Part A. Personal Information

DATE	24/05/19

Surname(s)	Bustos García de Castro	
Forename	Pablo	
ID number	07221290A	
Sex	Male	
Age	53	
Researcher codes	WoS Researcher ID *(*)*	
	SCOPUS Author ID*(*)*	735289
	Open Researcher and Contributor ID (ORCID)	0000-0003-3202-2493

(*) At least one of these is mandatory

A.1. Current position

Post/ Professional Category	Associate Professor	
UNESCO Code	120304	
Key Words	Robotics, Iot, Artificial Intelligence, Cyber-physical systems	
Name of the University	Universidad de Extremadura	
	Department/Centre	Escuela Politécnica
	Full Address	Avda de la Universidad sn Cáceres 10003
	Email Address	pbustos@unex.es
	Phone Number	34-927257259
Start date	17/04/02	

A.2. Education *(title, institution, date)*

Year	University	Degree	Title
1988	Universidad Politécnica de Madrid	First degree	Diplomado en Informática
1991	Universidad Politécnica de Madrid	Masters	Licenciado en Informática
1998	Universidad Politécnica de Madrid	PhD	Doctor en Informática

A.3. Indicators of Quality in Scientific Production *(See the instructions)*

- 2 "sexenios" (last starting on June, 2014)
- 5 Phds advised, all with the maximun grade and two with Internacional Doctorate mention.
- ResearchGate index: 23.07
- According to ResearchGate my publications have been read 14.933 times and cited 499 times.
- Google Scholar h index: 14
- i10 index: 23, with 677 cites since 2014.
- 2 patents in production granted in 2011 and 2014.
- Q1: 2
- Q2: 11
- Q3: 9
- Q4: 3

Part B. Free Summary of CV *(Max. of 3.500 characters, including spaces)*

I am an engineer in Computer Science from the Polytechnic University of Madrid (1992) and Doctor in Computer Science from the same University (1998), having completed his PhD at the Institute of Industrial Automation of the Higher Council of Scientific Research, in intelligent autonomous robots. During this stage I made 3 research stays at centers such as the Heriot-Watt University of Edinburgh with Professor Robert L. Heuben, at the IMPAQT Center at Drexel University, Philadelphia USA with Professor Alex Meystel and at the Active Vision Laboratory of the University of Oxford with professor Ian Reid, all of them financed in

competitive public calls. When I finished my doctorate, in 1999, I moved to the University of Extremadura as a doctor assistant professor and in 2002 I obtained the position of university professor. In the year 200 I founded, together with other professors, RoboLab, the Laboratory of Robotics and Artificial Vision of Uex, which has remained very active up to the present. During this stage I have directed 5 doctoral theses in mobile robotics and social robotics. He has also participated in the design and construction of 20 autonomous robots that include didactic mobile robots, hexapod robots, protocol robots, mobile manipulators and drones. The scientific and technological areas in which I focus my research currently include social robotics, artificial vision, and cyber-physical systems applied to intelligent spaces and precision agriculture. I am the deputy director of INDEHESA, Institute for Research in Silvopastoral Systems of UEx, where ICTs are used to improve these systems. I have a total of 127 publications, of which 23 are international journals and 12 book chapters. I have directed 20 projects at a regional, national and international level. Of these, four projects correspond to the National Plan, one project in the INNPACTO call, one in the Avanza I + D Plan and currently manages a CYTED network in which 10 Latin American countries participate. I have participated in 34 national and international projects of which 2 are European projects currently in execution. I have also directed several projects funded by the University and 8 transfer projects with companies. I a a regular reviewer of international magazines and congresses. I have also been an evaluator of ANEP research projects. I am one of the creators of RoboComp, a software for development of components in robotics selected six times by Google in its Google Summer of Code program. It is also worth noting the organization of various scientific and teaching events in areas such as the introduction of Robotics in primary and secondary education, the development of agro-technology in the Community of Extremadura or the institutional project on IoT, SmartPoliTech, currently in development at the Polytechnic School of the UEx. I have organized the Workshop of Physical Agents in 2009. He has been a member of the program committee of several national congresses and is an associate editor of JOPHA magazine since 2009. He has contributed to the creation of 3 "startups" of former RoboLab researchers who are currently in operation and actively contribute to the development of the region.

