

DEXMART Newsletter No. 1 – May 2009

Project acronym: DEXMART
Project full title: DEXterous and autonomous dual-arm/hand robotic manipulation with sMART sensory-motor skills: A bridge from natural to artificial cognition
Grant agreement no: FP7 216239
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Introduction

DEXMART is a large-scale integrating project which is funded under the European Community's 7th Framework Programme. The project started on the 1st of February, 2008 and will last for four years. The DEXMART consortium consists of 8 partners from Italy, Germany, France and Great Britain; please see www.dexmart.eu/index.php?id=6747.

DEXMART has the ambition to fill the gap between the use of robots in industrial environments and the use of future robots in everyday human and unstructured environments, contributing to reinforce European competitiveness in all those domains of personal and service robotics where dexterous and autonomous dual-hand manipulation capabilities are required.

Research domains

DEXMART is a highly interdisciplinary project, which combines the following four research domains:

- Observation, interpretation, learning and modelling
- Task planning and coordination
- Feedback control
- New robotics technologies

To gain insight into the research activities of DEXMART, please refer to www.dexmart.eu/index.php?id=6748, where you can download a background video and further dissemination materials.

Project objectives

DEXMART will contribute to the development of robotic systems endowed with dexterous and human-aware dual-arm/hand manipulation skills for objects, operating with a high degree of autonomy in unstructured real-world environments. These are the main objectives of the project:

- allow a dual-arm robot including two multi-fingered redundant hands to grasp and manipulate the same objects (different shape, dimension and weight) used by human beings;
- manipulation will take place in unsupervised, robust and dependable manner so as to allow the robot to safely cooperate with humans for the execution of given tasks;
- robotic system able to autonomously decide between different manipulation options, and to learn new action sequences aimed at creating a consistent and comprehensive manipulation knowledge base;
- possible exploitation of high power-to-weight ratio of smart materials and structures, aimed at design of new hand components (finger, thumb, wrist) and sensors for next generation of dexterous robotic hands.

Progress achieved so far

After the first project year, which ended on the 31st of January, 2009, first promising results were achieved by the consortium; please see www.dexmart.eu/index.php?id=11205.

