



CURRICULUM VITAE (CVA)

IMPORTANT – The Curriculum Vitae cannot exceed 4 pages. Instructions to fill this document are available in the website.

Part A. PERSONAL INFORMATION

CV date 2021/12/07

First name	MANUEL		
Family name	VARGAS VILLANUEVA		
e-mail	mvargas@us.es		URL Web
Open Researcher and Contributor ID (ORCID) (*)	0000-0002-8504-0575		

(*) Mandatory

A.1. Current position

Position	Associate Professor		
Initial date	26/05/2009		
Institution	Universidad de Sevilla		
Department/Center	Ing. de Sistemas y Automática	E.T. Superior de Ingeniería	
Country	Spain	Tel. number	+34 954486036
Key words	Robotics, computer vision, visual servoing, optimization, robust control, modeling of dynamic systems		

A.2. Previous positions (research activity interruptions, art. 14.2.b))

Period	Position/Institution/Country/Interruption cause
1995-1998	Predoct. grant / Ministerio de Educación y Ciencia / Spain
1998-2009	Assistant Professor / University of Seville / Spain

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Licensed in Computer Science Engineering	University of Seville / Spain	1993
PhD. Computer Science Engineering	University of Seville / Spain	2001

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

Manuel Vargas Villanueva obtained in 2001 his PhD. in Computer Science from the University of Seville (Apto Cum Laude). Since 2009, he has been full-time Associate Professor with the Department of Systems Engineering and Automation at the University of Seville.

As a researcher, he currently holds three six-year research terms (until 2019) and one six-year R+D transfer term (until 2019). He is the author of more than 20 publications in international JCR-indexed journals, as well as a number of publications in international conferences with peer review processes and international scientific committees. He is also co-author of 2 international book chapters and a noteworthy Research Report in the Scientific Publications Service of INRIA (Institut National de Recherche en Informatique et en Automatique) <https://hal.inria.fr/inria-00174036/>.



He is part of the Research Group *Automation, Control and Robotics Engineering* (TEP-201) of the Andalusian Research Plan and has taken part as a researcher in 14 relevant research projects, under competitive public funding.

He has made 5 stays in prestigious foreign research centres or universities (amounting for around 9.5 months). The first of them, as a predoctoral researcher, at the Technical University of Denmark (DTU). The following three, during his postdoctoral period, as a invited researcher, in one of the most prestigious research institutes in France, INRIA (Institut National de Recherche en Informatique et en Automatique), which served to establish links with the ICARE/AROBAS group, under the direction of Prof. Patrick Rives. The most recent stay, as a invited professor of the Departamento de Engenharia Eletrônica, at the Universidade Federal de Minas Gerais, Belo Horizonte, Brazil.

Dr. M.Vargas conducted his PhD thesis in the field of visual servoing in robotics. Later on, he worked in homography-based image geometry with application to vision-based control with the team of Prof. Patrick Rives at INRIA Sophia Antipolis, France. He also has co-authored some publications related to the joint control of gimbaled UAVs. In addition, he has developed part of his research activity in advanced control of industrial systems, having focused more recently on applied optimization. He has supervised one PhD. thesis on the latter subject.

Dr. M.Vargas has been in charge of two important R+D projects related to image processing, with a total budget of more than four hundred and twenty thousand euros. The first one, funded by Acisa (Aldesa enterprise group) was devoted, in particular, to the automated urban traffic surveillance in the cities of Sevilla and Granada, analyzing images gathered by preinstalled cameras. Statistics involving on-road vehicle tracking and counting, traffic-light queue length estimation, etc. were among the expected results. The project culminated with the development of a hardware prototype for the estimation of traffic data on urban roads. Project Leonardo, on the other hand, was funded by Abengoa Solar New Technologies. This project enabled intelligent detection and recognition in the visible spectrum of physical defects affecting photovoltaic solar panels, by automatically inspecting images of solar trackers operating in plants. Defects such as small burns in cells or filaments, whole burnt cells, discoloration, broken glass, etc. were of particular interest. Project Leonardo had several stages and lasted for a continuous period of approximately 3 years. Due to confidentiality restrictions, no related scientific publications were obtained. Nevertheless, national/international patents were applied for and granted, co-invented by Dr. M.Vargas. As a result of these projects, both research and technology transfer to the private sector were carried out.

