Emergence of communication in RObots through Sensorimotor and Social Interaction

Fact Sheet

Project Information

ROSSI

Grant agreement ID: 216125

Project website

Status
Closed project

Start date
1 March 2008

End date
31 October 2011

Funded under
FP7-ICT

Overall budget
€ 3 701 187

EU contribution
€ 2 800 000

Coordinated by
ALMA MATER STUDIORUM - UNIVERSITA DI BOLOGNA
Italy

Project description

Cognitive Systems, Interaction, Robotics Robots endowed with neural/computational mechanisms and sensorimotor systems structurally similar to human beings The ROSSI project addresses the question how the possibility of **communication** between **agents** (e.g. humans and robots) is affected by **differences** in sensorimotor capacities. In order to explore to what extent **concepts** must be **shared** to facilitate communication, ROSSI will build robots with sensorimotor systems **structurally similar** to **human** beings. The control mechanisms for these robots will be based on insights into the bunderlying human concepts and language. More specifically, the project aims at building robots endowed with the **sensorimotor** and **neural/computational** mechanisms that allow them to: flexibly **manipulate** and use objects in the environment, use a simple form of **language**, use

such concepts and verbal labels in social **interaction** with humans.

Starting from the assumption that cognition is embodied, the ROSSI project addresses the question how the possibility of communication between agents (e.g. humans and robots) is effected by differences in sensorimotor capacities.This is an important issue, given that robots are expected to become more common in non-structured environments, such as homes or hospitals. While there is a trend towards humanoid robots, it is clear that for the foreseeable future there will still be substantial differences in physical embodiment between robots and humans.To explore to what extent concepts must be shared to facilitate communication, we will build robots with sensorimotor systems structurally roughly similar to human beings. Furthermore, the control mechanisms for these robots will be based on insights into the neural mechanisms underlying human concepts and language.In particular, two types of neurons in premotor cortex will be modelled: (1) canonical neurons, which are active during both the execution of specific object-directed actions and the mere visual observation of the same objects, and (2) mirror neurons, which are involved in both an agent's own actions and the visual observation of such actions performed by others.In this framework, the project's aims are twofold. First, behavioural and neurophysiological experiments will provide new evidence and insights into the grounding of human conceptualization and language. Second, computational modelling of the underlying neural mechanisms will provide novel approaches to grounding of robotic conceptualization and language.More specifically, the project aims at building robots endowed with the sensorimotor and neural/computational mechanisms that allow them to: (a) flexibly manipulate and use objects in the environment, (b) use a simple form of language, i.e. nouns and verbs referring to objects and object-oriented actions, (c) use such concepts and verbal labels in social interaction with humans.

Field of science

/humanities/languages and literature/languages - general

Programme(s)

Topic(s)

Call for proposal

FP7-ICT-2007-1

Funding Scheme

Funding Scheme

CP - Collaborative project (generic)

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