

Attention detection and manipulation between autonomous four-legged robots

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Skills for attention detection and manipulation are crucial prerequisites underlying the development of social cognition. Through a series of steps of increasing complexity, children manage to make progress in directing the attention of their parent and in interpreting gaze direction and pointing gestures. Building robots capable of engaging in such kind of interactions is now a major topic in the developmental robotics community (e.g. [4, 5]). We report results of a set of experiments conducted with a population of AIBO ERS-7 robots showing how it is possible for a robot to (a) interpret the attentional behavior of another robot and (b) use pointing gestures in order to influence the attentional behavior of another robot. One of the robots takes the role of an adult and points to an object, the other robot, the learner, has to interpret the pointing gesture correctly in order to find the object [2]. We show that motivation and intrinsically rewarding stimuli play a crucial role in this development (as already advocated by Carlson and Triesch [1]). These initial results permit a better understanding of the challenges that remain to be addressed for building robots capable of joint attention [3]. In the line of Tomasello's views [6], we argue that joint attention is much more than simultaneous looking. Beside attention manipulation and detection it involves the development of skills for social coordination and more importantly some form of intentional understanding. Constructing robots capable of developing a shared intentional relation to the world is probably one of the hardest problem developmental robotics has to tackle.

References

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Figure 1. The adult robot point an object out to the other one.