Goal-directed, Adaptive Builder Robots

Fact Sheet

Project Information

Funded under
FP7-ICT

Goal-Leaders

Grant agreement ID: 270108

Project website

Status
Closed project

Overall budget
€ 2,357,421

EU contribution
€ 1,800,000

Coordinator
CONSIGLIO NAZIONALE DELLE RICERCHE
Italy

Project description

Cognitive Systems and Robotics
Developing biologically-constrained architectures for adaptive service robots, with unprecedented levels of goal-directedness and proactivity

The Goal-Leaders project aims at developing biologically-constrained architectures for the next generation of adaptive service robots, with unprecedented levels of goal-directedness and proactivity. Goal-Leaders will realize builder robots able to realize externally assigned tasks (e.g., fetching objects, composing building parts) and, at the same time, keeping their drives within a safe range (e.g., never end up without energy or get hurt), by operating autonomously and for prolonged periods of time in open-ended environments. This robotic design methodology will have a significant
impact both for the understanding of goal-directed action in living organisms and for the realization of goal-directed service robots by combining navigation and manipulation within an unconstrained environment.

The Goal-Leaders project aims at developing biologically-constrained architectures for the next generation of adaptive service robots, with unprecedented levels of goal-directedness and proactivity. Goal-Leaders will realize builder robots able to realize externally assigned tasks (e.g., fetching objects, composing building parts) and, at the same time, keeping their homeostatic drives within a safe range (e.g., never end up without energy or get hurt), by operating autonomously and for prolonged periods of time in open-ended environments. To this aim, Goal-Leaders will pursue a combined neuroscientific, computational and robotic study of three key sets of competences:-the biological and computational mechanisms behind an agent's goal system, which integrates somatic, affective, and cognitive elements, and realizes the setting and selection of the agent's goals;-the biological and computational mechanisms that support the assignment of situation-dependent value to an agent's state and action representations, and therefore realize the link between the agent's goal system and perceptual-motor processes;-the biological and computational mechanisms behind an agent's anticipatory and mental simulation abilities. The Goal-Leaders achievements beyond the state of the art will be assessed against behavioral and neuroscientific data, and by realizing three demonstrators in which robots will perform autonomous navigation and construction tasks, and will readapt without reprogramming to novel task allocations or changes in their environment. The project consortium includes a highly complementary, interdisciplinary team of top European researchers who focus on neuroscience, cognitive science, and robotics. Our robotic design methodology will have a significant impact both for the understanding of goal-directed action in living organisms, and for the realization of goal-directed service robots by combining navigation and manipulation within an unconstrained environment.

Programme(s)

Topic(s)

Call for proposal

FP7-ICT-2009-6

Funding Scheme
Coordinator

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Higher or Secondary Education Establishments

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