

Institut de Robòtica i Informàtica Industrial

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The **Institut de Robòtica i Informàtica Industrial** is a Joint University Research Institute of the Spanish Council for Scientific Research (CSIC) and the Technical University of Catalonia (UPC)

CSIC UNIVERSITAT POLITÈCNICA DE CTALUNYA BARCELONATECH

Its objectives are:

to conduct **research** in Robotics and Applied Informatics; to collaborate with the industry in **technology transfer** projects, and to offer scientific **education** through graduate courses.

PERCEPTION AND MANIPULATION

Research focuses on achieving higher degrees of autonomy and user-friendliness during everyday manipulation tasks in domestic, service and industrial environments. Some topics addressed are the geometric interpretation of perceptual information, construction of 3D object models, action selection and planning, reinforcement learning, and teaching by demonstration.

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KINEMATICS AND ROBOT DESIGN

This group carries out research on the design, construction, and motion analysis of complex mechanisms and structures. In Robotics: parallel manipulators, multi-fingered hands, reconfigurable mechanisms, or cooperating robots, In other domains: mechanistic models of locomotive organisms, molecular compounds, or nano-structures.

AUTOMATIC CONTROL

This group develops research in automatic control, with special emphasis on modelling, control and supervision of nonlinear, complex and/or large-scale systems. The group has acquired specific expertise in the application of advanced control techniques to environmental resources management, specifically in the water (water resources management) and energy fields (fuel cells).

MOBILE ROBOTICS

Its research are aimed to endow mobile robots and devices the necessary skills to aid humans in everyday life activities. These skills range from pure perceptual activities such as tracking, recognition or situation awareness, to motion skills, such as localization, mapping, autonomous navigation, path planning, aerial manipulation and autonomous driving to social robotics and human-robot interaction.