



## SHORT CURRICULUM VITAE

Name: **MANUEL A. ARMADA**  
Title: **Ph. D. in Physics (1979)**  
Current Position: **Professor of Research of the CSIC**  
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### Scientific and Research Management Experience

Manuel A. Armada received his Ph. D. in Physics from the University of Valladolid (Spain) in 1979. He has been involved since 1976 in research activities related to Automatic Control and Robotics. He has been working in more than 50 RTD projects (including international ones like EUREKA, ESPRIT, BRITE/EURAM, GROWTH, ICT, NMP, INCO-COPERNICUS and others abroad the EU, especially with Latin America (CYTED-AECID) and Russia (ESSIDAC EC project and Joint Projects between RAS-CSIC). He also carried out an important activity in several EC Thematic Networks, like CLAWAR and ROBMAR. Dr. Armada was the Chairman of the TELEMAN Evaluation Panel set up by the EC for evaluation of that Programme, and was one of the independent external reviewers for EURON Network of Excellence. Dr. Armada owns several patents (over 20), and has published over 250 papers (including contributions to several books, monographs, journals, international congresses and workshops). He is currently Professor of Research at CSIC, former Director of the Instituto de Automatica Industrial of the Spanish Council for Scientific Research (CSIC), and Deputy Director of the Centre for Automation and Robotics (CAR, CSIC-UPM), Member of the Russian Academy of Natural Sciences, and Doctor *Honoris Causa* by the State Technical University (MADI) of Moscow and by the Kursk State Technical University. His main research direction is concentrated in robot design and control, with especial emphasis in fields like force control and on walking and climbing machines. Dr. Armada has been presented with the IMEKO TC17 Award and three times with the CSIC Distinguished Award. Dr. Armada has been very active, in the last twenty years, in the preparation and management of RTD projects and has been also a reviewer for projects funded by the European Commission and by the Spanish, Italian, Netherland and Argentinean administrations. Dr. Armada is member of the editorial board and reviewer of several international journals. Dr. Armada is presently the National Contact Person for Spain at the IARP (International Advanced Robotics Programme).



## Some Publications

- Armada, M.: "Telepresence and Intelligent Control for a Legged Locomotion Robot", book chapter of: Expert Systems and Robotics, Springer Verlag, 1991.
- Armada, M., P. Gonzalez de Santos, J. Nieto and D. Araujo: "On the Design and Control of a Self-Propelling Robot for Hazardous Environments", Proc. 21st International Symposium on Industrial Robots, Copenhagen, 1990.
- Armada, M.: "Simplified Feedback Stabilization of Singularly Perturbed Bilinear Systems", book chapter of: Applied Modelling and Simulation of Technological Systems, North-Holland, 1987.
- Armada, M.: "Multivariable Frequency Domain Methods for Industrial Robot Controllers Analysis and Design", Proc. 16th ISIR, Bruselas, 1986.
- Armada, M., No, J.: "Systèmes Bilineaires : Application à la modélisation Dynamique des Robots Industriels", Proc. Congress AFCET AUTOMATIQUE'81, Nantes, 1981.
- M. A. Armada, P. Gonzalez de Santos, J. Nieto and D. Araujo: " On the design and Control of a Self-Propeling Robot for Hazardous Environments", 21st International Symposium on Industrial Robots, 23-25 Octubre, Copenhagen, Sweden, 1991.
- M. A. Jimenez, P. Gonzalez de Santos and M. A. Armada: "A four-legged Walking Test bed", First IFAC International Workshop on Intelligent Autonomous Vehicles, 18-21 Abril, Hampshire, U.K. 1993.
- M.A. Jiménez, E. Vargas, M.A. Armada: "Implementación y Simulación de Modos de Caminar para un Robot de Cuatro Patas". Proc. 2º Congreso de la AER, Zaragoza, 1991.
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- N. Aliane, M. Armada, C.M. Vargas-Gómez: "Self-Tuning Compensator for Walking Robots". 23rd international Symposium on Industrial Robots, Asociación Española de Robótica, 1992.
- M. Armada, N. Aliane, P. Gonzalez, M.A. Jiménez: "Controller tuning for a four legged locomotion robot". Systems Engineering in the Service of Humans.IEEE, Inc., 1993.
- G. Fernández, J. C. Grieco, M. Armada: "Decoupling control for robot manipulators using multivariable frequency domain techniques". Application of Multivariable System Techniques, Mechanical Engineering Publications Limited (London), 1994.
- P. Gonzalez, M.A. Jiménez, M. Armada: "Walking with discontinuous gaits along an arbitrary path". Robotics and Manufacturing. Recent Trends in Research, Ed. and Application, ASME Press, 1994.
- R. Ceres, J.M. Martin, L. Calderón, T. Freire, M. Armada: "Environment recognition in welding processes by ultrasonic sensors". Sensors and Actuators A, 37-38, 1993, pp. 635-638
- N. Aliane, M. Armada, P. González de Santos y M. A. Jiménez: "On the Control Problem of a Legged Robot". Studies in Informatics and Control, Vol.3, Nº 2-3, Septiembre 1994, pp. 269-278.
- J.C. Grieco, M. Armada, G. Fernández, P. González de Santos: "A review on force control of robot manipulators". Studies in Informatics and Control, Vol.3, Nº 2-3, Septiembre 1994, pp. 241-252.
- G. Fernández, J.C. Grieco, M. Armada: "Achieving diagonal dominance for robot control". Studies in Informatics and Control, Vol.3, Nº 2-3, Septiembre 1994, pp. 253-260.
- D. Carrica, B. Kuchen, M. Armada, M. Benedetti: "Basic schemes for vector control of ac induction motors". Studies in Informatics and Control, Vol.3, Nº 2-3, Septiembre 1994, pp. 261-268.
- B. Kuchen, D. Carrica, M. A. Armada, C. Vargas: "Experimental set up of field oriented control of ac induction motors". Studies in Informatics and Control, Vol.3, Nº 2-3, Septiembre 1994, pp. 279-284.
- R. Ceres, J.M. Martin, L. Calderón, M. A. Armada, J.L. Pons: "Photosensor tracks transients". The Industrial Robot, Vol.22, nº 1, 1995, pp.21-24.
- P. González de Santos, M. A. Armada / A. Martin, W. de Peuter (ESA): "A survey of locomotion concepts for planetary exploration rovers". 3rd ESA Workshop on Advance Space Technologies for Robot Applications, Noordwijk (Holanda), 1994.



