

CURRICULUM VITAE ABREVIADO (CVA)

IMPORTANT – The Curriculum Vitae cannot exceed 4 pages. Instructions to fill this document are available in the website.

Part A. PERSONAL INFORMATION

First name	Anibal		
Family name	Bregón Bregón		
Gender (*)	Male	Birth date (dd/mm/yyyy)	
Social Security, Passport, ID number			
e-mail		URL Web	
Open Researcher and Contributor ID (ORCID) (*)	0000-0001-6752-1159		

(*) Mandatory

A.1. Current position

Position	Associate Professor (Profesor Titular de Universidad)		
Initial date	04/12/2023		
Institution	Universidad de Valladolid		
Department/Center	Dpto. de Informática	Escuela de Ing. Informática de Segovia	
Country	Spain	Teleph. number	
Key words	Artificial Intelligence, Knowledge-based Systems, Model-based Reasoning, Model-based Diagnosis, Supervision and Diagnosis, Prognostics, Deep Learning, Big Data		

A.2. Previous positions (research activity interruptions, indicate total months)

Period	Position/Institution/Country/Interruption cause
07/06/2006 – 06/06/2010	Becario Predoctoral/Universidad de Valladolid/Spain
14/09/2010 – 20/01/2011	Profesor Asociado/Universidad de Valladolid/Spain
24/02/2011 – 10/02/2013	Profesor Ayudante/Universidad de Valladolid/Spain
11/02/2013 – 10/02/2018	Profesor Ayudante Doctor/Universidad de Valladolid/Spain
11/02/2018 – 03/12/2023	Profesor Contratado Doctor/Universidad de Valladolid/Spain

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Ing. Técnico en Informática de Sistemas	Universidad de Valladolid/Spain	2003
Ingeniero en Informática	Universidad de Valladolid/Spain	2005
Doctor en Informática (PhD)	Universidad de Valladolid/Spain	2010

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

I received my B.Sc. degree in Computer Science from the University of Valladolid, Valladolid, Spain, in 2005. That year, I joined the Intelligent Systems Group of the Department of Computer Science at the University of Valladolid, and in 2006, I was awarded a four-year pre-doctoral grant from the regional government. I got my Ph.D. in May 2010 (supervised by Dr. Belarmino Pulido and Dr. Carlos J. Alonso), focusing on the integration of diagnosis techniques from the Artificial Intelligence and Automatic Control communities within a consistency-based diagnosis framework. I have been distinguished with the Best Ph.D. Thesis Award in Computer Science in the region of Castilla y León (2011) by the Professional Association of Computer Scientists.

In February 2011, I joined the Department of Computer Science as a Teaching Assistant until February 2013, when I became an Assistant Professor, and later became an Associate Professor. During this time, I have gotten 2 “six-year research” positive evaluations by the Spanish national research commission (sexenios), the last one in 2020. Since I got my PhD, I have continued research on fault diagnosis and have extended my main research to

prognosis, health-management, distributed diagnosis, and prognosis, and lately I have carried out basic research and technology transfer in Deep Learning, Industry 4.0, and Big Data.

I have been a guest researcher with the Intelligent Systems Division at NASA Ames Research Center, Moffett Field, CA, USA (2 stays with a total time of 3 months – both stays have been funded through competitive grants), with the Institute for Software Integrated Systems, Vanderbilt University, Nashville, TN, USA (3 times with a total time of 10 months), and with the Department of Electrical Engineering, Linköping University, Linköping, Sweden (1 time with a total time of 1.5 months). I still maintain close relations with researchers from all these centers, as well as from many other research centers and universities, both national and international.

I have conducted both basic and applied research in fault diagnosis and prognosis for aerospace and industrial systems, and have co-authored 16 JCR-indexed journal papers (11 in Q1 and 5 in Q2) and over 70 peer-reviewed papers at international and national conferences, as well as book chapters, with several conference papers indexed in GGS and Core conference ratings. I served as a co-advisor for 2 PhD theses, and I am currently co-advising 6 PhD candidates, mainly focused on Industry 4.0 and advanced computer vision with deep learning. Additionally, I co-advised 13 MSc students in various Master's programs and 50 Bachelor's students in Computer Science at the University of Valladolid.

