Safe and effective human-robot cooperation towards a better competiveness on current automation lack manufacturing processes

Sharework's main objective is to endow an industrial work environment of the necessary "intelligence" and methods for the effective adoption of Human Robot Collaboration (HRC) with no fences.

Sharework will provide a system capable of understanding the environment and human actions through knowledge and sensors, future state predictions and with the ability to make a robot act accordingly while human safety is guaranteed and the human-related barriers are overcome.

Sharework will develop the needed technology for facing the new production paradigm compiling the necessary developments in a set of modular hardware, software and procedures to face different HRC applications in a systematic and effective way.

Sharework technology will be demonstrated in four different industrial cases: railway, automotive, mechanical machining and equipment goods sectors. The usability of the developed HRC solutions in different industrial sectors and company sizes will increase productivity, flexibility, and reduce human stress, to support the workers and to strengthen European industry.

Evolving knowledge base - KB and semantic environment

KB capable of representing information constituting the system experience and real-time environment information.

Human-aware dynamic task planning system

Dynamic task planning and scheduling system to continuously adapt the control model of the collaborative tasks that the human and the robot are going to perform.

Human-aware robot motion planner

Off-line and real-time motion planners enabling human-robot cooperation while coping with cycle time.

Multimodal human-robot communication system

Module for human task identification based on human gestures, environmental information, and workflow status using machine learning.

Methods for overcoming human-related barriers and ensuring a successful integration

Methods for overcoming human-related barriers and to ensure data reliability and security concerning the entire framework for a successful integration in the industry.

Consortium

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