Part C. Relevant accomplishments
C.1. Publications

1) P. Bustos, LJ Manso, AJ Bandera, I García-Varea, J. Martínez-Gómez "The CORTEX cognitive robotics architecture: use cases" Cognitive Systems Research Vol 55 pags 107-123. https://doi.org/10.1016/j.cogsys.2019.01.003 Elsevier 2019 Impact Factor 1.150 (Q3)

2) A. Vega, L. Manso Argüelles, D. G. Macharet, P. Bustos García, and P. Núñez Trujillo, "Socially aware robot navigation system in human-populated and interactive environments based on an adaptive spatial density function and space affordances," Pattern Recognition Letters, 2019. pags 72-84 Vol 118 https://doi.org/10.1016/j.patrec.2018.07.015 ISSN: 0167-8655 Impact Factor 1.952 (Q2)

3) P. Bachiller Burgos, L. Manso Argüelles, and P. Bustos García, "A Spiking Neural Model of HT3D for Corner Detection," Frontiers in Computational Neuroscience, vol. 12, p. 37, 2018. https://doi.org/10.3389/fncom.2018.00037 Impact Factor 2.073 (Q2)

4) L. J. Manso Argüelles, M. A. Gutiérrez Giraldo, P. Bustos and P. Bachiller Burgos Integrating planning perception and action for informed object search. Cognitive Processing, pp 1-12, Vol 19(2) August 2017. https://doi.org/10.1007/s10339-017-0828-3 ISSN: 1612-4790 Impact Factor 1.150 (Q4)

5) P. Bachiller-Burgos; L. J. Manso; P. Bustos. A variant of the Hough Transform for the combined detection of corners, segments and polylines. EURASIP Journal on Image and Video Processing 2017.32. ISSN:1687-5281 Impact Factor 1.742. (Q2)
https://jivp-eurasipjournals.springeropen.com/articles/10.1186/s13640-017-0180-7
https://doi.org/10.1186/s13640-017-0180-7

6) J.C. Pulido, J.C. González, C. Suárez, A. Bandera, P. Bustos, F. Fernández. Evaluating the Child-Robot Interaction of the NAOTherapist Platform in Pediatric Rehabilitation. International Journal of Social Robotics, April 2017, ISSN:1875-4805 http://doi.org/10.1007/s12369-017-0402-2 Impact Factor 2.559 (Q2)

7) L.J. Manso, P. Bustos, J.P. Bandera, A. Romero-Garcés, L. V. Calderita, R. Marfil, A. Bandera. Deep Representations for Collaborative Robotics. In Brain-Inspired Computing,

Lecture Notes in Computer Science LNCS 10087. Springer International Publishing, https://doi.org/10.1007/978-3-319-50862-7_14 pags 179-193
2016 Impact factor (SJR) 0.369 (Q2)
22. L.J. Manso, P. Bustos, P. Bachiller, P. Núñez. A Perception-aware Architecture for Autonomous Robots. International Journal of Advanced Robotic Systems (ISSN 1729-8806), InTech, Vol. 12, No. 174, 2015. DOI: 10.5772/61742. Impact Factor 0.615 (Q4)
8) L.V. Calderita, , C. Suarez Mejías, P. Bustos, , F. Fernandez, R. Viciana, A. Bandera. Asistente Robótico Socialmente Interactivo para Terapias de Neuro-rehabilitación con Pacientes de Pediatría. Revista Iberoamericana de Automática e Informática Industrial. Vol. 12, Nº 1, pages 99-110. 2015. https://doi.org/10.1016/j.riai.2014.09.007 ISSN: 1697-7912 Impact Factor 0.475 (Q4)
9) Felipe Cid, Jose Moreno, Pablo Bustos and Pedro Núñez. Muecas: A Multi-Sensor Robotic Head for Affective Human Robot Interaction and Imitation. Sensors 2014, 14(5), 7711-7737; https://doi.org/10.3390/s140507711. April 2014 http://www.mdpi.com/1424-8220/14/5/7711. Impact Factor 2.048 (Q1)
10) L.V. Calderita, J.P. Bandera, P. Bustos, A. Skiadopoulos. Model-based Reinforcement of Kinect Depth Data for Human Motion Capture Applications. Sensors 2013 Vol 13. Num 7. Pag. 8835-8855. 2013. https://doi.org/10.3390/s130708835 Impact Factor 2.245 (Q1)

C.2. Research Projects and Grants

1. Arquitecturas Cognitivas para Robots con Conciencia Social, Ministerio de Ciencia, Innovación y Universidades. RTI2018-099522-B-C42 2019-2022. Presupuesto: 98.000€.
2. Red Iberoamericana para la mejora productiva de sistemas silvo-pastorales- Founder: CYTED. Science and Technoloy for Development Enero 2017-21 Socios: Spain, Portugal, Colombia, Uruguay, Brazil, Argentina, Chile, Costa Rica, Venezuela. IPUex: Pablo Bustos IP-Coordinator: Pablo Bustos Presupuesto: 30.000€ p/año (120.000€ total)
3. Iniciativas Innovadoras para el impulso del envejecimiento activo en la región EUROACE (Innovative activities to boost active aging in the EUROACE region)

