MINISTERIO DE CIENCIA E INNOVACIÓN

Cofinanciado por la Unión Europea

AGENCIA ESTATAL DE INVESTIGACIÓN

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	M. DOLORES		
Family name	BLANCO ROJAS		
Gender (*)	Women	Birth date (dd/mm/yyyy)	
Social Security, Passport, ID number			
e-mail	dblanco@ing.uc3m.es	URL Web	
Open Researcher and Contributor ID (ORCID) (*)		0000-0001-6300-5165	

(*) Mandatory

A.1. Current position

Position	Associate Professor		
Initial date	09/12/2009		
Institution	UNIVERSIDAD CARLOS III DE MADRID		
Department/Center	System Engineering and Automation Department		EPS
Country	SPAIN	Teleph. number	
Key words	Robotics, exosqueletons, SMA actuators		

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

Period	Position/Institution/Country/Interruption cause
2006-2009	Profesora Contratada Doctora – Carlos III Universyti of Madrid, Spain
2001-2006	Teaching Assistant – Carlos III Universyti of Madrid, Spain
1999 - 2001	Predoctoral contract – Carlos III Universyti of Madrid, Spain
1996 -1999	Felowship student (FPI) – Carlos III Universyti of Madrid, Spain

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Bachelor of Physical Sciences	Universidad Complutense de Madrid	1992
PhD. Mechatronics engineering	Universidad Carlos III de Madrid	2002

(Include all the necessary rows)

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

PhD. Dolores Blanco received the B.S. degree in Physics from the University Complutense of Madrid, Spain in 1992 and the Ph.D. degree in Mechatronics from University Carlos III of Madrid (UC3M) in 2002. From 1996 to 1999, she was a fellowship student at the Department of Systems Engineering and Automation of UC3M. She is associated professor since 2009 and Member of Robotics Lab Group at UC3M. Head of Systems Engineering and Automation Department during the years 2011-2015 and currently since 2021. She has been an elected member of the School Board of the UC3M School of Engineering since 2008. Member of the Senate of the Carlos University III of Madrid between 2015-2018 and currently.

PhD Blanco has supervised 6 doctoral theses and 3 more in course. Among the scientific publications that have resulted from his research career, 7 book chapters should be cited,

more than 30 articles in international journals of recognized prestige (indexed in JCR of the «ScienceCitationIndex») and around 50 contributions to international conferences. He has recognized 3 research periods.

She has maintained a constant research activity since he joined UC3M in 1996, participating in more than 15 national and international research projects with public funding and in collaboration with private companies. In recent years, Dr. Dolores Blanco has been PI of the Discover2Walk-UC3M projects (in collaboration with the CSIC and the HNJ, call Retos2019) and EDAM (Retos de la Sociedad 2016), has participated as a researcher with responsibilities in the direction of tasks and research teams among others in 2 European projects (STAMAS. Labyrinth); 1 CONSOLIDER-INGENIO2010 project (HYPER Project); 3 National Plan projects (IPCIS, PCAET and RoboHealth); and in the TechnoFusión and RoboCity2030 projects financed by the Community of Madrid. She has recently directed as IP projects financed by companies such as ARQUIMEA, AIRBUS and SIEMENS.

She has participated as ANEP expert evaluator since 2017. Member of the evaluation commission of the Ramón y Cajal (RyC) call within the area of Industrial Production, Civil Engineering and Engineering for Society (PIN), representing the sub-area of Electrical, Electronic and Automatic Engineering (IEA) in 2020. Evaluator of Scientific Research, Development and Technological Innovation Projects, for AENOR INTERNACIONAL.

Her current research includes new actuator technologies for robotics and the design and control of rehabilitation exoskeletons. The main scientific interest in the medium term is the design and construction of robotic rehabilitation and assistance systems for people with disabilities, both for the upper limb (including the hand) and the lower limb. The objective is to advance in the achievement of devices that meet the needs of both people with disabilities and the health specialists who care for them. The technological proposal in this sense is the use of advanced actuators such as SMA (Shape Memory Alloys) or ultrasound motors to improve the performance of these devices.

