

Preface

The anchoring problem is an important aspect of the connection between symbolic and sensory based processes in autonomous robotic systems. Anchoring is the problem of how to create, and to maintain in time, the connection between the symbol- and the signal-level representations of the same physical object.

Anchoring must necessarily occur in any physically embedded system that comprises a symbolic reasoning component. One of the main difficulties with using symbolic representations for reasoning in embedded systems is how to link these representations to the real world. A typical example is the problem of connecting, inside an autonomous robot, the symbol used by a planner to refer to a particular room, say `room-21', to the vision or laser data that correspond to that specific room. This connection is necessary, among other things, to exploit linguistic knowledge provided by humans, e.g., regarding rooms and doors in a map. Another example is the problem of connecting the symbol used by a planner to refer to an object needed for an action, say `ball-1', to the data that correspond to that object in the sensori-motoric system. This connection must be dynamic since the same symbol must be associated to new entities in the perceptual stream in order to track the object over time or to re-acquire it at a later moment.

Anchoring must also occur in a multiple robot system, since the robots must agree about the meaning of the symbols used to refer to perceived objects in the environment. A typical example is the problem of establishing the correspondence between the symbols used by two different robots embedded in the same physical environment to refer to the same physical object, e.g., a room. We talk in this case of grounded communication. Grounded communication is also needed for efficient human-robot interaction.

This workshop is the third event on this subject, and it will be devoted to assessing the progress toward the development of general theories and techniques for anchoring. In addition, this workshop will aim at making contact with other communities that address tasks in which anchoring is present even if it is not mentioned explicitly.

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