J. Javier Yebes

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Research Interests

- **Computer Vision:** image features, object recognition, scene understanding, intelligent video surveillance, 3D reconstruction.
- **Machine Learning:** latent SVM, CRFs, structured learning and inference.
- **Robotics:** Visual SLAM, service robots, UAV/MAV, aiding systems for the visually impaired.
- **Intelligent Vehicles:** ADAS, smart driving applications, autonomous vehicles, occupants monitoring, driver drowsiness detection.

Research Experience

PostDoc Research Assistant   September 2014 - now
University of Alcalá (UAH), Madrid, Spain.
Working on an intelligent vision system for parking monitoring, 3D visual reconstruction of outdoor scenes and also preparing other project proposals.

Research Assistant   October 2008 – July 2014
RobeSafe group, Department of Electronics, UAH.
Main projects: service robots for the improvement of citizen's life quality in metropolitan areas; advanced driver assistance systems (**ADAS**); **smart driving** applications; 3D reconstruction of legacy buildings from high resolution images; **vision-based localization** for visually impaired people; DARPA Virtual Robotics Challenge and intelligent **video surveillance**.

Collaboration in teaching (UAH)   January 2012 – July 2014
Computer Vision and Intelligent Control of the "Master in Advanced Electronic Systems. Intelligent Systems". Also, co-advising Degree and Master Theses.

Visiting research student (VIG)   April – August 2013
Visual Inference Group, Technische Universität Darmstadt (Germany).
Prof. Stefan Roth supervised my research on visual inference of object instances from KITTI urban images. Awarded with funding from the Spanish MECD.

Visiting research student (TTI-C)   2011– 2012
Toyota Technological Institute at Chicago (USA).
5 months internship under the supervision of **Prof. Raquel Urtasun**, on 3D scene understanding, learning and inference of graphical models. Supported with funds from UAH and TTI-C.

Education

Ph. D. in Computer Vision and Robotics (Cum Laude)   May 2010 - July 2014
Department of Electronics, University of Alcalá (UAH). Madrid, Spain.
Thesis: "*Supervised learning and inference of semantic information from road scene images: objects and layout*".   **Advisor:** Full Prof. Luis M. Bergasa.
Research topic: leverage the 2D world perceived by robots to provide a meaningful **3D scene understanding, semantic learning and object recognition** from monocular and stereo images. Applications to robots, intelligent vehicles and to the visually impaired aiding. Awarded with two grants: *UAH-FPI* and Spanish Ministry of Education *FPU*.

M.Sc. in MUSEA (UAH)   October 2009 – September 2010
(Master in Advanced Electronic Systems. Intelligent Systems)
Thesis (Hons.): "Occupants monitoring system inside vehicles based on bag of visual words method."

B.Sc. in Electrical/Telecommunication Engineering (UAH)   September 2009
Rank # 1 in class of 75, Dipl. Telematics Technical Engineering.

Selected publications

- Conference Papers

  – J. J. Yebes, L.M. Bergasa, R. Arroyo and A. Lázaro. Supervised learning and evaluation of KITTI's car detector with DPM. IEEE Intelligent Vehicles Symposium. Dearborn, MI, USA, 2014.

  – Pablo F. Alcantarilla, J. J. Yebes, J. Almazán and L. M. Bergasa. On Combining Visual SLAM and Dense Scene Flow to Increase the Robustness of Localization and Mapping in Dynamic Environments, IEEE International Conference on Robotics and Automation. St. Paul, Minnesota, USA, 2012.

  – J. J. Yebes, P. F. Alcantarilla and L. M. Bergasa. Occupant monitoring system for traffic control based on visual categorization. IEEE Intelligent Vehicles Symposium, Baden-Baden, Germany, 2011.

- Journal Papers

  – A. González, L. M. Bergasa and J. J. Yebes. Text Detection and Recognition on Traffic Panels From Street-Level Imagery Using Visual Appearance, IEEE Trans. on Intelligent Transportation Systems 2013, 99, 1-11.

  – A. Rodríguez, J. J. Yebes, P. F. Alcantarilla, L. M. Bergasa, J. Almazán and A. Cela. Assisting the Visually Impaired: Obstacle Detection and Warning System by Acoustic Feedback, Sensors 2012, 12, 17476-17496.