With regard to his teaching activity, he has more than 22 years of experience in university teaching, including a variety of bachelor's and master's degrees in Engineering, such as Telecommunication, Industrial, Computer Science, Mechatronics and Aerospace Engineering. In particular, he has been lecturing in subjects such as Image Processing and/or Perception Systems for more than 6 years up to the present day.

Part C. RELEVANT MERITS (sorted by typology)

C.1. Publications (see instructions)

- 1. Journal Paper.** D. Rodríguez, G. Bejarano, M. Vargas, J.M. Lemos, M.G. Ortega. *Modelling and cooling power control of a TES-backed-up vapour-compression refrigeration system.* Applied Thermal Engineering. October 2020. <https://doi.org/10.1016/j.applthermaleng.2019.114415>
- 2. Journal Paper.** G. Bejarano, D. Rodríguez, J.M. Lemos, M. Vargas, M.G. Ortega. *MINLP-based hybrid strategy for operating mode selection of TES-backed-up refrigeration systems.* International Journal of Robust and Nonlinear Control. 30-15, pp. 6091-6111. WILEY, October 2020. ISSN 1049-8923, ISSN 1099. <https://doi.org/10.1002/rnc.4674>



3. **Journal Paper.** G. Bejarano, M. Vargas, M.G. Ortega, F. Castaño, J.E. Normey-Rico. *Efficient simulation strategy for PCM-based cold energy storage systems*. Applied Thermal Engineering. Vol 139. Pages 419-431, July 2018. <https://doi.org/10.1016/j.applthermaleng.2018.05.008>.
4. **Journal Paper.** G. Bejarano, J.J. Suffo, M. Vargas, M.G. Ortega. *Novel scheme for a PCM-based cold energy storage system. Design, modelling, and simulation*. Applied Thermal Engineering, Vol. 132, March 2018, Pages 256-274. <https://doi.org/10.1016/j.applthermaleng.2017.12.088>
5. **Journal Paper.** G. Bejarano, C. Vivas, M.G. Ortega, M. Vargas. *Suboptimal hierarchical control strategy to improve energy efficiency of vapour-compression refrigeration systems*. Applied Thermal Engineering, Vol. 125, 2017, Pages 165-184. <https://doi.org/10.1016/j.applthermaleng.2017.06.135>.
6. **Journal Paper.** G. Bejarano, J.A. Alfaya, M.G. Ortega, M. Vargas. *On the difficulty of globally optimally controlling refrigeration systems*. Applied Thermal Engineering. Vol. 111, January 2017, Pages 1143-1157. <https://doi.org/10.1016/j.applthermaleng.2016.10.007>.
7. **Journal Paper.** F. Barrero, J.A. Guevara, E. Vargas, S. Toral, M. Vargas. *Networked transducers in intelligent transportation systems based on the IEEE 1451 standard*, Computer Standards & Interfaces. Volume 36, Issue 2, 2014, Pages 300-311, <https://doi.org/10.1016/j.csi.2012.05.004>. <https://doi.org/10.1016/j.csi.2012.05.004>.
8. **Journal Paper.** J.M. Milla, M. Vargas, S.L. Toral, F. Barrero. *A Dual-Rate Background Subtraction Approach for Estimating Traffic Queue Parameters in Urban Scenes*. IET Intelligent Transport Systems. Vol. 7, 2013, Pages 122-130.
9. **Journal Paper.** F. Barrero, S.L. Toral, M. Vargas, J. Becerra. *Networked Electronic Equipments using the IEEE 1451 Standard: VisioWay, a Case Study in the ITS Area*. International journal of distributed sensor networks. Vol. 8, Issue 4, 2012, Pages 1-12.

C.2. Congress

Conference Paper.