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

C.1. Publications *(see instructions)*

1. Scientific paper. D. Copaci; J. Arias, M. Gómez-Tomé, L. Moreno, and D. Blanco. (5/5). sEMG-Based Gesture Classifier for a Rehabilitation Glove. *Frontiers in Neurorobotics*, 2022, vol. 16. doi: 10.3389/fnbot.2022.750482
2. Scientific paper. J. I. ARIAS; COPACI, D.- S.; SERRANO DEL CERRO, D.; MORENO, L.; BLANCO, M. D. (5/5). 2021. Efficiency analysis of SMA-based actuators: Possibilities of configuration according to the application. Actuators. 10/3, pp.63. ISSN 2076-0825. https:// doi.org/10.3390/act10030063
3. Scientific paper. COPACI, D.- S.; BLANCO, M. D.; MARTIN CLEMENTE, A.; MORENO, L.. (2/4). 2020. Flexible shape memory alloy actuators for soft robotics: Modelling and control International Journal of Advanced Robotic Systems (International Journal of Advanced Robotic Systems). 17/1, pp.1-15. ISSN 1729-8806. https://doi.org/10.1177/1729881419886747
4. Scientific paper. COPACI, D.- S.; BLANCO, M. D.; MORENO, L.. (2/3). 2019. Flexible shape-memory alloy-based actuator: Mechanical design optimization according to application. Actuators. 8/3, pp.63. ISSN 2076-0825. https:// doi.org/10.3390/act8030063
5. Scientific paper. COPACI, D.- S.; MORENO, L.; BLANCO, M. D. (3/3). 2019. Two-stage shape memory alloy identification based on the Hammerstein - Wiener model Frontiers in Robotics and AI. 6/83, pp.1-10. ISSN 2296-9144. https://doi.org/10.3389/frobt.2019.00083
6. Scientific paper. COPACI, D.- S.; MARTÍN, F.; MORENO, L.; BLANCO, M. D. (4/4). 2019. SMA based elbow exoskeleton for rehabilitation therapy and patient evaluation IEEE Access. 7, pp.31473-31484. ISSN 2169-3536. https://doi.org/10.1109/ACCESS.2019.2902939

7. Scientific paper. VILLOSLADA PECIÑA, Á.; RIVERA. C.; ESCUDERO, N.; MARTÍN, F; BLANCO, M. D.; MORENO, L.. (5/6). 2019. Hand exo-muscular system for assisting astronauts during extravehicular activities. Soft Robotics. 6/1, pp.21-37. ISSN 2169-5172. https://doi.org/10.1089/soro.2018.0020
8. Scientific paper. COPACI, D.- S.; SERRANO DEL CERRO, D.; MORENO, L.; BLANCO, M. D. (4/4). 2018. A High-Level Control Algorithm Based on sEMG Signalling for an Elbow Joint SMA Exoskeleton SENSORS. 18/8 (2522). ISSN 1424-8220. https://doi.org/10.3390/s18082522
9. Scientific paper. COPACI, D.- S.; CANO, E.; LOPEZ MORENO, L.M.; MORENO, L.; BLANCO, M. D.(4/5). 2017. New design of a soft robotics wearable elbow exoskeleton based on shape memory alloy wire actuators Applied Bionics and Biomechanics. Article ID 1605101, pp.1-11. ISSN 1176-2322. https:// doi.org/10.1155/2017/1605101
10. Scientific paper. VILLOSLADA PECIÑA, Á.; FLORES CABALLERO, A.; COPACI, D.- S.; BLANCO, M. D.; MORENO, L.. (4/5). 2015. High-displacement flexible shape memory alloy actuator for soft wearable robots ROBOTICS AND AUTONOMOUS SYSTEMS. 73, pp.91-101. ISSN 0921-8890. https:// doi.org/10.1016/j.robot.2014.09.026

C.2. Congress, indicating the modality of their participation (invited conference, oral presentation, poster)

C.3. Research projects, indicating your personal contribution. In the case of young researchers, indicate lines of research for which they have been responsible.

1 Project. PDC2022-133898-C32. Design and validation of new actuators for the clinical environment (STRIDE-UC3M). Proyectos I+D+i Pruebas de Concepto 2022. **PI: M. D. BLANCO.** 01/12/2022- 30/11/2024.

