MINISTERIO DE CIENCIA, INNOVACIÓN Y UNIVERSIDADES

CURRICULUM VITAE (maximum 4 pages)

CV date	26/JUN/2019

Part A. PERSONAL INFORMATION

First and Family name	Antonio Mandow Andaluz		
ID number		Age	
Researcher numbers	Researcher ID	K-6457-2014	
	Orcid code	0000-0002-9994-6239	

A.1. Current position

Name of University/Institution	Universidad de Málaga, UMA		
Department	Dpto. de Ingeniería de Sistemas y Automática		
Address and Country	C/ Dr. Ortiz Ramos, s/n, 29071 Málaga (Spain)		
Phone number	(+34)951952250	E-mail	amandow@uma.es
Current position	Profesor Titular de Universidad	From	06/NOV/2001
UNESCO nomenclat.	3311.01		
Keywords	Automation technology		

A.2. Education

PhD	University	Year
Doctor en Informática	Universidad de Málaga	1998

A.3. Quality indicators of Scientific research (JCR articles, h Index, thesis supervised…)

***"Tramos de investigación (Sexenios)" recognized by ANECA:* 4.**
Most recent one: 01/01/2013 to 31/12/2018.

Citation metrics:

	Scopus	*WoS (Publons)*	*Google Scholar*
h-index	**16**	**13**	**22**
Citations (total)	**988**	**559**	**1724**
Citations/year (2014-2018)	**118**	**68**	**195**

Indexed articles:

- *JCR (total)*: **24**
- *JCR - Q1 (according to the closest year rank)*: **11**
- *A1 conferences (Qualis)*: IROS (**8**), ICRA (**1**).

Patents:

- Published: **4**
- Exploited: **1**

Supervisor of PhD theses defended in the last 10 years:

1. "Modelado Analítico y Control Inteligente de un Sistema de Suspensión Activa para un Cuarto de Vehículo", J. Hurel-Ezeta. Supervisors: A. García Cerezo, A. Mandow. Grade: Sobresaliente *Cum Laude*. Defense date: 2013.
2. "Contributions to Intelligent Scene Understanding of Unstructured Environments from 3D Lidar Sensors", Victoria Plaza Leiva. Supervisors: J.A. Gómez Ruiz, A. Mandow; Advisor: A. García Cerezo. Grade: Sobresaliente *Cum Laude*. Defense date: 11/Jul/2018.

Part B. CV SUMMARY *(max. 3500 characters, including spaces)*

Antonio Mandow-Andaluz (AKA Anthony Mandow) received the M.Eng. and Ph.D. degrees in computer systems from Universidad de Málaga (UMA), Málaga, Spain, in 1992 and 1998, respectively. He is currently Profesor Titular de Universidad in the Department of Systems Engineering and Automation, UMA, and is a member of the UMA Lab for Robotics and

Mechatronics. His doctoral dissertation was mainly derived from achievements in autonomous navigation in the AURORA greenhouse robot, featured at the cover of the IEEE Robotics and Automation Magazine (Dec-1996). Since then, his research efforts have been driven by practical application of field robotic systems. He has been engaged in several robotics and automation projects and is currently co-heading a Spanish project towards human/robotic UGV and UAV Manipulator Teams for Robotic Search and Rescue Tasks. He has authored more than 60 publications, including more than 20 indexed journal papers, and has been the supervisor for two Ph.D. Theses. His current research interests include intelligent control, robot learning, multi-robot teams, 3-D perception, vehicle motion control, and validation of robotic mission planning. Dr. Mandow serves in national and international scientific committees and societies. He was the Organizing Chair for the 2009 IEEE International Conference on Mechatronics. He has served in journal editorial boards, including as a Guest Associate Editor of the IEEE Transactions on Industrial Electronics, and is a member of Comité Español de Automática (CEA-IFAC), Sociedad Española para la Investigación y Desarrollo en Robótica (SEIDROB), and the Institute of Electrical and Electronics Engineers (IEEE). As a teacher, he is committed to training new researchers; he led an educational innovation project (UMA 2013-2015) to improve scientific communication and technology transfer skills in post-graduate students. Besides, he coordinated the 2013 BUT-TUD-UMA Summer School on Mechatronics (ERASMUS-IP). Since 2016, Dr. Mandow is the Academic Coordinator for the UMA Doctoral Program in Mechatronics Engineering.

