

MAS 966: Meaning Machines Week 3: Objects

Readings

Damian Isla and Bruce Blumberg. (2002). Object Persistence for Synthetic Creatures, Proceedings of the International Joint Conference on Autonomous Agents and Multiagent Systems.

Gary Drescher. (1993). The Schema Mechanism. In Machine Learning: From Theory to Applications (S. Hanson, W. Remmele, and R. Rivest, eds.). Springer, pp 125-138.

Sebastian Thrun. (2000). Probabilistic Algorithms in Robotics, AI Magazine, 21(4): 93--109.

Assigned: Monday, February 23, 2004

Response due: Noon, Sunday, February 29, 2004

Email response to dkroy@media.mit.edu with subject "MAS 966 Week 3"

Q1. Consider four kinds of linguistic reference to a particular dog:

- (i) "that" (while pointing to the dog)
- (ii) "Rover"
- (iii) "the dog"
- (iv) "the animal"

(a) Isla and Blumberg describe an approach to object permanence for virtual worlds. Imagine that a person interacting with a character in the virtual world would like to refer to a dog that is represented using Isla & Blumberg's method (i.e., the dog is treated as an object and represented using their model of object permanence). How could each kind of reference (i-iv) be grounded (connected) to the non-linguistic representations? Keep in mind that although each kind of reference refers to the same object, it is able to establish reference for different reasons. Is anything missing in the current form of their representation of objects that makes one or more of these levels of grounding unsatisfying?

(b) Repeat your analysis of (a) for Drescher.

(c) Repeat your analysis of (a) for Thrun (he presents a family of related probabilistic methods – you may choose any particular algorithm(s) for your analysis).

Q2. Evidence of objects can also stem from less direct evidence. For each of the three readings, sketch a mechanism by which evidence from

- a) sheep droppings
- b) pointing to an object out of view of the creature
- c) pointing to an object out of view and saying "sheep"
- d) saying "sheep on the left"

could be incorporated into the paper's object tracking mechanism.