

FP7 INFORMATION DAYs for Research PPPs on 11+12 July 2011

Template project ideas

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Project information			
PPP <input checked="" type="checkbox"/> Factories of the Future <input type="checkbox"/> Energy-efficient Buildings <input type="checkbox"/> Green Cars			
Topic/Title	Development of a toolkit and a system to endow industrial robots with active learning capabilities with human-like accuracy		
Project idea, objectives	<p>This project proposal aims to develop a system that enables robotic solutions for small batch and craft manufacturing (with remarkable variations in the characteristics and structure of the process and the parts involved).</p> <p>Therefore it is targeted on SME that could benefit from the development of reconfigurable robot cells, easy to program in a fast and user friendly form and under a plug-and-produce approximation. The developed toolkit and system should work in combination with any commercial industrial robot endowed with a standard communication interface like Ethernet.</p> <p>Objectives.</p> <ul style="list-style-type: none"> - Fast, ergonomic, and intuitive programming by workers skilled on the process, but not on robotics. - Accomplishment with complexity and demanding accuracy requirements typical of robot-based industrial processes. - The robot must approximate to human-like ability to actively learn new processes by a simple analogy. The teaching process must be done in a cooperative way, with the robot learning from a demonstration. Learning should be cumulative. - Multifunctional solution. Valid (or quickly adaptable) for different processes and applications through a modular plug-and-produce approach. - Large-scale demonstration of the developed system focused on MIG arc welding in complex structures with close-to-repetitive welding patterns. <p>Although the idea is that the solution will be valid for different processes (welding, grinding, polishing, scanning, etc) that are</p>		

	<p>currently done manually in many SME companies, the demonstration will focus on fast robot programming for arc welding in complex structures with partially repetitive parts.</p> <p>The major technology involved will be machine vision to support active learning and to locate the workpieces and readapt trajectories during the process execution (e.g. during arc welding).</p>
<p>Partner search description Type = Company/SME/Research organisation/university + desired skills/knowledge</p>	
Partner 1	Company/SME dedicated to industrial robotics
Partner 2	SME. Devoted to machine vision and robotics
Partner 3	SME. Additional potential final user of the system.
Partner 4	Research organization/university. Knowledge in safe human-robot cooperation (preferably based on machine vision) and/or real-time robot trajectory correction.