
EUCORB

European Cognitive Robotics



The robot companion

www.eucorb.org

Fiora Pirri

ALCOR-DIS

University of Roma "La Sapienza"

Objective addressed

Cognitive Robots imply intelligent behaviour, fault adaptive control and management: they help Human Beings to interact with...

Cognitive Robotics is concerned with the theory and the implementation of robots that reason, act, perceive, and learn in changing, incompletely known, unpredictable environments.

Cognitive robots must have higher level cognitive functions that involve reasoning about goals, actions, when to perceive and what to look for, the cognitive states of other agents, time, collaborative task execution, etc.

State of the art in Cognitive Robotics

Higher level cognitive functions have been built on top of existing robotic hardware and software.

Integration of the cognitive functions with the control is shallow and ad hoc.

Why: very different methodologies used at the various levels little interaction between the AI & Robotics community

Aims of the project

Bring together different approaches from AI, Neuroscience and Robotics: create a new region of research connecting the above three areas.

Incorporate Cognitive Modalities into robot control: reasoning, perception, planning and learning.

Create a new architectural paradigm of integration, beyond part superposition: a cognitive architecture based on the dynamic of Knowledge, Action and Perception.

Implement the integration into a new conceived embodied system.

Excellence in the Consortium

AI &

Cog Rob

Cognitive Perception: Recognition, Integration between high-level cognition and physical perception and action, high level vision, understanding of complex scenes.

Reasoning about actions, spatio-temporal reasoning, abductive/deductive/inductive/common sense reasoning. Probabilistic and Bayesian reasoning. Emerging methods of reasoning under uncertainty:

Planning and decision strategies under Uncertainty, Interleaving Planning and Execution monitoring and Coordination.

Robotics

Control

Visual servoing, visually-guided grasping, motion planning, collision avoidance, sensor-based learning, internet robotics, computational geometry, self-organization, force control, collective robotics. Control of multi robotic systems

Dexterous manipulation, robot hands, sensors, telemanipulation. Speech Recognition

Service and assistive robots, human-robot interfaces, haptics, teleoperation, mobile robots.

Neuro

Computation

Neural network modelling of various forms of cognitive processes, including sequential processing, induction, categorisation, motivation and action selection in autonomous agents, as well as spatial learning, conditioning and habituation. Neural computations by cortical networks

For more information look into

www.eucorb.org



This document was created with Win2PDF available at <http://www.daneprairie.com>.
The unregistered version of Win2PDF is for evaluation or non-commercial use only.