Part C. RELEVANT MERITS

C.1. Publications (including books). Journal publications from the last five years:

1. Morales, J., Plaza-Leiva, V., Mandow, A., Gomez-Ruiz, J.A., Serón, J., García-Cerezo, A. (2018) Analysis of 3D scan measurement distribution with application to a multi-beam lidar on a rotating platform, *Sensors*, 18 (2), art. no. 395, .DOI: 10.3390/s18020395.
2. Plaza-Leiva, V.; Gomez-Ruiz, J.A.; Mandow, A.; Garcia-Cerezo, A. (2017) Voxel-Based Neighborhood for Spatial Shape Pattern Classification of Lidar Point Clouds with Supervised Learning. *Sensors* (17), 594. Doi: 10.3390/s1703059.
3. García, J.M., Martínez, J.L., Mandow, A., García-Cerezo, A. (2017) Caster-leg aided maneuver for negotiating surface discontinuities with a wheeled skid-steer mobile robot. *Robotics and Autonomous Systems* (91), 25-37, doi: 10.1016/j.robot.2016.12.007.
4. Gómez-de-Gabriel, J.M.; Mandow, A.; Fernández-Lozano, J.; García-Cerezo, A., (2015) "Mobile Robot Lab Project to Introduce Engineering Students to Fault Diagnosis in Mechatronic Systems" *IEEE Transactions on Education* (58) 187-193. doi: 10.1109/TE.2014.2358551.
5. Morales, J., Martínez, J.L., Mandow, A., Reina, A.J., Pequeño-Boter, A., García-Cerezo, A. (2014) "Boresight Calibration of Construction Misalignments for 3D Scanners Built with a 2D Laser Rangefinder Rotating on Its Optical Center" *Sensors*, 14(11),20025-20040; doi:10.3390/s141120025.
6. Serón, J., Martínez, J.L., Mandow, A., Reina, A., Morales, J., García-Cerezo, A (2014) "Automation of the Arm-Aided Climbing Maneuver for Tracked Mobile Manipulators", *IEEE Trans. on industrial Electronics*, 61 (7) 3638-3647, doi:10.1109/TIE.2013.2272275.
7. Hurel, J., Mandow, A., García-Cerezo A. (2013) "Kinematic and Dynamic Analysis of McPherson Suspension with a Planar Quarter-Car Model", *Vehicle System Dynamics*: 5(9),1422-1437. doi:10.1080/00423114.2013.804937.
8. Morales, J., Mandow, A., Martínez, J.L., Reina, A.J., García-Cerezo, A.J. (2013) "Driver Assistance System for Passive Multi-trailer Vehicles with Haptic Steering Limitations on the Leading Unit" (2013), *Sensors*, 13 (4), 1185-4498. doi: 10.3390/s130404485.
9. Hurel, J., Mandow, A., García-Cerezo, A.J, (2013) "Los Sistemas de Suspensión Activa y Semiactiva: Una Revisión. Active and Semi-active Suspension Systems: A Review" *Revista Iberoamericana de Automática e Informática Industrial*., 10(2), 121-132. doi:10.1016/j.riai.2013.03.002.

10. Morales, J., Martínez, J.L., Mandow, A., García-Cerezo, A.J. (2013) "Steering the Last Trailer as a Virtual Tractor for Reversing Vehicles with Passive On- and Off-Axle Hitches" *IEEE Trans. on Industrial Electronics*, 60(12),5729-5736. doi:10.1109/TIE.2013.2240631.

