



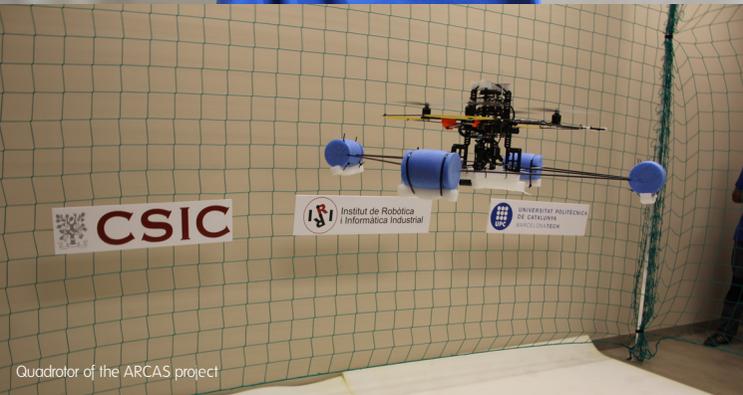
Water-Cycle Control Systems Lab



A Stewart-Gough platform at the Kinematics and Robot Design Lab



Cloth grasping task at the Perception and Manipulation Lab



Quadrotor of the ARCAS project

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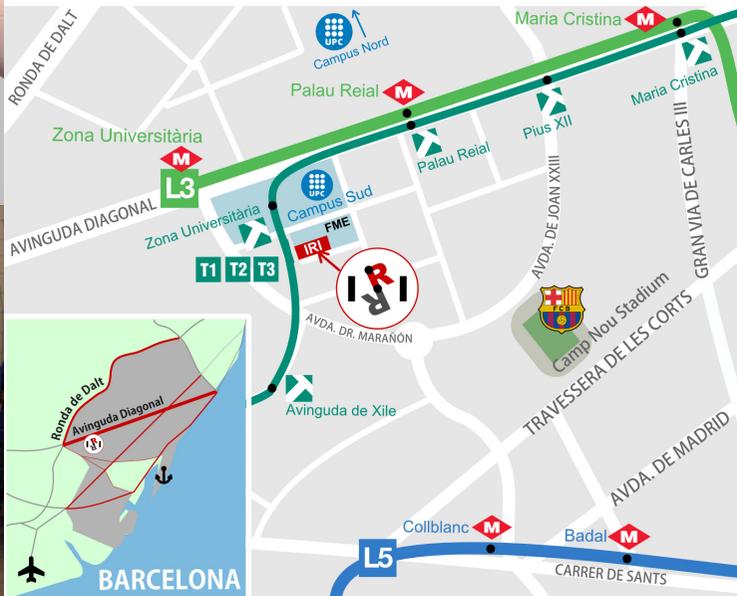
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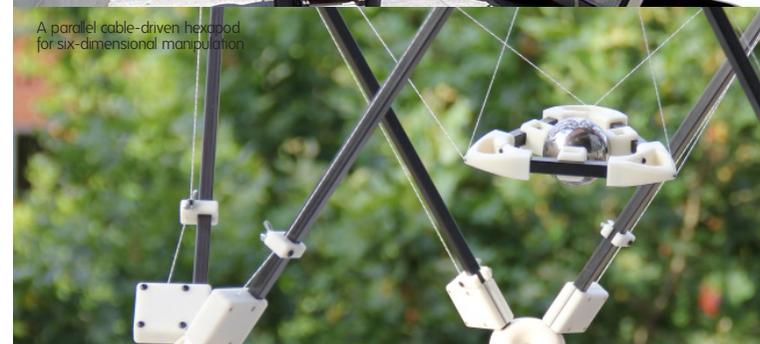
Institut de Robòtica i Informàtica Industrial, CSIC-UPC
C/ Llorens i Artigas 4-6, 08028 Barcelona
Tel :+34 93 4015751, Fax :+34 93 4015750
email: admin-iri@iri.upc.edu



Institut de Robòtica i Informàtica Industrial



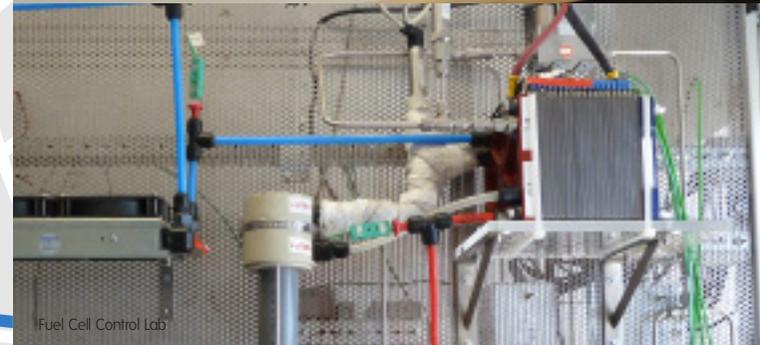
Tibi robot and the robotized car



A parallel cable-driven hexapod for six-dimensional manipulation



A robot arm cleaning a table at the Perception and Manipulation Lab



Fuel Cell Control Lab

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

It has three main objectives:

- > To promote fundamental research in Robotics and Applied Informatics
- > To cooperate with the community in industrial technological projects
- > To offer scientific education through graduate courses.

Perception and Manipulation ►

Research focuses on enhancing the perception, learning, and planning capabilities of robots to achieve 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



Taking samples of a leaf (GARNICS project)

learning
planning computer vision
deformable objects perception
manipulation

Kinematics and Robot Design ►

The Kinematics and Robot Design Group carries out fundamental research on the design, construction, and motion analysis of complex mechanisms and structures. In Robotics, these devices are parallel manipulators, multi-fingered hands, reconfigurable mechanisms, or cooperating robots, to name a few, but they appear in other domains too, such as mechanistic models of locomotive organisms, molecular compounds, or nano-structures.



Hexapode parallel robot

singularities
design mechanisms
motion kinematics
parallel robots
position



Segway powered by fuel cells

supervision
control systems
automatic energy
water networks
fuel cells

Mobile Robotics ►

The research activities of the Mobile Robotics line are aimed to endow mobile robots and ubiquitous computing 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 or exploration, to social robotics and human-robot interaction.



Teo robot

robots
mobile localization
urban navigation
mapping
human-robot interaction
recognition

Automatic Control ▲

This line develops basic and applied 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 and energy fields.