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- M. Armada, P. Gonzalez de Santos: "Climbing, walking and intervention robots". Industrial Robot, vol. 24, n. 2, 1997, pp. 158-163.
- P. González de Santos, M. A. Armada, M.A. Jiménez: "Walking machines-initial testbeds, first industrial applications and new research". Computing&Control Engineering Journal (IEE) Vol.8, nº 5, 1997, pp.233-237.
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- P. González de Santos, M. Armada, M. A. Jiménez: "Ship Building with ROWER". IEEE Robotics and Automation Magazine, December 2000
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- T. Akinfiev, M. Armada. The Influence of Gravity on Trajectory Planning for Climbing Robots with Non-rigid legs. Journal of Intelligent and Robotic Systems, vol 35, 2002, pp.309-326
- M. Armada, P. González de Santos, M. A. Jiménez, M. Prieto. Application of CLAWAR machines. International Journal of Robotics Research, vol. 22, No. 3-4, 2003, pp. 251-264
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- C. Balaguer, G.S. Virk, M. Armada. Robot applications against gravity. IEEE Robotics and Automation Magazine, Marzo 2006, 13(1) 5- 6
- H. Montes, S. Nabulsi, M. Armada . Reliable, Built-in, High-Accuracy Force Sensing for Legged Robots. International Journal of Robotics Research, 2006 25: 931-950.
- R. Caballero, M. Armada, P. Alarcón. Methodology for Zero-Moment Point Experimental Modelling in the Frequency Domain. Journal of Vibration and Control, 2006, 12: 1385-1406.
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- E. Garcia, M.A. Jiménez, P. González de Santos, M. Armada. The evolution of robotics research from industrial to service robots. IEEE Robotics and Automation Magazine, March 2007.



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- R. Ponticelli, E. Garcia, P. Gonzalez de Santos y M. Armada, "A scanning robotic system for humanitarian demining activities", *Industrial Robot*, Vol.: 35 N.: 2, pp: 133 – 142, 2008.
- P. Gonzalez de Santos, J. Estremera, E. Garcia and M. Armada, "Power assist devices for installing plaster panels in construction", *Automation in Construction*, Vol. 17, pp. 459-466, 2008
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- T. Akinfiev, M. A. V. S. Nabulsi, "Climbing cleaning robot for vertical surfaces", *Industrial Robot*, Vol. 36, No. 4, 2009.
- P. Gonzalez de Santos, E. Garcia, R. Ponticelli and M. Armada, "Minimizing Energy Consumption in Hexapod Robots", *Advanced Robotics*, 23, pp. 681–70, 2009.

### Some patents (Data supplied from the **esp@cenet** database):

- DEVICE FOR A LOCAL VIBRATION TREATMENT OF WELDING SEAMS, Publication info: RU2259406 - 2005-08-27
- SURFACE-CLEANING MACHINE. Publication info: US 7,765,634 B2, Aug. 3, 2010.
- MOBILE BASKET FOR CONSOLIDATION WORK ON WALLS. Publication info: WO2006013594 - 2006-02-09
- QUADRUPED ROBOT FOR TECHNOLOGICAL PROCESSES, Publication info: WO2005118230 - 2005-12-15
- ACTUATOR FOR A WORKING ELEMENT, PARTICULARLY A WALKING ROBOT AND THE METHOD OF CONTROLLING SAID ACTUATOR, Publication info: US2005127686 - 2005-06-16
- GUIDED MOBILE LOAD HANDLING SYSTEM, Publication info: WO2004028754 - 2004-04-08
- AUTOMATIC FOOD-HEATING DEVICE, Publication info: WO03099085 - 2003-12-04
- ACTUATOR FOR A WORKING ELEMENT, PARTICULARLY A WALKING ROBOT, AND THE METHOD OF CONTROLLING SAID ACTUATOR, Publication info: WO03099641 - 2003-12-04
- UNDERSEA ROBOT AND THE CONTROL METHOD THEREFOR, Publication info: WO03042029 - 2003-05-22
- VEHICLE CONTROL METHOD, Publication info: WO03038387 - 2003-05-08
- ROBOT SALTADOR Y PROCEDIMIENTO PARA SU CONTROL, Publication info: ES2209617 - 2004-06-16
- DEVICE FOR A WORK ELEMENT HAVING TWO DEGREES OF MOBILITY, Pub. info: US2002134188 - 2002-09-26
- ACTUATOR FOR THE LEGS OF A WALKING ROBOT, Publication info: WO0228600 - 2002-04-11
- AUTOMATIC VENDING DEVICE WITH BUILT-IN GAME SYSTEM, Publication info: WO0215134 - 2002-02-21
- PRODUCTS VENDING MACHINE, Publication info: WO0209049 - 2002-01-31
- DEVICE FOR AUTOMATIC PROCESS TREATMENT OF PARTS, Publication info: RU2163189 - 2001-02-20
- AUTOMATIC DEVICE WITH ELECTRONIC SPEED CONTROL, FOR MEASURING THE ADHERENCE OF THE WIRES OF THE CIRCUIT TO THE BASE MATERIAL OF A PRINTED CIRCUIT, Publication info: ES2018722 - 1991-05-01



## Some projects

SOME EUROPEAN PROJECTS	
<b><u>As co-ordinator:</u></b>  1. Advanced Robot Control With Multisensor Integration ROCOMI (ESPRIT 02/76100) (1993-1996). 2. Efficient Start-Stop Intelligent Drives with Adaptive Control ESSIDAC (INCO 960054) (1997-2000). 3. Auxiliary climbing robot for underwater ship hull cleaning of sea adherence and surveying AURORA (GRD1-1999-11153) (2000-2004).	 10. SACON (ESPRIT-PACE PR 212) (1994-1997) 11. STBM (BRITE EURAM BE-1735) (1996-1999) 12. ROWER II (BRPR-CT97-554) (1998-2002) 13. GOODLIFE (GROWTH 99 GRD1-1999-10335) (2000-2003) 14. CLAWAR (BETN2-546) (1998-2002) 15. CLAWAR 2 (G1RT-CT-2002-05080) (2002-2005) 16. ROBMAR (BRRT-CT98-5083) (1999-2003) 17. ROBOCLIMBER (G1ST-CT-2002-50160) (2002-2004) 18. SAFERDRILL (FP6-CE-COOP-CT-2005-016842 (2005-2007) 19. SPILL RESPONSE EUROPEAN EXPERIENCE (SPREEX) (FP6-2003-Transport-3, N. 012409, 2005-2007) 20. Intelligent sensing and manipulation for sustainable production and harvesting of high-value crops - clever robots for crops (CROPS) FP7-NMP-2009-LARGE-3 CP-IP 246252-2 (2010-2015)
<b><u>As partner:</u></b>  4. HEPHAESTOS I (ESPRIT 5369) (1990-1992) 5. IUI (EUREKA EU-40) 6. HEPHAESTOS II (ESPRIT III 6042) (1992-1995) 7. PALAIOMATION (BRITE EURAM CR 1651) (1995-1997) 8. TRACMINER (BRITE EURAM CRAFT 1156 91) (1994-1995) 9. ROWER I (BRITE EURAM BE2-7229)	

Madrid, Spain, 2011