Integration and Transfer of Action and Language Knowledge in Robots

Fact Sheet

Project Information

ITALK

Grant agreement ID: 214668

Closed project

Start date 1 March 2008 End date 29 February 2012

Funded under
FP7-ICT

Overall budget
€ 8 163 635

EU contribution
€ 6 250 000

Coordinated by
UNIVERSITY OF PLYMOUTH
United Kingdom

Project description

Cognitive Systems, Interaction, Robotics
Robot learns to speak
The ITALK project aims to develop artificial embodied agents able to acquire complex behavioural, cognitive, and linguistic skills through individual and social learning. This will be achieved through the development of cognitive robots that learn to handle and manipulate objects and tools autonomously, to cooperate and communicate with other robots and humans, and to adapt their abilities to changing internal, environmental, and social conditions. The novelty and uniqueness of this project lies in its multi-methodological investigation of the integration and
bootstrapping of cognitive system due to the parallel co-development of action, social and linguistic capabilities.

The ITALK project aims to develop artificial embodied agents able to acquire complex behavioural, cognitive, and linguistic skills through individual and social learning. This will be achieved through the development of cognitive robotic agents, such as the iCub humanoid platform, that learn to handle and manipulate objects and tools autonomously, to cooperate and communicate with other robots and humans, and to adapt their abilities to changing internal, environmental, and social conditions. The main theoretical hypothesis behind the project is that the parallel development of action, conceptualisation and social interaction permits the bootstrapping of language capabilities, which on their part enhance cognitive development. This is possible through the integration and transfer of knowledge and cognitive processes involved in sensorimotor learning and the construction of action categories, imitation and other forms of social learning, the acquisition of grounded conceptual representations and the development of the grammatical structure of language.

The project will lead to the development of: (a) new theoretical insights, models and scientific explanations of the integration of action, social and linguistic skills and in particular on the hypothesis that action, social and linguistic knowledge co-develop and further bootstrap cognitive development, (b) new interdisciplinary sets of methods for analysing the interaction of language, action and cognition in humans and artificial cognitive agents, (c) new cognitively-plausible engineering principles and approaches for the design of robots with behavioural, cognitive, social and linguistic skills.

Overall, the project proposes visionary research that will provide a new standard in embodied cognitive science and will demonstrate the effectiveness of the method proposed by integrating interdisciplinary theoretical and experimental research on a single advanced robotic platform.

**Fields of science**

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**Programme(s)**

**Topic(s)**

**Call for proposal**
Funding Scheme

CP - Collaborative project (generic)

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Higher or Secondary Education Establishments

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