Project no.:	**027657**
Project full title:	**Perception, Action & Cognition through Learning of Object-Action Complexes**
Project Acronym:	**PACO-PLUS**
Deliverable no.:	**D3.1.3 (formerly D3.2.2)**
Title of the deliverable:	**Test data "Action Representation II" Test and ground truth data that will be used to test action representations and recognition from sensor data.**

Abstract:

This deliverable explains that an additional data collection planned for Action Representation II is not necessary due to the large size and the broadness of the previous dataset Action Representation I.

Keywords: action representation dataset

Test data "Action Representation II" Test and ground truth data that will be used to test action representations and recognition from sensor data.

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1 Introduction

The aim of deliverable D3.1.2, Action Representation I, and this deliverable D3.1.3, Action Representation II, is the collection of data for testing and evaluating action representations that are being developed in WP3.

Deliverable D3.1.2 has been collected for the first deliverable date at month 12.

The dataset Action Representation I is very extensive and covers different aspects for evaluation (see also deliverable D3.1.2). Available is

1. AAU dataset: The dataset contains synchronized video data from four video cameras and data from an electro-magnetic motion capture system (MovieStar, Ascension). The dataset contains performances of 10 different individuals with at least 5 different repetitions and and four different categories of actions. The individuals perform upper-body, one arm movements that involve an object.

2. KTH dataset: The dataset contains synchronized electro-magnetic data (nest of birds) for upper-body, one arm movements that involve objects. A large number of different arm movements are available: grasp, remove, push, rotate, pick up.

3. UniKarl dataset: This dataset is the most complex one. It contains data of 400 different movements performed by 20 different individuals. The actions in the database consist of typical kitchen actions. The data was recorded with a Vicon system.

One major part of the on-going research in WP3 is concerned with:

1. The synthesis and recognition of arm movements of a particular type, e.g., "reaching out and grasping an object". It is important to note that the appearance of such a movement depends on the position of the involved object. The aim is to learn these movements from a set of exemplar moves and to recognize and synthesize the same movements that involve the object at different locations.

2. Automatic recovery of action primitives: in the previous deliverable at Month 12, we have reported about work done at KTH [1]. Here, action primitives were recovered by hand within the KTH dataset. The authors built HMMs specific for these action primitives to allow a more efficient recognition of actions. Ongoing research is the automatic recovery of these action primitives.

For these two main research goals, the dataset Action Representation I is sufficient, the collection of an additional dataset was therefore presently not performed and has been delayed until new data becomes necessary.

References

[1] I. Vicente and V. Kyrki and D. Kragic and M. Larsson. Action Recognition and Understanding Through Motor Primitives. Deliverable D2.1.