

# ELENA GARCIA

Elena.garcia@csic.es ♦ Centre for Automation and Robotics CSIC-UPM ♦ +34 91 8711900  
<http://egarcia-car.weebly.com/>

Scopus Author ID: 7402249975    ORCID 0000-0001-7349-250X

## PERSONAL SUMMARY

*“All the work and the effort during my professional career finds the best of the prizes: the smile of a child who finally finds himself walking on his feet. This is the one and only merit I would write. Publications, patents, awards have so little value when compared to the value of a child’s life.” --Elena Garcia.*



## EDUCATION

Technical University of Madrid  
2002 PhD in Robotics Engineering  
Technical University of Madrid  
1995 MsC in Electronics and Automation Engineering

## PROFESSIONAL AFFILIATIONS

Spanish National Research Council ♦ Centre for Automation and Robotics  
**Tenured Scientist** 2007 – Today  
Spanish National Research Council ♦ Institute for Industrial Automation  
**Postdoctoral fellow** 2002 – 2007  
CNRS - ENSIEG ♦ Laboratoire d’Automatique de Grenoble  
**Visitor Scholar** 2001 (Prof. Canudas de Wit)  
Massachusetts Institute of Technology ♦ Leg Laboratory (AI Lab)  
**Visitor Scholar** 1999 (Prof. Gill Pratt)  
Spanish National Research Council ♦ Institute for Industrial Automation  
**PhD Candidate** 1998 – 2002

## HONORS AND AWARDS

♦ 2019	TALGO Foundation	Award for the Excellence of Women in Engineering, 1st Edition
♦ 2019	Madrid Excelente Foundation, Government of Madrid	Award for Excellence in Science
♦ 2018	Government of Madrid	Silver Plate of Madrid Health System
♦ 2018	Mayor of Madrid	Gold Medal of the City
♦ 2018	Government of Madrid	Award in Science and Research
♦ 2012 - 2017	Spanish National Research Council (CSIC)	Yearly Honor for Scientific Merit
♦ 2017	SAMSUG & Mujeres a seguir	MAS Smart Girl by SAMSUNG Award
♦ 2017	Spanish Scientists Society	Plate of honor
♦ 2017	Spanish Federation of Companies of Healthcare Technologies (FENIN)	Award for entrepreneurship in health technology
♦ 2017	A Tu Salud / La Razón Publisher	Special Jury Award for the Best Biomedical Researcher of the Year
♦ 2016	ABC Publishers	Award to Health Technology of the Year
♦ 2016	Fuera de Serie Pub./ Volkswagen	Award to Social Innovation
♦ 2016	Emerald Group Publishing Limited	Innovation Award – For practical innovation in the field of robotics
♦ 2015	Spanish Confederation of Small and Medium Enterprises (CEPYME)	Award to the Best Entrepreneur Project
♦ 2015	Almeria Federation of Associations of Persons with Disabilities FAAM	Golden Award to Scientific and Social Innovation
♦ 2014	Accenture / IE Business School	Pasion>ie Award, Category Health of the Future
♦ 2014	euRobotics Asbl	Second Prize, Robotics Investment Forum, European Robotics Forum
♦ 2013	Madri+d Foundation for Knowledge	Best Technology-Based Business Idea

## SELECTED SCIENTIFIC PUBLICATIONS

- |   |  |   |
|---|--|---|
| ♦ M. Cestari, D.Sanz-Merodio, and <u>E. Garcia</u> ,                | Preliminary Assessment of a Compliant Gait Exoskeleton,                              | Soft Robotics, Vol. 4, No. 2, pp. 135-146, 2017                           |
| ♦ <u>Garcia, E.</u> , Arevalo, J., Cestari, M.,and Sanz-Merodio, D, | On the technological instantiation of a biomimetic leg concept for agile locomotion, | ASME Journal of Mechanisms and Robotics, Vol. 7, No. 3, 2015              |
| ♦ M. Cestari, D.Sanz-Merodio, J.C. Arevalo and <u>E. Garcia</u> ,   | An Adjustable Compliant Joint for Lower-Limb Exoskeletons,                           | IEEE/ASME Transactions on Mechatronics, Vol. 20, No. 2, pp.889-898, 2015. |

- ♦ Arevalo, J.C and García, E. Impedance Control for Legged Robots: An insight into the Concepts Involved, IEEE Transactions on Systems Man and Cybernetics Part C- Applications and Reviews, Vol. 42, No. 6, pp. 1400-1411, 2012
- ♦ García, E., González de Santos, P. and Matia, F. Dealing with Internal and External Perturbations on Walking Robots, Autonomous Robots Vol. 24, pp. 213-227, 2008
- ♦ García, E., Jiménez, M.A., González de Santos, P. and Armada, M.A. The Evolution of Robotics Research from Industrial Robotics to Field and Service Robotics, IEEE Robotics and Automation Magazine, Vol. 14, No. 1, pp. 90-103, 2007.
- ♦ Gonzalez de Santos, P., García, E. , Estremera, J. Quadrupedal locomotion: an introduction to the control of four-legged robots, Springer 2006
- ♦ García, E. and González de Santos, P. On the Improvement of Walking Performance in Natural Environments by a Compliant Adaptive Gait, IEEE Transactions on Robotics, Vol. 22, No. 6, pp. 1240-1253, 2006
- ♦ González de Santos, P., Estremera, J., García, E., and Armada, M. Including Joint Torques and Power Consumption in the Stability Margin of Walking Robots, Autonomous Robots, vol. 18, pp. 43–57, 2005
- ♦ Gonzalez de Santos, P., Galvez, J.A., Estremera, J. and García, E. SILO4 - A true walking robot for the comparative study of walking machine techniques, IEEE Robotics and Automation Magazine, Vol. 10, No. 4, pp. 23-32, 2003