4. Life Climate Change Adaptation Project Application (LIFE MONTADO ADAPT, LIFE16 CCA/IT/000011) European Comission LIFE Program 2016 9/2016 to 1/9/2022 IP: Fernando Pulido (UEx coordinator) Presupuesto: 4.075.040 € (328.837 € University of Extremadura)

Monitorización ambiental. Aplicaciones Biotecnológicas y Gestión Biológica en Sistemas Agroforestales. Programa de Infraestructuras Científicas. MEC 2017. IP Oscar Santamaría. Presupuesto: 366.579€

5. Arquitectura de un robot interactivo para terapias de neurorehabilitación . Plan Nacional – Proyecto Coordinado TIN2012-38079-C03-01 . Comienzo: 1 de Enero de 2013 , finalización: 31 de Diciembre de 2015 . Coordinador consorcio: Pablo Bustos García de Castro . Investigador principal UEX: Pablo Bustos García de Castro . Presupuesto: 67.500€.
6. Fusión de Habilidades de Navegación y Manipulación para Robots Sociales en Smart Homes (Fusion of Navigation and Manipulation Skill for Social Robots in SmartHomes) Ministry of Economy and Competivity. National Research Program – TIN2015-65686-C5-5-R 1/2016 to 12/2018 IP: Pablo Bustos. Presupuesto: 45.375 €

C.3. Contracts

1. Oftalmología digital: un nuevo concepto de exploración basado en la captación digital, robotizada, integral y en línea de imágenes Empresa: International Oftalmological Center Professor Fernández-Vigo 12/2016 to 12/2018 IP: José Moreno del Pozo. Presupuesto: 39.504,13€
2. Nueva niveladora agrícola con doble control hidráulico para posicionamiento de la cuchilla. Empresa: CAPILLA Fabricación maquinaria agrícola SL 09/2016 to 09/2018. IP: Pablo Bustos Presupuesto: 20.000€
3. Producción de módulos software para sistemas de supervisión (Software modules for satellite supervision systems) CELESTIA INGENIERIA DE SISTEMAS SL 04/2015 to 11/2015 IP: Pedro Núñez Trujillo Presupuesto: 80.000€
4. BS-NAVLOC - Brazil-Spain Cooperation on Navigation and Localization for Autonomous Robots on Underwater and Terrestrial Environments. PHBP14/00083 Programa Hispano-Brasileño de Cooperación Interuniversitaria. MECD. 2015-2016 Presupuesto: 9690€

5. TIERRA, Tecnologías Integradas para la Gestión Eficiente de Recursos Agrarios. Gobierno de Extremadura COINVESTIGA 2014 07/2014 to 07/2015 IP: Pablo Bustos Presupuesto: 183.000 €

4. EYESMAP: Escáner estéreo para aplicaciones de arquitectura) Convocatoria INTERCONNECTA 2013. 1 de Octubre de 2013 a 31 Diciembre de 2014. Presupuesto: 90.000€

C.4. Patents and other IPR

• Dispositivo electrónico para el entrenamiento de técnicas endoquirúrgicas. Na Solicitud P200702659(7). Fecha: 9 de Octubre de 2007. Jesús Usón Margallo, Francisco Miguel Sánchez Margallo, Miguel Angel Sánchez Hurtado, José Mateos, Blas Pagador, Pablo Bustos García de Castro. Fecha concesión 12 de Abril de 2011. Publicación en BOPI: 26 de Abril de 2011 http://www.ccmijesususon.com/ccmi/contenido/documentacion/patentes/P200702659.pdf

• Conjunto de accesorios universales para dispositivos de seguimiento de instrumentos. Solicitud P201101176. Fecha: 26-10-2011. J. Blas Pagador, Francisco Miguel Sánchez Margallo, Jesús Usón Margallo, Marcos Lucas Hernández, José Luis Moyano García Cuevas, Juan Alberto Sánchez Margallo, Luisa Sánche Peralta, Pablo Bustos García de Castro y José Moreno del Pozo. Fecha concesión 12 de Abril de 2011. Publicación en BOPI: 11 de Abril de 2014.
http://www.ccmijesususon.com/_ccmi/contenido/documentacion/patentes/P201101176.pdf

C.5 RoboLab: Laboratorio de Robótica y Visión Artificial

• Co-founder of the Laboratory of Robotics and Artificial Intelligence - RoboLab - of the University of Extremadura in 2000. http://robolab.unex.es
• Open source software developer RoboComp, a high performance framework for Robotics used by different research groups and companies: http://robocomp.org
• Selection of RoboComp as part of the Google program, Google Summer of Code (200 selected worldwide) in 2013, 2014, 2016, 2017, 2018 and 2019 with the award of 49 scholarships for students world-wide summing more that 300.000$.

C.6 Robots built

List or robots built since the start of my PhD work: