



ROBotic Open-architecture Technology for
Cognition, Understanding, and Behavior



Project No. 004370

RobotCub

Development of a Cognitive Humanoid Cub

Instrument: Integrated Project
Thematic Priority: IST – Cognitive Systems

D2.2

**Software Implementation of the iCub Cognitive
Architecture (version 2.0)**

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Organisation name of lead contractor for this deliverable: DIST, University of Genova

Responsible Person: Giorgio Metta

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Dissemination Level		
PU	Public	PU
PP	Restricted to other programme participants (including the Commission Service)	
RE	Restricted to a group specified by the consortium (including the Commission Service)	
CO	Confidential, only for members of the consortium (including the Commission Service)	



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1 Introduction

This deliverable item is a report on the iCub Cognitive Architecture, release 2.0. The Cognitive Architecture is described in greater length in Deliverable 2.1 (Roadmap of Cognitive Development) and has been updated to reflect revision during the last period (M49-M65). The software release consists of a collection of modules further combined into applications which can be run independently on the iCub to instantiate a certain number of behaviours. The Cognitive Architecture is demonstrated through a series of live and video demonstrations.

In particular, they include:

- Reaching, grasping, affordance understanding and imitation;
- Human-robot interaction;
- Crawling;

a number of ancillary live demonstrations such as:

- Gazing, memory and prediction;
- Force control on the iCub;

and a few more demonstrations on video/teleconferencing:

- Predictive gaze;
- Human imitation.

Each demo is built as an iCub “application” as defined in WP8 and consists of a set of modules (YARP modules) with a set of specified input and output communication ports which implement a given behaviour (e.g. the attention system is one of such applications).

Each application is fully software compatible and documented on the iCub repository. The repository has recently been moved to SVN and is fully hosted on SourceForge in a project called “RobotCub” (this was created at the beginning of the project and we finally migrated to it). There are several modules that are shared across applications.

2 iCub cognitive architecture version 2.0

The iCub cognitive architecture manual is available from:

http://eris.liralab.it/iCub/dox/html/group_icub_applications.html

Each application listed at this documentation page is built following the iCub standards and include:

- A set of YARP modules, each with specific documentation that can be found at: http://eris.liralab.it/iCub/dox/html/group_icub_module.html;
- XML files are used to instantiate, terminate, and control the behaviour realized by the set of modules;
- Further documentation, paper references, class documentation, etc.



3 Entry point

Please use the following link as entry point into the D2.2. This is just a placeholder document. The actual deliverable consists into the delivery of the implementation of the Cognitive Architecture v2.0.

Videos of the experiments running on the iCub are available from:

http://eris.liralab.it/wiki/Deliverable_2.2_v2