## SELECTED RESEARCH PROJECTS (AS PRINCIPAL RESEARCHER)

- ♦ Disruptive technologies for effectively rehabilitating chronic ambulatory disability (MARSÍ) European Union’s Horizon 2020 research and innovation programme GA No 784498 2018-2020
- ♦ Customization of pediatric EXOskeletons as an alternative to the physical therapy of children with severe neuromuscular diseases (EXORAPI) Dirección General de Investigación Científica y Técnica (MINECO RTC- 2016-4728-1) 2016-2019
- ♦ Clinical Evaluation of Gait Training with Exoskeleton in Children with Spinal Muscular Atrophy (EXOTrainer) European Commission (EU FP7-601116 Echord++) 2015-2017
- ♦ Creation and consolidation of a multi-agent structure for the strategic positioning of Spanish R & D + i in Horizon2020 (COMPEX2020) Dirección General de Investigación Científica y Técnica (MINECO EUI2013-51014) 2014-2015
- ♦ Exoskeletons as an instrument to improve the quality of life of children with Spinal Muscular Atrophy and Cerebral Palsy (KINDER) Dirección General de Investigación Científica y Técnica (MINECO DPI2013-40504-R) 2014-2016
- ♦ New actuation and control technologies for empowering humans and robots (ATLAS) Dirección General de Investigación (MICINN DPI2010-18702) 2011-2013

## TECHNOLOGY TRANSFER ENTREPRENEURSHIP



**Marsi Bionics S.L.**  
Alcalá de Henares (Madrid)  
ESB86756483

SME Created on September 2013 by Dr.  
Elena Garcia and BDBox SL, Co-founders  
[www.marsibionics.com](http://www.marsibionics.com)  
<https://www.facebook.com/marsibionics>

Granted European Union's Horizon 2020 i4SME Phase 2 research and innovation programme under grant agreement No 784498

### PRODUCTS IN EXPLOITATION AS A RESULT OF RESEARCH PROJECTS



**ATLAS 2020/2030  
Paediatric Gait Exoskeleton**  
For gait training and aid of children  
with Neuromuscular Diseases

Result of research projects ATLAS  
(DPI2010-18702) and KINDER (DPI2013-  
40504-R), in exploitation by Marsi Bionics  
SL



**MAK Powered Knee**  
For rehabilitation and gait assistance  
of Stroke, Postpolio and muscular  
dystrophies

Result of research project ATLAS  
(DPI2010-18702), in exploitation by Marsi  
Bionics SL

### SELECTED PATENTS

Application no.	Title	Assignee
ES20130030882 EP14810160 WO2014198979	Articulation with controllable stiffness and force-measuring device	Licensed from CSIC-UPM to MARSI BIONICS
ES20120031567 EP2907495 (Pro); US2015265490 (Pro); WO2014057153	Walker comprising mechanism for assisting a user in standing and sitting operations	Licensed from CSIC-UPM to MARSI BIONICS
PCT/ES2015/070855 US 20170340504A1 EU sol. 15862885	Exoskeleton for human gait assistance	CSIC-UPM (CAR) (85%), MARSI BIONICS (15%) Licensed to MARSI BIONICS

## CONTRIBUTION TO THE DISSEMINATION OF SCIENCE



TEDx event under the slogan 'Watching the Future'. Elena García talks about the new horizon in the therapy of neuromuscular diseases in childhood through gait exoskeletons.

2017

<https://www.youtube.com/watch?v=yQA4xl6iGLo>



The cycle of conferences 'Qué sabemos de...?' (What do we know about ...?) a space in which the protagonists of science explain to the society the scientific achievements, its processes and its impact on our daily life, leaving time for debate.

2015-2017



CIUDAD CIENCIA is a project that brings science to different Spanish locations through interesting outreach activities (conferences, exhibitions, workshops, etc.)

2015-2017



Cycle of Conferences.

Bionic Exoskeletons: A Possible Therapeutic Alternative in Neuromuscular Diseases in Childhood

2014

MADRID, BUCAREST, BELGRADO



What do we know about... Robots?, CSIC-Catarata, Book by Elena García belonging to the Collection 'What do we know about...?' for the dissemination of science. This book aims at the acceptance and integration of robots in our society.

2016

## BOARDS AND COMITEES

- ♦ Jury of Princess of Asturias Awards, Category Science and Technology
- ♦ Commissioner for the National Museum of Science and Technology
- ♦ Industrial Activities Board of the IEEE Robotics and Automation Society
- ♦ Scientific Committee of National Robotics, Spanish Committee of Automation (CEA-GTRob)
- ♦ International Program Committee of the IEEE International Conference on Humanoid Robots, IEEE Robotics and Automation Society
- ♦ Editorial Board of the IEEE/RSJ International Conference on Intelligent Robots and Systems, IEEE Robotics and Automation Society
- ♦ International Program Committee of the IEEE International Conference on Humanoid Robots