(Contract)*

5 Advice on radioactive contamination analysis for Navantia, based on orders. Coordinator: José Luis Calvo Rolle. (Navantia Fene-Ferrol). 01/03/2017-28/02/2021. 15.022,68€. Ref. INV03817 *(Contract)*

6 Radioactive pollution analysis for the Navantia company. Coordinator: José Luis Calvo Rolle. (Navantia). 20/10/2011 - 31/12/2015. 21.092,09€. Ref. INV05911 *(Contract)*

7 Cooperation in the Development of Environmental Radiological Surveillance Programs for Nuclear Facilities (PVRAIN). Coordinator: José Luis Calvo Rolle. (University of Castilla-La Mancha). 01/06/2006 - 31/12/2015. 24.110,18€. Ref. INV05706 *(Contract)*

8 José Luis Calvo Rolle; Ramón Ferreiro García. P201600835. (Patent with prior examination) Plant and operating procedure for the conversion of wave energy to electrical energy via pumps and reciprocating hydraulic motors Spain. 09/04/2018. Owner: University of A Coruña. *(Patent)*

9 Andrés Piñón Pazos; Jose Luis Casteleiro Roca; Maria del Carmen Meizoso Lopez; Jose Luis Calvo Rolle. C-189-2014. QCM_CH - Quartz Crystal Microbalance CHaracterization Spain. 2014. Owner: University of A Coruña. *(Software register)*

10 Jose Luis Calvo Rolle. PIDRLF Spain. 2010. Owner: University of A Coruña. *(Soft. register)*