C.2. Research projects and grants

1. **Co-Principal Investigator**. RTI2018-093421-B-I00. "*TRUST-ROB: Towards Resilient UGV and UAV Manipulator Teams for Robotic Search and Rescue Tasks*". Ministerio de Ciencia, Innovación y Universidades, Programa Estatal de I+D+i 2018, PI: Alfonso José García Cerezo, Enero 2019-Diciembre 2021.
2. **Co-Principal Investigator**. DPI2015-65186-R. "*FIRST-ROB. Multi-Robot System for Cooperation with First Response Human and Canine Rescue Teams in Catastrophe Scenarios*", funded by MINECO (Spanish Government), from 1/1/2016 to 31/12/2018; 272.250,00 €; PI: Alfonso José García Cerezo.
3. **Team member**. P10-TEP-6101, "*Autonomous navigation of a 4x4 mobile robot in natural environments using differential GPS and a 3D laser rangefinder*" Proyecto de Investigación de excelencia, Junta de Andalucía, form March 2013 till March 2017; 39,000 €; PI: Jorge Luis Martínez Rodríguez.
4. **Team member**. DPI2011-22443, "*RAMBLER: Towards Long-Range Exploration Robot Autonomy in Natural Environments*," funded by MICINN (Spanish Government), from January 2012 to December 2015; 266,200 €; PI: Alfonso José García Cerezo.
5. **Team member**. DPI2008-00553, "*Estrategias para maniobras-3D en un robot tele-automático de búsqueda y rescate operando en escenarios naturales y de desastre*" funded by MEC (Spanish Government), from 01/01/2009 tol 31/12/2011; 303,952 €; PI: Alfonso José García Cerezo.
6. **Team member**. DPI2005-00207,"*Asistente robótico móvil para misiones de exploración y rescate*" funded by MEC (Spanish Government), from 31/12/2005 to 31/12/2008; 225,029€; PI: Alfonso José García Cerezo.

C.3. Contracts

- Team member in the project "*Vehículo logístico de alta movilidad y capacidad de conducción autónoma -Proyecto ATICA*", programa Feder-innterconecta. PI: A. J. García Cerezo Empresa Contratante: Iturri S.A. Actividad a Contratar: Firma del contrato: 01/06/2012 Fin contrato: 31/03/2014 Importe: 280.000,00€.

- Team member in project *V.IA (Vehicle Initiative Consortium for Transport Operation and Road Inductive Applications) "Desarrollo de un carril para carga de vehículos eléctricos por inducción*", Programa Feder Innterconecta. Ref.: 8.06/5.56.4175 INNTERCON, PI: J.J. Fernández Lozano, Empresas Contratantes: Conservación, Asfalto y Construcción S.A. + EMT. Empresa Malagueña de Transportes S.A.M. Actividad a Contratar: Firma del contrato: 01/04/2013 Fin contrato: 31/12/2014 Importe: 80.000,00 + 70.000,00€.

C.4. Patents

1. Pequeño-Boter,A.; J. Morales Rodriguez; J.L. Martínez Rodriguez; A.J. Garcia Cerezo; A. Mandow Andaluz; J.J. Fernandez Lozano; A.J. Reina Terol. (2012) "3D telemeter and method for obtaining a 2D laser telemeter around the optical centre thereof by means of pitching", WO 2012/056057(A1), 03.05.2012. Patent exploited by Ingeniería Uno (A. Pequeño Boter).
2. García Cerezo, A.J.; J.L. Martínez Rodriguez; J. Morales Rodriguez; A. Mandow Andaluz; J. M. Gomez De Gabriel; J. Serón Barba; A. Reina Terol; A. Pequeño-Boter; V.F. Muñoz Martínez; J. J. Fernandez Lozano (2009) "All-terrain robot system comprising a multiple-articulation manoeuvring arm, and control and sensor elements which are removable while remaining functional", WO 2009/074704 (A1), 18.06.2009.