I currently lead as Principal Investigator a nationally funded project (Proyectos de Generación de Conocimiento) on advanced machine learning for predictive maintenance in Industry 4.0 (funded with a budget of 52.877€) and have participated as researcher on several funded projects on fault diagnosis and prognosis topics, including 7 national projects, 2 national thematic networks, and 1 regional project. I currently lead one technology transfer contract as Principal Investigator (PI) to develop computer vision solutions with deep learning techniques, for a total of 30.000€. Since 2011, I have led 8 technology transfer contracts as Principal Investigator, for a total of 124.970 €, and have participated in another 13 technology transfer contracts as investigator, for a total of 508.195 €.

I am a Fellow Member of the Prognostics and Health Management (PHM) Society, where, among other professional activities, I have held various chair positions at the PHM and PHM Europe conferences and served as the Local Chair of the 2016 European Conference of the PHM Society. I have also been awarded the 2016 Annual Achievement Award for my contributions to the PHM Society. I have also served as a member of the Program Committees of several international conferences, including the International Workshop on Principles of Diagnosis and the Annual Conference of the PHM Society, among others. I have also served as a reviewer for other conferences, such as the IFAC Safeprocess and the European Control Conference, as well as for relevant journals, including IEEE Trans. on Systems, Man and Cybernetics, IEEE Trans. on Instrumentation & Measurement, and IEEE Trans. on Industrial Electronics, among others.

Finally, I have strong research relations with some important research centers, such as NASA Ames Research Center, Palo Alto Research Center (PARC), Vanderbilt University, Linköping University, Universitat Politècnica de Catalunya, and industrial and aerospace companies, such as Boeing Research & Technology Europe, Horse, Michelin, Scania, Renault, and Schlumberger, among others.

Part C. RELEVANT MERITS (*sorted by typology*)

C.1. Publications (*see instructions*)

- **[Q1]** Á. García, **A. Bregon**, M.A. Martínez. "Digital Twin Learning Ecosystem: A cyber–physical framework to integrate human-machine knowledge in traditional manufacturing". Internet of Things, 25, 101094 (2024). ISSN: 2543-1536. DOI: 10.1016/j.cie.2022.108463. **JCR impact value 2023: 6. Q1.**
- **[Q2]** J. Silvestre, M.A. Martínez, **A. Bregon**, P.C. Álvarez-Esteban. "A deep learning-based approach for predicting in-flight estimated time of arrival". *The Journal of Supercomputing*. Vol. 80. Pg(s). 17212–17246 (2024). DOI: 10.1007/s11227-024-06060-6. **JCR impact value 2023: 2.5. Q2.**

