2ⁿᵈ ROBOTICS LAB WORKSHOP
Spring 2013

Universidad
Carlos III de Madrid

4 de abril de 2013
10:00-14:30
Sala Adoración de Miguel
(1.2C16)

SILVIA RODRÍGUEZ JIMÉNEZ - 3D Object Perception Using Depth Cameras for Indoor and Outdoor Applications
Depth or range cameras provide depth information about the scene in real-time. Due to their advantages, these devices have been already used in a wide range of applications. In this talk, the evaluation of these cameras for indoor and outdoor applications will be shown within the framework of two projects: "HANDLE - Developmental Pathway towards Autonomy and Dexterity in Robot In-Hand Manipulation" and "Research project on advanced systems for a more eco-efficient aircraft". The perception techniques will be defined, on the one hand focusing on 3D reconstruction using a single view from a RGB-Depth camera and on the other hand, on detection method based on a-contrario reasoning, using the 3D point cloud data acquired by a Time-of-Flight camera.

MARTIN FODSTAD STOELEN - Augmentation of User Capabilities through an Adaptive Assistive Manipulator
Assistive robot manipulators have the potential to increase the independence of disabled persons in daily life activities. This thesis aims to augment the user's capabilities in performing such tasks by adapting the robot, and its level of assistance, to the user. Methodologies for modeling and benchmarking the complete human-robot system were established, which helped drive the development of different approaches to adaptation. This includes a task-oriented optimization of the robot physical structure, approaches for low-level adaptive shared control, and work on interactive learning of simple object manipulation tasks.

ALEJANDRO MARTÍN CLEMENTE - Complex Material (SMA) Modeling: Hysteresis, Control and Real Time Applications
The aim of this work is to develop a new methodology not just to model complex material which presents hysteresis (such as SMA) but to real-time control them with common embedded hardware devices. Using a modified version of the Prandtl-Ishlinskii model and the DE optimization algorithm, a quick and easy to implement methodology (mainly using the Simulink Coder tool) is defined and validated to work in real time applications.