3. García Cerezo, A.J.; J. L. Martínez Rodriguez; J. Morales Rodriguez; A. Mandow Andaluz; J. M. Gomez De Gabriel; Pequeño-Boter,A.; J. J. Fernandez Lozano (2009) "All-terrain robot system comprising a gyrostabilised platform for co-operating with unmanned aerial vehicles," WO 2009/074705 (A1). 18.06.2009.
4. Garcia Cerezo, A.J.; A. Ollero Baturone; A. Simon Mata; V.F. Muñoz Martínez; J.M. Gomez De Gabriel; J.L. Martínez Rodriguez; A. Mandow Andaluz; F. Garcia Vacas; J.J. Fernandez Lozano; R. Molina-Mesa (2005) *"Sistema robotizado para servicio en invernaderos",* ES2208091 (B1), 16.03.2005.

C.5. Editorial boards

- *International Program Committee* in three editions of the Mediterranean Conference on Control and Automation: Zadar, Croatia (MCA, IEEE), 19/06/2018-22/06/2018; Valletta, Malta (MCA, IEEE), Fecha: 3/07/2017-6/7/2017; Torremolinos, Spain (MCA, IEEE),16/06/2015-19/06/2015.
- *Editorial Board*, International Journal of Advanced Robotic Systems. From 17/05/2013.
- *Program Committee*. Robotics Science and Systems, Los Angeles, USA, 2011. (IEEE (RAS), AAAI, RSJ) Fecha: 02/11/2010 - 30/06/2011
- *Technical Program Committee.* IEEE International Conference on Mechatronics ICM 2011, Istambul, Turkey (IEEE) Fecha: 16/04/2010 - 15/04/2011
- *Guest Editor,* IEEE Transactions on Industrial Electronics:01/07/2009.

C.6. Membership of scientific societies

- *Institute of Electrical and Electronic Engineers (IEEE),* since 2007. Member of the *Robotics and Automation Society*. Member of the *Industrial Electronics Society*.
- *Comité Español de Automática (CEA),* Spanish branch of the *International Federation of Automatic Control* (IFAC), since 2009.

C.7 Institutional responsibilities

Since July 2016, **Academic Coordinator of UMA's Doctoral Program in Mechatronics Engineering** (*Programa de Doctorado en Ingeniería Mecatrónica*), official Spanish program (RUCT code: 5600225) under RD 99/2011 regulation.

C.8. Training and educational initiatives for novel researchers

- Thesis supervisor for the PhD Thesis of Dr. Victoria Plaza (granted by the DPI2015-65186-R project "Contributions to Intelligent Scene Understanding of Unstructured Environments from 3D Lidar Sensors" (Defense date: 11/Jul/2018). Dr. Plaza is currently working in R&D artificial vision projects with Application Solutions Ltd from Continental Corporation, Lewes, UK.
- Coordinator of the course "Escritura y comunicación de publicaciones de investigación en Ingeniería (Writing and communicating engineering research publications)" in the UMA Master in Mechatronics Engineering, addressed to novel researchers.
- Coordinator of the Educational Innovation Project: "*Project-based learning to improve the quality of scientific publications and technology transfer in engineering*", funded by UMA, from 2013 to 2015. Results were published in the Frontiers in Education conference (rank A ERA), doi: 10.1109/FIE.2014.7044022.
- Program Coordinator for the "ERASMUS IP Joint BUT-TUD-UMA Summer School in Mechatronics (ERASMUS IP 2013-1-ES-ERA10-74539) held in the Brno University of Technology, Brno (Czech Republic) from 23-Sep-2013 to 4-Oct-2013.

C.9 Awards

- Best intelligent control paper award "Premio Kemtecnia", in the CEA-IFAC Jornadas de Automatica, 2016, Madrid, Spain.
- Best robotics paper award "Premio Robotnik", in the CEA-IFAC Jornadas de Automatica, 2012, Vigo, Spain.