Learning algorithms for robot manipulation of clothing and plant leaves*

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***Abstract*— Manipulator robots are widening their range of activities in factories, as well as finding increased application in human-centered domains such as healthcare, education, entertainment and services. For robots to become handy co-workers and helpful assistants, quick and user-friendly ways to endow them with flexible manipulation skills are needed. At the Perception and Manipulation Lab of IRI (CSIC-UPC), we are addressing several of the learning challenges arising in this context [1], especially in handling deformable objects such as clothing, vegetables, and cables.**

Five types of learning algorithms are being developed and applied: visual object recognition/classification and pose estimation using appearance and depth data [2-6], kinematic and dynamic robot model learning [7-9], learning manipulation tasks from demonstrations [10-11], reinforcement learning of skills [12], and learning to plan and act [13-16]. The most representative of the cited works will be showcased along the presentation.

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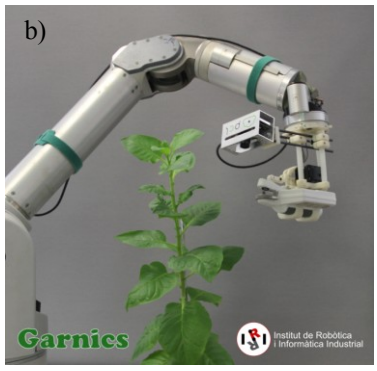

Setups for robot perception and manipulation of deformable objects at IRI:
a) perceiving and handling clothes [2, 3, 9, 14],
b) measuring the chlorophyll of plant leaves for phenotyping [5, 6].

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