- **[Q1]** D. García-Álvarez, **A. Bregon**, B. Pulido, C.J. Alonso-González. "Integrating PCA and structural model decomposition to improve fault monitoring and diagnosis with varying operation points". *Engineering Applications of Artificial Intelligence*. Vol. 122. Pg(s). 106145 (2023). DOI: 10.1016/j.engappai.2023.106145. **JCR impact value 2023: 7.5. Q1.**
- **[Q1]** Á. García, **A. Bregon**, M.A. Martínez. "Towards a connected Digital Twin Learning Ecosystem in manufacturing: Enablers and challenges". *Computers & Industrial Engineering*. Vol. 171. Pg(s). 108463 (2022). ISSN: 0360-8352. DOI: 10.1016/j.cie.2022.108463. **JCR impact value 2022: 7.9. Q1.**
- **[Q1]** Á. García, **A. Bregon**, M.A. Martínez. "A non-intrusive Industry 4.0 retrofitting approach for collaborative maintenance in traditional manufacturing". *Computers & Industrial Engineering*. Vol. 164. Pg(s). 107896 (2022). ISSN: 0360-8352. DOI: 10.1016/j.cie.2021.107896. **JCR impact value 2022: 7.9. Q1.**
- **[Q1]** C. J. Alonso-González, B. Pulido, M. Cartón, **A. Bregon**. "A Big Data Architecture for Fault Prognostics of Electronic Devices: Application to Power MOSFETs". *IEEE Access*. Vol. 7. Pg(s). 102160 – 102173 (2019). ISSN: 2169-3536. DOI: 10.1109/ACCESS.2019.2929111. **JCR impact value 2019: 3,745. Q1.**
- **[Q1]** B. Pulido, J. M. Zamarreño, A. Merino, **A. Bregon**. "State space neural networks and model-decomposition methods for fault diagnosis of complex industrial systems". *Engineering Applications of Artificial Intelligence*. Vol. 79. Pg(s). 67-86 (2019). ISSN: 0952-1976. DOI: 10.1016/j.engappai.2018.12.007. **JCR impact value 2019: 4,201. Q1.**
- **[Q1]** M. J. Daigle, **A. Bregon**, X. Koutsoukos, G. Biswas, B. Pulido. "A Qualitative Event-based Approach to Multiple Fault Diagnosis in Continuous Systems using Structural Model Decomposition". *Engineering Applications of Artificial Intelligence*. Vol. 53. Pg(s). 190-206 (2016). DOI: 10.1016/j.engappai.2016.04.002. **JCR impact value 2016: 2,894. Q1.**
- **[Q1]** **A. Bregón**, M. Daigle, I. Roychoudury, G. Biswas, X. Kotsoukos, B. Pulido. "An Event-based Distributed Diagnosis Framework using Structural Model Decomposition". *Artificial Intelligence*. Vol. 210. Pg(s). 1-35 (2014). ISSN: 0004-3702. DOI: <http://dx.doi.org/10.1016/j.artint.2014.01.003>. **JCR impact value 2014: 3,371. Q1.**
- **[Q1]** M. Daigle, **A. Bregon**, I. Roychoudhury. "Distributed Prognostics based on Structural Model Decomposition". *IEEE Transactions on Reliability*. Vol. 63. No. 2. Pg(s). 495 – 510 (2014). DOI: 10.1109/TR.2014.2313791. **JCR impact value 2014: 1,934. Q1.**

C.2. Congress

- P. Mielgo, **A. Bregon**, C. J. Alonso-Gonzalez, M. A. Martinez-Prieto & B. Pulido. (2025, October). A Contrastive Learning Approach for Anomaly Detection in Multi-View Scenarios. In *Annual Conference of the PHM Society* (Vol. 17, No. 1).
- P. Mielgo, **A. Bregon**, C.J. Alonso-González, D. López, M.A. Martínez-Prieto & B. Pulido. (2024, November). A Deep Learning Solution for Quality Control in a Die Casting Process. In *Annual Conference of the PHM Society* (Vol. 16, No. 1).
- C.J. Alonso-González, B. Pulido, M. Cartón, **A. Bregon**. "Towards a Scalable Architecture for Fault Prognostics of Electronic Components". *Asia Pacific Conference of the Prognostics and Health Management 2019*. Oral presentation. Beijing, China. July, 2019

C.3. Research projects

Participation in research projects as Principal Investigator (PI)

- "Aprendizaje avanzado para la mejora de la productividad en factorías inteligentes (DATASmart)" (PID2021-126659OB-I00), granted by the Ministry of Science and Innovation, Spain, (2022-2025). Main researchers: Carlos J. Alonso González and Anibal Bregon Bregon (U. de Valladolid). Budget: 52.877 €.

Participation in research projects as member of the researcher team (most relevant)

- "Gemelo Digital Industrial en Línea con Detección de Anomalías, Optimización de Rendimiento, Calidad y Eficiencia Energética y Análisis Prescriptivo" (CPP2021-008639), granted by the Ministry of Science and Innovation, Spain. Main researcher: Fernando J. Tadeo Rico (U. de Valladolid). Budget: 271.894,74 €.

