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Work Address

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Current Address

CSE Department
UC San Diego
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La Jolla, CA 92093, USA

RESEARCH INTERESTS: Computer vision and robotics; Recognition from wearable and mobile cameras; People analysis in social media pictures.

EDUCATION

- Sept. 2003 - Oct. 2008 **PhD in Computer Science.** University of Zaragoza (UZ), Spain
Outstanding PhD thesis Award 2007/08 at UZ.
Google AnitaBorg Europe 2008 Scholarship Finalist.
- Jan. 2008 Winter School on Bayesian Cognition. INRIA, Chamonix, France.
- June 2004 Summer School on Image & Robotics, INRIA, Sophia-Antipolis, France.
- 2003 Graduate courses in robot sensors, navigation, 3D Computer Vision, Localization and mapping. Average grade 9 (in 1 to 10 scale). UZ, Spain.
- Pre-doctoral research stays at:
- Feb. - April 2008 AI Lab. Stanford University, USA. Visiting Prof. Jana Košecká.
- March - May 2007 AI Lab. Stanford University, USA. Visiting Prof. Jana Košecká.
- Feb. - June 2006 BIWI lab. ETHZ, Switzerland. PhD H. Bay, Prof. L. Van Gool.
- March - Aug. 2005 VISICS, KU Leuven, Belgium. Prof. T. Tuytelaars, Prof. L. Van Gool.
- Sept. 1998- Sept. 2003 **Bs.&Ms. in Computer Science Engineering.** UZ, Spain.
- 2003 Master Thesis on image processing and classification, at Danmarks Tekniske Universitet (D.T.U.), Denmark (with EU Erasmus program).

AWARDS and SCHOLARSHIPS received

- June - Dec. 2011 Mobility program for researchers, from the regional government (*Subvenciones de fomento de la movilidad de investigadores de la DGA*).
- Aug. - Dec. 2010 Mobility program for researchers at the UZ.
- 2008 "Premio extraordinario de doctorado 2008-09", awarded to the most outstanding PhD thesis from the year at the University of Zaragoza.
- 2008 Accesit for the best Robotics PhD thesis in Spain in 2008.
- 2008 Google AnitaBorg 2008 Scholarship Finalist.
- May 2004 - April 2008 FPI scholarship (research staff training program from the Spanish Ministry for Education and Science)
- Jan. - June 2003 Erasmus scholarship from the European Union, to perform part of the Master studies abroad (at Danmarks Tekniske Universitet, Denmark).

WORK EXPERIENCE

- Sept. 2013 - present **Visiting Assistant Professor** at:
CSE Dep. UC San Diego, California, USA.
- Oct. 2008 - present **Assistant professor**, Informatics & Systems Engineering Dpt., UZ, Spain.
- **Teaching** (for Computer Science, Telecommunications and Industrial Engineering degrees): Automation, Service Robotics, Real Time Systems (Bs. and Ms. courses); Perception and Computer Vision (PhD courses).
 - Other short courses: *Smartphone* programming. iOS programming.
 - **Supervision and research** on projects about *computer vision in smartphones, applications of RGB-d cameras, vision for robotics* (see projects and publication sections).
- Visiting Scholar** at:
- Sept. 2012 to Jan. 2013 Computer Vision Lab. Prof. Serge Belongie. UC San Diego, California, USA.
- June to Dec. 2011 Computer Vision Lab. Prof. Serge Belongie. UC San Diego, California, USA.
- Aug. to Dec. 2010 CS Dpt. Prof. Jana Košecká. George Mason University, Virginia, USA.
- Guest lectures and seminars:**
- October 2010 *Vision Based Localization for Robots: metric, topological and semantic mapping.* George Mason University, USA.
- October 2011 *Computer Vision and Robotics: appearance based models.* University of California, San Diego, USA; and Willow Garage, USA.
- May 2012 *Mobile robotics in education,* Master on Education. University of Zaragoza.
- October 2012 Image processing and Computer vision guest lectures, University of California, San Diego, USA.
- Sept. 2003 - Sept. 2008 **Graduate Research Assistant - PhD candidate**, Robotics, Perception & Real Time Group. UZ, Spain. **Research** in Computer Vision and Robotics: multi-view geometry, structure from motion, image matching, localization, omnidirectional vision, recognition and online learning.
- Sept. 2002 - Jan. 2003 Aragón Institute of Technology, Zaragoza, Spain. **Internship** in Labora Project. Application Development with Web technologies.

