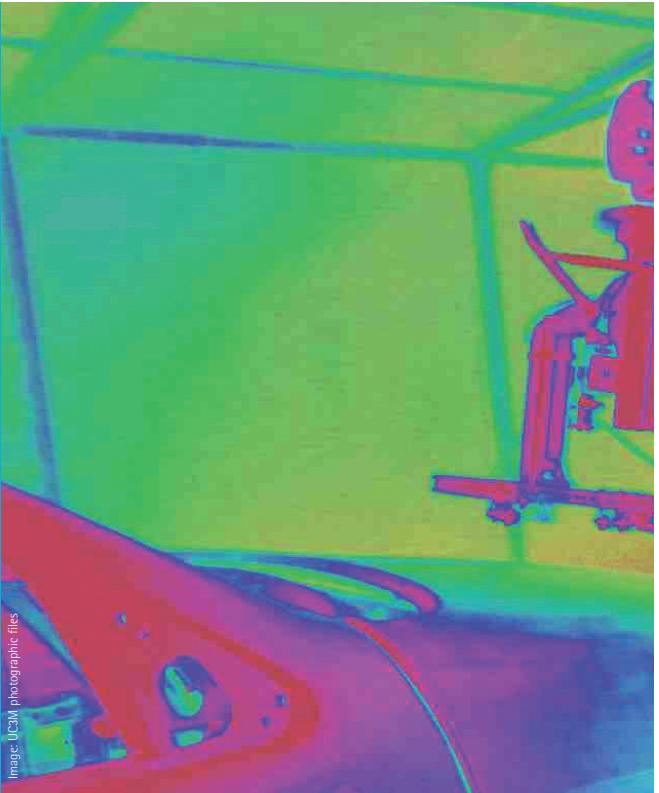


LSI

INTELLIGENT
SYSTEMS
LABORATORY

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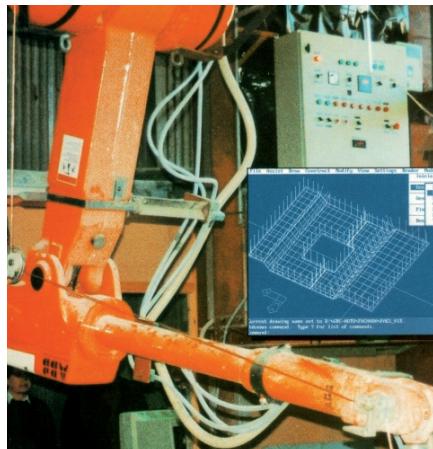


The Intelligent Systems Laboratory has a high level of international prestige thanks to the publication of its research results in numerous scientific journals

The Intelligent Systems Laboratory (LSI), led by Dr. Arturo de la Escalera Hueso, Dr. Jose María Armingol Moreno and Dr. Francisco José Rodríguez Urbano, is formed by a consolidated and multidisciplinary team of 14 engineers and physicists, with vast experience in providing innovative solutions for the Automation, Control and Optimization of the manufacturing systems of companies from various sectors.

•RESEARCH LINES•

- Intelligent transport systems
- Computer vision
- Computer-integrated manufacturing
- System modeling and simulation
- Microrobotics



We offer medium- and long-term "customized" solutions for specific problems of a high technological complexity.

•OUTSTANDING COLLABORATIONS AND R&D&I PROJECTS•

The main clients of the group include national and international companies such as APTECA-Aplicaciones Tecnológicas S.A., BCB INFORMÁTICA Y CONTROL, DRACE-Grupo Dragados, FFE-Fundación de los Ferrocarriles Españoles, Gamco, Geotecnia y Cimientos S.A., IberOptics, JOHN DEERE Ibérica S.A., Iberia Informática S.L, Tecsa Empresa Constructora and Telefónica I+D. LSI also participates actively in international associations (IEE, IAPR, IFAC) and national associations (AERFAI, CEA, ASEPA) which are renowned in the automation field.

Some of the most relevant R&D&I projects of the group in the last ten years are:

- Active Security System for Vehicles based on Artificial Vision (SAVVA).

Funding entity: Autonomous Community of Madrid (Comunidad de Madrid). Date: 2003-2004.