2 Project. PLEC2021-007819, IROPER - Intelligent Robotics for Personal Needs. AGENCIA ESTATAL DE INVESTIGACION (AEI). PI: CARLOS BALAGUER BERNALDO DE QUIROS. (Universidad Carlos III de Madrid). 13/12/2021- 12/12/2024. Personal contribution: Application of exoskeletons in upper limb rehabilitation. Conceptual design and functional test design.

3 Project. 861696, Labyrinth: Unmanned Traffic Management 4D Path Planning Technologies for Drone. Swarm to Enhance Safety and Security in Transport. EUROPEAN COMMISSION RESEARCH EXECUTIVE AGENCY. PI: MORENO LORENTE, LUIS ENRIQUE. (Universidad Carlos III de Madrid). 01/06/2020-31/05/2023. Personal contribution: Analysis of application cases. Management.

4 Project. PID2019-105110RB-C32, Development a novel robotic system that promotes walking in toddlers with CP. AGENCIA ESTATAL DE INVESTIGACION (AEI). **PI: BLANCO, M. D.** (Universidad Carlos III de Madrid). 01/06/2020-31/05/2023. Personal contribution: Scientific direction of the project. Management. Conceptual design.

5 Project. Exoskeleton for Diagnosis and Assistance in Manipulation Tasks. **PI: BLANCO, M. D.** (Universidad Carlos III de Madrid). 30/12/2016-29/09/2020. Personal contribution: Scientific direction of the project. Management. Conceptual design.

6 Project. DPI2013-47944-C4-3-R, Development of robotic exoskeletons for upper limb rehabilitation. MINISTERIO DE ASUNTOS ECONOMICOS Y TRANSFORMACION DIGITAL. PI: MORENO LORENTE, LUIS ENRIQUE. (Universidad Carlos III de Madrid). 01/01/2014-30/06/2018. Personal contribution: Conceptual design and design of functional tests. Management. Design and testing of an elbow and wrist exoskeleton actuated with SMA fibers.

7 Project. FP7-SPACE-2012-312815, STAMAS: SMAs in Space. Artificial Muscles and other robotic applications. EUROPEAN COMMISSION RESEARCH EXECUTIVE AGENCY. PI: MORENO LORENTE, LUIS ENRIQUE. (Universidad Carlos III de Madrid). 01/01/2013-31/12/2015. Personal contribution: Conceptual design and functional test design.

8 Project. CSD2009-00067, Hybrid Neuroprosthetic and Neurorobotic Devices for Functional Compensation and Rehabilitation of Motor Disorders (HYPER). MINISTERIO DE CIENCIA E INNOVACION. PI: MORENO LORENTE, LUIS ENRIQUE. (Universidad Carlos III de Madrid). 01/01/2010-16/12/2015. Personal contribution: Scientific direction. Analysis of magnetorheological, ultrasonic and SMA actuators.

C.4. Contracts, technological or transfer merits, Include patents and other industrial or intellectual property activities (contracts, licenses, agreements, etc.) in which you have collaborated. Indicate: a) the order of signature of authors; b) reference; c) title; d) priority countries; e) date; f) Entity and companies that exploit the patent or similar information, if any

1. Contract. Desarrollo de un actuador multihilo con fibras de SMA. ARQUIMEA ADS, S.L.U.. (Universidad Carlos III de Madrid). 15/09/2021 to 15/05/2022. 47.000 €.
2. Contract. SISTEMA DE EXOESQUELETO DESACOPLADO PARA CARGA Y DESCARGA DE EQUIPAJE AEROPORTUARIO. GESNAER CONSULTING S.L.N.E..(Universidad Carlos III de Madrid). 01/10/2019-31/12/2021. 60.000 €.
3. Contract. Mecanismos Robóticos con Tecnologías SMA. ARQUIMEA MEDICAL S.L.U. (Universidad Carlos III de Madrid). 20/12/2018-20/12/2021. 69.000 €.
4. Contract. Investigación para la mejora competitiva del ciclo de perforación y voladura en minería y obras subterráneas, mediante la concepción de nuevas técnicas de ingeniería, explosivos, prototipos y herramientas avanzadas. (TUÑEL). EXPACE ON BOARD SYSTEMS, S.L.28/07/2015 a 31/12/2019.