INTERNATIONAL JOURNALS and BOOK CHAPTERS

- *Localization in Urban Environments Using a Panoramic Gist Descriptor.*
A. C. Murillo, G. Singh, J. Kosecka, J. J. Guerrero. IEEE Transactions on Robotics, vol.29, no.1, pp.146,160, Feb. 2013.
- *Semantic labeling for indoor topological mapping using a wearable catadioptric system.*
A. Rituerto, A. C. Murillo, J. J. Guerrero. Robotics and Autonomous Systems J., in special issue "Semantic Perception, Mapping and Exploration", 2012. (Available on-line)
- *Sistema multi-robot para localización e identificación de vehículos.*
C. Sagüés, A.R. Mosteo, D. Tardioli, A. C. Murillo, J.L. Villarroel, L. Montano. Revista Iberoamericana de Automática e Informática industrial (RIAI) 9(1), pp. 69-80, January, 2012.
- *Visual Door Detection in Images Integrating Appearance and Shape Cues.*
A. C. Murillo, J. Košecká, J. J. Guerrero, C. Sagüés. Robotics and Autonomous Systems J., 6(6), pp. 512-521, June, 2008.
- *Localization and Matching using the Planar Trifocal Tensor with Bearing-only Data.*
J.J. Guerrero, A. C. Murillo, C. Sagüés. - IEEE Transactions on Robotics, 24(2), pp. 494-501, 2008.
- *Topological and metric robot localization through computer vision techniques.*
A. C. Murillo, J.J. Guerrero, C. Sagüés. - Chapter 8, in book: Unifying Perspectives in Computational and Robot Vision, Springer Lecture Notes Electrical Engineering Series, vol.8. 2008.
- *From Omnidirectional Images to Hierarchical Localization.*
A. C. Murillo, C. Sagüés, J.J.Guerrero, T. Goedemé, T. Tuytelaars, L. Van Gool. Robotics and Autonomous Systems J., Vol. 55(5): 372-382, 2007.
- *From Lines to epipoles through planes in two views.*
C. Sagüés, A. C. Murillo, F. Escudero, J.J. Guerrero. Pattern Recognition J., Vol.39(3):384-393, 2006.

INTERNATIONAL CONFERENCES and WORKSHOPS (all with at least two reviewers)