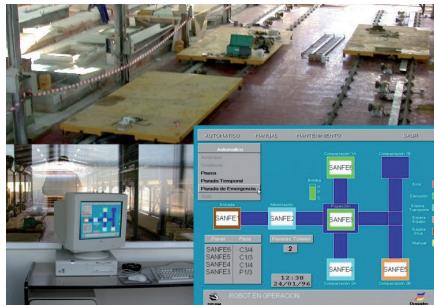
The automatic analysis of images allows a 100% quality control, with homogeneous criteria and cost reduction.

- Reconfigurable Architecture Controller for Teleoperation Applications.

Funding entity: Ministry of Science and Technology. Date: 2003-2006.

- Advanced Driving Assistance System for Urban Environments.

Funding entity: Ministry of Education and Science. Date: 2004-2007.



The Automation and the Modeling, Simulation and Optimization of Production Systems increases competitiveness and improves system productivity.

- Automation of the Modular Spiral Building System.

Funding entity: Construcciones Especiales y Drajados S.A. Date: 2005-2006.

- Vehicle Recognition (RECOVE).

Funding entity: GAMCO S.L. Date: 2009.

- Pedestrian, Cyclist and Motorist Detection System - Perception System.

Funding entity: Ministry of Science and Technology. Date: 2007-2010.



With our training program we facilitate the technology transfer between the University and the Company.

- Computer Vision for Road Perception (VISVIA).

Funding entity: Ministry of Education and Science. Date: 2007-2010.

- VISION: New Generation Video Communications.

Funding entity: Telefónica I+D. Date: 2007-2010.

- Cooperative Vehicle Speed Control System.

Funding entity: Autonomous Community of Madrid (Comunidad de Madrid) - Universidad Carlos III de Madrid. Date: 2008.

- Automatic Traffic Sign Detection and Identification in Roadway Inventory (DIASTIC).
Funding entity: Ministry of Industry. Date: 2008-2009.

- Motor Vehicles Security.
Funding entity: Autonomous Community of Madrid (Comunidad de Madrid). Date: 2010-2013.

- Intelligent Inventory and Road Monitoring System.

Funding entity: GEOTECNIA Y CIMENTOS S.A. Date: 2009-2011.



As a multidisciplinary group we can provide global solutions for the automation problems of companies.

- Pre-collision Measure Activation System to Prevent Accidents in Urban Environments.

Funding entity: Ministry of Science and Technology. Date: 2011-2013.

- Driver Assistance Systems based on Driver Monitoring using Computer Vision.

Funding entity: Ministry of Science and Technology. Date: 2011-2011.

- Driver Distraction Detector System.

Funding entity: Ministry of Science and Technology. Date: 2012-2014.

- Development of an Integral System for Detecting Trains, Broken Rails and other Railway Applications based on the Intelligent Interpretation of Vibrations Transmitted by Rails.

Funding entity: Ministry of Economy and Competitiveness. Date: 2012-2015.



Our constant research allows us to progress in the development of new technologies for their subsequent transfer to the Company.

• INNOVATIVE TECHNOLOGICAL SOLUTIONS •

- Control system for motorised optics with variable focal length. Patent ES2134116.

- Control systems for motorized optics with variable focal length. They have multiple applications: activities of security and surveillance, automated visual inspection for quality control, remote operation of robotized systems and teleconferences, among others.

- Lane Departure Warning System.

- Traffic Sign Recognition System.

- Pedestrian Detection System.

- Variable Speed Control System.

- Driver Control System.

• SCIENTIFIC-TECHNICAL SERVICES •

- Analysis of the suitability of changing or redesigning production systems by means of computer techniques for Modeling, Simulation and Optimization of Processes.
- Design and development of solutions for automating production processes.
- Design and development of industrial Computer Vision applications.

• TECHNOLOGICAL EQUIPMENT •

The group has excellent facilities which are perfectly equipped to tackle any type of work and project:

- 3 industrial ABB robot manipulators.
- 30 PLCs (Siemens, Telemecanique).
- Communications systems for Fieldbuses (Profibus, Can Bus).

- 12 pieces of image analysis equipment (MATROX).

- Lathe and milling machine with CNC.
- Computers with data acquisition and control card.
- Simulation Software Tools (SimProcess, Witnes, Arena).

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