- “IDEAPHYS, Sistema inteligente para la diagnosis y prognosis distribuidas de sistemas híbridos (Intelligent Distributed Diagnosis And Prognostics For Hybrid Systems)” (DPI2013-45414-R), granted by the Ministry of Economy and Competitiveness, Spain – MINECO, (2014-2017). Main researchers: Carlos J. Alonso González and J. Belarmino Pulido Junquera (U. de Valladolid). Budget: 60.500 €.
- “BANDHI: Redes Bayesianas para la diagnosis de sistemas híbridos” (MCI TIN2009-11326), granted by the Ministerio de Ciencia e Innovación (2009-2013). Main researcher: Carlos J. Alonso González (U. de Valladolid). Budget: 78.650,01 €
- “HYFA: Nuevas metodologías de Diagnóstico, Tolerancia a Fallos y Mantenimiento Predictivo mediante Técnicas y Sistemas Híbridos” (MCI DPI2008-01996), granted by the Ministerio de Ciencia e Innovación (2009-2011). Main researcher: Joseba Quevedo Casín (UPC). Budget: 346.060 €
- “Líderes en energías renovables oceánicas (OCEAN LIDER)”. Granted by the MICINN. Programa CENIT-E del Plan Nacional de Investigación Científica, Desarrollo e Innovación Tecnológica (2009-2013). Responsable: Iberdrola Ingeniería y Construcción, S.A. Empresa Vinculada: GMV, Valladolid. Main researchers: Diego Llanos Ferraris and Arturo González Escribano (U. de Valladolid). Budget: 500.000 €.

C.4. Contracts, technological or transfer merits

Contracts as coordinator/main researcher (funded Art. 60) (most relevant)

- “Desarrollo de soluciones Deep Learning para la ayuda al reciclaje” (09/2025–12/2027). RDNest, S.L. Budget: 30.000 €.
- “Desarrollo de una arquitectura Deep Learning para la clasificación de contenedores y contornos de envases” (04/2023–12/2024). RDNest, S.L. Budget: 32.000 €.
- “FROG-DL: creación de modelos Deep Learning para la mejora de la eficiencia en explotaciones ganaderas – Fase 2” (12/2022-07/2023). Virtual Reality Solutions SL. Budget: 13.000 €.
- “FROG-DL: creación de modelos Deep Learning para la mejora de la eficiencia en explotaciones ganaderas – Fase 1” (11/2021-04/2022). Virtual Reality Solutions SL. Budget: 25.000 €.
- “Sistema de ayuda al reciclaje mediante técnicas de Deep Learning” (11/2021–01/2022). RDNest, S.L. Budget: 1.760 €.
- “Recoil: sistema de clasificación automática de fotografías de envases utilizando Deep Learning” (07/2019–10/2019). RDNest, S.L. Budget: 5.000 €.

More relevant Technology Transfer Contracts as researcher (funded Art. 60) :

- “Técnicas Deep Learning para el desarrollo y despliegue de soluciones de control de calidad en fabricación” (11/2021-10/2022). Research contract with WIP Proyectos Industriales, SL. Budget: 18.000 €.
- “Sistema de Deep Learning para la ofuscación de datos personales sujetos a RGPD” (03/2020-06/2020). Research contract with Taiger Spain S.L., budget: 20.000 €.
- AIRPORTS: Construcción de un prototipo de plataforma “bigdata” para el análisis de la eficiencia operacional de vuelos basada en trayectorias. Research contract with Boeing Research & Technology Europe (09/2015- 12/2018). Budget: 180.000 €.
- “Agente de Subastas Cadenas II (ASUCA II)”, research contract with Agropecuarias Montevega, S.L. (June 15, 2015 until April 15, 2016). Budget: 66.200 €.