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Whole-Body Compliant Dynamical Contacts in Cognitive Humanoids

D7.2

Standard database with support materials.

Editor(s)	Francesco Nori
Responsible Partner	IIT
Affiliations	¹ IIT
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Editor(s):	Francesco Nori
Contributor(s):	Francesco Nori, Federico Bozzini, Alessandro Bruchi
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Abstract	The scope of the current deliverable is to present the results of the activities conducted within task 7.3 concerning the design, realization and implementation of a database of human motion with contacts. The database has been thought in such a way that both human and robot data can be inserted since it was observed that minor modification of the database could obtain this desirable feature.
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1 Introduction

In this brief document we describe the structure of the CoDyCo data base. The data base is thought to store data from experiments conducted on the iCub or on humans. Each experiment is described with a set of tags. A crucial set of tags is represented by couples measurement-body part: in practice each measurement (e.g. position, velocities, accelerations, forces, torques) is associated with its position on the body (e.g. left arm, right arm, torso, legs).

2 Executive Summary

The project goal is to create an application that manages an open repository of experimental data. The main goal of the application is to allow researchers of the CoDyCo project to store experimental data and to allow external researchers to search and retrieve these data. The application should be public accessible as a regular website.

3 Integrated Technical Architecture

3.1 Application roles

The application users can be accessed with 3 different roles:

- Administrator: the administrator role allows the user to manage categories, measurement tags and the experiment structures. Other data (like research institutions) are managed by the administrator.
- Uploader: the uploader role allows the user to manage the experiments.
- Consumer: the consumer role (not logged on the system) allows the user to browse the experiments and download the relevant data.

3.2 Data requirement: experiments

The experimental data stored by the application are represented as data records called experiments. The basic experiment structure is described in the following.

experiments											
Name	Description	Date of acquisition	Research institution	Uploader	Experimental data	External link	Category	(Measurement tag – body part) ₁	:	(Measurement tag – body part) _N	Model
											Other fields

1. Name - an unique name of the experiment.
2. Description - a descriptive text.
3. Date of acquisition - date of acquisition of the experimental data.
4. Research institution - the research institution that performed the experiment.
5. Uploader - the user who uploaded the experiment.
6. Experimental data - an archive (zip,tar, ...) containing the data of the experiment.
7. External link - the url of a relevant resource (publication, same data published elsewhere, ...).
8. Category - the category of the experiment.
9. N couples measurement tag, body part – the type of available measurements and the associated body parts.
10. Model - an archive containing all the information about the robot model when applicable.
11. Other fields, depending on the category.

3.3 Data requirement: categories

Categories (human, iCub, COMAN, ...) are logical groups of experiments, defining their structure and the associable measurement tags. Categories are managed by the system administrator. An experiment is always associated with one and only one category.

3.4 Data requirement: measurement tags

A measurement tag (eg: accelerometer, skin, ...) is a tag needed to communicate what kinds of measurements are featured by the experiment. Measurement tags are also used in order to make the experiments more easily searchable by the consumers. The measurement tags that can be associated to an experiment are limited by the associated category. The measurement tags are coupled with one or more body parts.

3.5 Data requirement: body parts

A body part represents a part of a humanoid robot (head, torso, L/R Arm, L/R Hand, L/R Leg, L/R Foot, not applicable) and is necessary in order to better identify the scope of the experiment. Categories, measurement tags and body parts are the three elements that can be used by a consumer to better filter and analyze the experiments managed by the application.