- *Line Image Signature for Scene Understanding with a Wearable Vision System*
A. Rituerto, **A. C. Murillo**, J. J. Guerrero. *SenseCam and Pervasive Imaging Conference*, UCSD, La Jolla, USA, 2013. Oral presentation.
- *A low-cost custom-built robotic arm on the TurtleBot platform*
P. Herman, A. R. Mosteo, **A. C. Murillo**. *ROBOT 2013: 1st Iberian Robotics Conference*, Madrid, Spain, 2013. Poster presentation.
Invited Talk at RSS 2013 Workshop on Common Platforms in Robotic Manipulation, Berlin, 2013.
- *From Bikers to Surfers: Visual Recognition of Urban Tribes*
I. S. Kwak, **A. C. Murillo**, P. Belhumeur, D. Kriegman, S. Belongie. *British Machine Vision Conference (BMVC)*, Bristol, UK, 2013. Poster presentation.
- *Urban Tribes: Analyzing Group Photos from a Social Perspective.*
A. C. Murillo, I. S. Kwak, L. Bourdev, D. Kriegman, S. Belongie. *IEEE Workshop on Socially Intelligent Surveillance and Monitoring (SISM)*, held with Computer Vision and Pattern Recognition Conf.. Providence, USA, 2012. Oral presentation.
- *Wearable Omnidirectional Vision System for Personal Localization and Guidance.*
A. C. Murillo, D. Gutiérrez-Gómez, A. Rituerto, L. Puig and J. J. Guerrero. *2nd IEEE Workshop on Egocentric (First-Person) Vision*, held with Computer Vision and Pattern Recognition Conf. Providence, USA, 2012. Poster presentation.
- *Towards robust and efficient text sign reading from a mobile phone.*
A. B. Cambra, **A. C. Murillo**. *IEEE International Workshop on Mobile Vision*, held with Int. Conf. on Computer Vision, Barcelona, Spain, 2011. Oral presentation.
- *Label propagation in videos indoors with an incremental non-parametric model update.*
J. Rituerto, **A. C. Murillo**, J. Košecká. *IEEE/RSJ Int. Conference on Intelligent Robots and Systems*. San Francisco, USA, 2011. Interactive presentation.
- *A practical mobile robotics engineering course using LEGO Mindstorms.*
A. C. Murillo, A. R. Mosteo, J. A. Castellanos, L. Montano. *Int. Conf. on Research and Education in Robotics (EUROBOT 2011)*, Prague, Czech Republic, 2011. Oral presentation.
- *Gist vocabularies in omnidirectional images for appearance based mapping and localization.*
A. C. Murillo, P. Campos, J. Košecká, J.J. Guerrero. *10th IEEE Workshop on Omnidirectional Vision, Camera Networks and Non-classical Cameras (OMNIVIS)*, held with Robotics, Science and Systems Conf. Zaragoza, Spain, 2010. Oral presentation.
- *Improving topological maps for safer and robust navigation.*
A. C. Murillo, P. Abad, J.J. Guerrero, C. Sagüés. *IEEE/RSJ Int. Conf. on Intelligent Robots and Systems*, pp. 3609-3614. St. Louis, USA, 2009. Oral presentation.
- *Experiments in Place Recognition using Gist Panoramas.*
A. C. Murillo, J. Košecká. *9th IEEE Workshop on Omnidirectional Vision, Camera Networks and Non-classical Cameras (OMNIVIS)*, with Int. Conf. on Computer Vision, pp. 2196-2203. Kyoto, Japan, 2009. Oral presentation.
- *Weakly Supervised Labeling of Dominant Image Regions in Indoor Sequences.*
A. C. Murillo, J. Košecká, B. Micusik, Sagüés, J. J. Guerrero. In *Workshop Vision in Action: Efficient strategies for cognitive agents in complex environments*, held with ECCV, 2008. Oral presentation.
- *Door detection in images integrating appearance and shape cues.*
A. C. Murillo, J. Košecká, J.J. Guerrero, C. Sagüés. *2ⁿd From Sensors to Human Spatial Concepts Workshop*, with Int. Conf. on Intelligent Robots and Systems, pp. 41-48. San Diego, USA, 2007. Oral presentation.
- *SURF features for efficient robot localization with omnidirectional images.*
A.C. Murillo, J.J. Guerrero, C. Sagüés. *IEEE Int. Conf. on Robotics and Automation*, pp. 3901-3907. Rome, Italy, 2007. Oral presentation.
- *Topological and metric robot localization through computer vision techniques.*
A. C. Murillo, J.J. Guerrero, C. Sagüés. *Unifying perspectives in computational and robot vision Workshop*, with Int. Conf. on Robotics and Automation, pp. 79-85. Rome, Italy, 2007. Oral presentation.
- *Robot and Landmark Localization using Scene Planes and the 1D Trifocal Tensor.*
A. C. Murillo, J.J. Guerrero, C. Sagüés. *IEEE/RSJ Int. Conf. on Intelligent Robots and Systems*, pp. 2070-2075. Beijing - China, 2006. Oral presentation.

- *Hierarchical localization by matching vertical lines in omnidirectional images.*
A. C. Murillo, C. Sagüés, J.J. Guerrero, T. Goedemé, T. Tuytelaars, L. Van Gool. *1st From Sensors to Human Spatial Concepts Workshop*, with Int. Conf. on Intelligent Robots and Systems, pp.13-19. Beijing, China, 2006. Oral presentation.
- *Localization with Omnidirectional Images using the Radial Trifocal Tensor.*
C. Sagüés, A.C. Murillo, J.J. Guerrero, T. Goedemé, T. Tuytelaars, L. Van Gool. IEEE/RSJ Int. Conf. on Robotics and Automation, pp. 551-556. Orlando, USA, 2006. Oral presentation.

