ActIPret Glossary of Terms

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Action

An operation with a discrete start and end point, e.g. "grasp".

Activity

A continuous (or extended period) operation characterised by an "action verb", e.g. "holding".

Activity plan

An abstract notation of the encountered *scenario* written in a conceptual language.

Atomic plan primitive

An observed plan primitive resulting from an instantiated concept function from the reasoning engine. Atomic primitives are derived either by vision means (most likely actions and events), inferred (most likely activities and events) or from a hard coded model (an external event). A primitive cannot be decomposed into simpler actions, activities or events.

Attentive (Date: 22.2.02, Accepted by: ALL)
Processes that confirm/reject a hypothesis in a task-driven manner.

Categorisation (Date: 22.2.02, Accepted by: ALL)
Confirming that a member of a class is in the scene.

Cognitive Vision (CV) (Date: 22.2.02, Accepted by: ALL)
is concerned with the purpose and behaviour of computer vision in the context of a system's goal-oriented activity (from ECVision). CV includes (Hilary)

- **memory** (representations of objects, categories, actions, behaviours, …),
- **learning** (e.g., representations),
- **control** (of processing as well as view points), and
- building up and **reasoning** about representations (structures) and events/actions.

Conceptual language

A language system suitable for describing the *activity plan* and performing those tasks that we wish to be able to use the ActIPret demonstrator for. These tasks include operating the system in a tutor mode and producing a Virtual Reality (VR) reconstruction.

Detection (Date: 22.2.02, Accepted by: ALL)
= binary *categorisation*.

In our project only methods that include *localisation* are considered. Detectors are typically imprecise and fast to compute.
Answers the question: “Where is this?”

Event

A second order operation characterised by a change in state with a causal link to actions and activities, e.g. "dropped the CD", which impacts on the activity "holding".

Gesture

A characteristic task-significant purposive 3-D hand *trajectory*.

Identification (Date: 22.2.02, Accepted by: ALL)
Process of confirming the particular instance of a class in the scene.

Localisation (Date: 22.2.02, Accepted by: ALL)
Determination of the *position* of an object in the scene.

Location

Synonym for *Position*.

Orientation (2D and 3D)

Representation of a rotation in 2D (= only one degree of freedom), for example the angle of an object in the image plane, or of a rotation in 3D space (= defined using a sequence of three angles alpha, beta and theta, e.g. rotating about the z, y and z-axes). Again these one/three values can be represented by a vector. See *Pose*.

Plan concept

A “plan concept” is a specific term in the context of the synthesis phase of ActIPret and represents a concept at the most task relevant level of abstraction. A full instantiation of an *activity*, *event* or *action* resulting from prior evidence verified by further evidence.

Plan hypothesis

A “plan hypothesis” is a specific term in the context of the synthesis phase of ActIPret and represents a hypothesis at the most task relevant level of abstraction. A partial instantiation of an *activity*, *event* or *action* resulting from the existence of some prior evidence.

Pose (= Position plus Orientation) (2D and 3D)

Representation of the combined *position* and *orientation* related to a coordinate system (if no coordinate system is explicitly mentioned the pose is always related to the world coordinate system). A pose in 2D space has three values (x, y, alpha), a pose in 3D space has six values (x, y, z, alpha, beta and theta).

A geometrical definition of **Position, Orientation** and **Pose** has been already sent out by Profactor e-mail of 20.3.2002 (using L. Sciavicco, B. Siciliano, "Modelling and Control of Robot Manipulators," McGraw-Hill Series in Electrical and Computer Engineering, October 1996, pp. 28 - 30). The Pose IDL-pattern is defined in the Pose Server.

Position (2D and 3D)

Representation of a point in 2D (x, y), for example in the image, or of a point in 3D space (x, y, z). This can be also expressed in a 2D/3D vector from a start point to a target point (if the

start point is the origin of the world coordinate system then the point in 2D/3D space and the vector to that point are equal). See Pose.

Pre-attentive (Date: 22.2.02, Accepted by: ALL)
Refers to processes that do a pre-*categorisation*.
In this project just processes are considered which are task relevant.

Recognition (Date: 22.2.02, Accepted by: ALL)
Identification and/or *categorisation*.
In our project only methods that include localisation are considered.
Answers the question: “Where is what?”

Resource (Date: 22.2.02, Accepted by: ALL)
is all in the system that can be consumed. Resources are restricted, hence they need coordination of their use. Typical resources are CPU-processing time, memory, realisable views and required hardware in general.

Resource Request (Date: 22.2.02, Accepted by: ALL)
is the option of a component to occupy the entire or a specified part of a resource.

Scenario
The overall task for the user of the ActIPret demonstrator. In the case of the first demonstration, picking up a CD and putting it in a CD player.

Scenario exemplar
A single instance of the scenario as demonstrated to the ActIPret demonstrator by the expert in expert mode. An exemplar has scenario ‘end-to-end’ significance (i.e. it represents a complete and uninterrupted instance of the scenario).

SOI (Space Of Interest)
A representation in 3D space of a region of interest. For now it is a simple rectangular (or spherical) axis-parallel box and the pose of the box (a definition of the SOI is given in the IDL-pattern of TrackObjects).

Tracking
Repeated determination of the position/pose of a detected and/or recognised object in the scene.
Answers the question: “Where is this now?”

Trajectory
Representation of the motion of an object. Several representations are possible: e.g., with the positions/poses over a sequence of time steps, or with averaging over equally-spaced time steps a curved motion becomes a vector, or with (the simplest way) two 3-D locations, one for current location of the object and the other for its location in the previous time step.