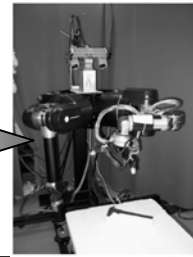
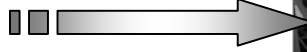
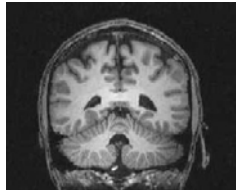


*** Two research grants for neuro-computation and robotics research ***



Graduate (or graduating) students are required for research activities at the **Robotic Intelligence Lab of Universitat Jaume I, Castellon, Spain**, under the supervision of Prof. Angel del Pobil.

Duration: from 6 to 12 months. Possibility of a further 3-year PhD scholarship after completion of this project.

Salary: from 825€/month, according to qualification (accommodation and meals for one month in Castellon costs less than 400€).

Both grants are included in a project for the development of a robotic vision-based grasping application with neuroscientific inspiration, in which neural damages related to visual analysis based on grasping purposes are simulated.

Grant 1 - Connectionist implementation of neural transfer functions

Purpose: The goal of this work is to emulate the job performed by certain human brain areas in the context of visual analysis for grasping. Given a set of well-defined transfer functions corresponding to different areas, these have to be implemented using basic connectionist methods (mainly artificial neural networks). Experiments will be performed for comparing the performances of the defined areas in normal conditions and with different sorts of impairments (above all visual agnosia and optic ataxia).

Tasks

- Study the functioning of real and artificial neural networks.
- Study the main characteristics of the computational model of vision-based grasping inspired on neuroscience developed by the Intelligent Robotic Lab.
- Implement the transfer functions related to the areas of interest. This can be done with different net types and configurations
- Compare the performances of the different implementations in different working conditions, in the normal case and with simulated impairments. For the simulation of neural damages different quantities and kinds of noise may be introduced in the system.

Grant 2 - Robotic grasping based on visual and tactile information

Purpose: Implement a library of arm and hand movements for performing a given grasping action, given a set of target grasp configurations related to the shape, position and other object features. Improve the action execution and the reliability of the contact between hand and object using tactile feedback.

Tasks

- Study the software libraries on grasping and haptics available in the Robotic Intelligence Lab.
- Given the different possible grasp configurations, implement efficient movements for the positioning of the hand in order to perform one selected grip on the target object.
- Make use of tactile feedback for adapting the finger position so that the contacts, and the grips, are more stable and reliable.

Contact: Secco Emanuele Lindo, PhD,
Eris Chinellato, PhD,

elsecco@deis.unibo.it
eris@uji.es

+39 - 051 - 209.3067
+34 - 964 - 387.047