PARTICIPATION in RESEARCH PROJECTS

- *Portable computer vision for augmented navigation and personal assistance*, DPI2012-31781. Financed by Spanish Government. Period 2013-2015. P.I.(principal investigator): J.J. Guerrero.
- *Multi-robot teams for logistics, maintenance and ambiental monitoring*, DPI2012-32100. Financed by Spanish Government. Period 2013-2015. P.I.: J. L. Villaroel.
- *Project TEams of robots for Service and Security missiOns, TESSEO*, DPI2009-08126. Financed by Spanish Ministry of Science & Innovation. Period 2010-2012. P.I.: C.Sagüés.
- *Project Non-conventional Vision Systems for Personal Assistance, VISPA*, DPI2009-14664. Financed by Spanish Ministry of Science & Innovation. Period 2010-2012. P.I.: J.J. Guerrero.
- *Innovation in tourist guides through new mobile technologies.* Financed by DISLINE desarrollos tecnológicos (Spain). Transfer to Industry project. From 01-07-2011 to 30-03- 2012. P.I.: A.C. Murillo.
- *Project Artificial Vision for Intelligent Control of Balay Induction Hobs.* Financed by Electrodomésticos España S.A.(BSH - Spain). Transfer to Industry project. From 01-06-2008 to 30-06- 2009. P.I.: C. Sagüés.
- *Project NERO (NETworked RObots)*, DPI2006-07928. Financed by Spanish Research Directorate-General (MEC). From 1/11/2006 to 30/10/2009. P.I.: C. Sagüés.
- *Project RAWSEEDS (Robotics Advancement through Web-publishing of Sensorial and Elaborated Extensive Data Sets, EC, FP6-IST-045144).* Financed by EU. From 2005 to 2009. Int. coordinator M. Matteucci, P.I. Univ. Zaragoza: J. D. Tardós.
- *Project Visual localization and 3D reconstruction with omnidirectional vision.* Financed by Univ. of Zaragoza, UZ2007 TEC05. From 1/1/2008 to 31/12/2008. P.I.: J.J. Guerrero.

SUPERVISED MASTER THESIS PROJECTS

- *Computer vision approaches for building recognition*. Oscar J. Calderón Nevot. Ms. CS Eng. 2007.
- *Topological map building and robot localization with omnidirectional cameras*. Diego Viu Domínguez. Ms. Civil Eng. 2007.
- *Vision based hierarchical navigation and object detection*. Pablo Abad Rubio. Ms. CS Eng. 2008.
- *Visual recognition for iPhone platform*. Jose Herrero. Ms. CS Eng. 2010.
- *Automatic organization and search in omnidirectional image sets for outdoor localization*. Pedro Campos. Ms. Civil Eng. 2010.
- *Mobile Robotics with Lego Mindstorms*. David Pellicer. Ms. CS Eng. 2010.
- *Automatic recognition of interest areas on indoor sequences*. Jorge Rituerto. Ms. Civil Eng. 2011.
- *Text sign interpretation with a mobile phone camera*. Ana B. Cambra. Ms. CS Eng. 2011.
- *Augmented indoor hybrid maps using catadioptric images*. Alejandro Rituerto. Ms. CS. 2011.
- *Management Platform for tourist guides on mobile phones*. Juanjo Molinero. Ms. CS. Eng. 2012.
- *Tourist guide based on visual recognition from a mobile phone*. Javier Arroyo. Ms. CS. Eng. 2012.
- *3D Object recognition with low cost depth cameras*. David Bueno. Ms. CS. Eng. 2012.
- *Gesture based interface to control a humanoid robot using RGB-d cameras*. Luis Parrilla. Ms. CS. Eng. 2012.
- *Vision guided robotic arm mounted on a robotic platform*. Pierre Herman. Ms. Civil Eng. 2013.
- *Computer vision techniques for augmented reality applications in smartphones*. Alfonso Escriche. Ms. CS.Eng. 2013.
- *Visual recognition in smartphones for visually impaired users*. Juan París. Ms. CS. Eng. 2013.
- *Developing a ROS Enabled Full Autonomous Quadrotor*. Iván Monzón. Ms. Civil Eng. 2013.

Additional SERVICE and PROFESSIONAL ACTIVITIES

- Conferences **committees** and **organization**:

Co-organizer of the *Workshop on Wearable Computer Vision Systems*, held together with Int. Conf. on Computer Vision 2013.

Co-organizer of *1st IEEE workshop Challenges and Opportunities in Robot Perception*, held together with Int. Conf. on Computer Vision 2011.

Associate Editor of the IEEE/RSJ International Conference on Intelligent Robots and Systems, IROS 2013.

Local committee for Robotics, Science and Systems conference, June 2010, Zaragoza.

Program committee of FS2HSC workshop, held jointly with International Conference on Intelligent Robots and Systems 2007.

- **Reviewer** for international conferences and journals (ICRA, IROS, ICINCO, RAS, TRO, ECCV, WACV)

- Organization and participation in **divulagation** activities:

Collaborator for the workshops organization at the "Girls' Day" & "Engineering Week" in the University of Zaragoza (open doors activities to high school students) since 2008.

- Professional evaluation:

Positive evaluation in the Spanish academic equivalent to first tenure-track evaluation. (*Contratado Doctor*). December 2011.

- IEEE and IEEE WIE (Women in Engineering) member since 2006.