1. **Conference Paper.** G. Bejarano, J.J. Suffo, M. Vargas, M.G. Ortega. *Modelado dinámico de un sistema de almacenamiento de frío vinculado a un ciclo de refrigeración*. Actas de las XXXVIII Jornadas de Automática, 2017. ISBN: 978-84-16664-74-0.
2. **Conference Paper.** J.G. Villagómez, M. Vargas, M.G. Ortega, F.R. Rubio. *Modeling and control of the tPVTOL (tilt Planar Vertical Takeoff and Landing vehicle)*. IFAC-PapersOnLine 48(9), 2015. Pages: 150-155.
3. **Conference Paper.** J.G. Villagómez, M. Vargas, M.G. Ortega, F.R. Rubio. *Planar Modeling of an Actuated Camera Onboard a MAV*. CONTROLO'2014 Proceedings of the 11th Portuguese Conference on Automatic Control, 2014, Pages: 483-493, ISBN: 978-3-319-10380-8.
4. **Conference Paper.** J.G. Villagomez, M. Vargas, F.R. Rubio. *Backstepping and sliding-mode techniques applied to an underactuated camera onboard a rotorcraft MAV*. In Proc. of the IROS Workshop on Visual Control of Mobile Robots (ViCoMoR), 2014. Pages 1-7.

C.3. Research projects



1. Control de Apuntamiento de Paneles Solares HCPV por Realimentación de Potencia (ICARO). IP: Rodríguez Rubio, Francisco. (DPI2016-79444-R). 2017-2019. 135000 EUR.
2. Optimización y producción de frío mediante sistemas de almacenamiento de energía (DPI2015-70973-R). Ministerio de Economía y Competitividad. Ortega-Linares, Manuel Gil. 2016-2018. 168.000,00 EUR.
3. Estimación y Predicción Distribuida de la Radiación para Control de Campos Solares. IP: Rodríguez Rubio, Francisco. (DPI2013-44135-R). 2014-2016. 147.000,00 EUR.
4. Optimización y control robusto multivariable de sistemas de refrigeración (DPI2012-37580-C02-02). Ministerio de Economía y Competitividad. Ortega-Linares, Manuel Gil. 2013-2015. 152.100,00 EUR.
5. CONRED. Control realimentado de sistemas integrados en redes inalámbricas (DPI2010). Rodríguez-Rubio, Francisco. 2011-2013. 235.950,00 EUR.

C.4. Contracts, technological or transfer merits

R&D Projects and contracts

1. LEONARDO. *Automated Visual Inspection of Solar Power Plants*. M. Vargas. I+D+i Project. Abengoa Solar New Technologies) 2010-2012. 190.380,00 EUR.
2. THESTO. Development of energy storage systems for vapour direct generation. M.G. Ortega. 2012-2015, 250.000,00 EUR.
3. PLANTA TES PS10. Sistemas de sales fundidas para el almacenamiento térmico a alta temperatura. M.G. Ortega. 2010-2011. 138.491,00 EUR.

Patents

1. Title: Método para la inspección automatizada de captadores solares fotovoltaicos instalados en planta.
Inventors: Pablo Noriega Gil, Manuel Vargas Villanueva, Manuel Garrido Satué, Jesús María González Villagómez.
Publication code: [ES2415240](#) B1. Date of publication: 21-05-2014
International request code: PCT/ES2012/070870 Country of priority: Spain
Concession date: 13-05-2014
Owning entity: ABENGOA Solar New Technologies, S.A.
Under exploitation by: ABENGOA Solar New Technologies, S.A.
Link: <http://invenes.oepm.es/InvenesWeb/detalle?referencia=P201132058>
2. Title: Method for the automated inspection of photovoltaic solar collectors installed in plants (International extension of the previous one)
Inventors: Pablo Noriega Gil, Manuel Vargas Villanueva, Manuel Garrido Satué, Jesús María González Villagómez.
Publication code: WO2013093153 A1. Date of publication: 27-06-2013
International request code: PCT/ES2012/070870 Country of priority: Spain
Fecha de concesión: 13-05-2014
Owning entity: ABENGOA Solar New Technologies, S.A.
Under exploitation by: ABENGOA Solar New Technologies, S.A.
Link: https://worldwide.espacenet.com/publicationDetails/originalDocument?CC=WO&NR=2013093153A1&KC=A1&FT=D&ND=3&date=20130627&DB=EPODOC&locale=es_LP