

Cluster of "Industrial Human Robot Collaboration" projects

Over the last years both **Research and Industry have tried to address the requirement for flexible production by introducing technologies that allow humans and robots to coexist and share production tasks**. The benefits of implementing this production paradigm lays in the implementation of flexible and highly reconfigurable production systems which can easily change their operation to accommodate different product families, similar to the way that a human operator would do.

In this direction, **the latest trends of European Research foster the integration of new forms of interaction between robots and workers** aiming to make the most out of the synergy effect. This means to efficiently combine and exploit the robot's precision, repeatability and strength with the human's intelligence and flexibility.

Currently, there are **7 EU projects that are addressing the topic of Human Robot Collaboration (HRC) targeting on industrial applications in different manufacturing domains**. The objective is to increase the maturity of technologies developed and validated in laboratory by deploying and demonstrating prototypes in real or relevant manufacturing environments.

Each project addresses human-robot collaboration in different market sectors, and therefore they will explore new business models and means to overcome the lagging adaptation of robotics in manufacturing. A key element to such adaptation will be the reproducibility of the research results in more use-cases.

These projects came together under a fruitful workshop, organized by European Commission, targeted on **illustrating potential benefits of funding research and innovation on robotics**. The identification of consolidated and emerging technology trends was a core activity. The findings in each of the projects will provide policy recommendations on measures to maximise the environmental, economic and societal impacts. Partners exchanged information and early insights from their respective projects, to map the fields where technology and experience can be transferred among the researchers. The results of this workshop will be formulated as basis for a report on robotics performed by European Commission that will be published before the end of this year.

Meet the Projects

Mobile dual arm robotic workers with embedded cognition for hybrid and dynamically reconfigurable manufacturing systems



The project aims to create a dynamically reconfigurable shopfloor utilizing autonomous, mobile dual arm workers. These workers are able to perceive their environment and through reasoning, cooperate with each other and with other production resources including human operators.



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Cognitively enhanced robot for the manufacturing of metal and composite parts



COROMA project proposes to develop a modular robotic system to perform multiple manufacturing operations, including safe human-robot collaboration, automatic manufacturing scene understanding, increased autonomy with self-learning and knowledge sharing capability.



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Co-production cell performing human-robot collaborative assembly



This project aims to equip robots with collaborative skills so that they can learn from the human and become valuable assistants for assembly operations, in an effective and safe manner.



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Hybrid Human-Robot RECYcling plant for electriCal and eLEctRonic equipment



HR-Recycler will target the development of a 'hybrid human-robot recycling plant for electrical and electronic equipment' operating in an indoor environment.



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RObot enhanced SenSing, INtelligence and actuation to Improve job quality in manufacturing



The project aims to develop a disruptive, inherently safe hardware-software platform for the design and deployment of human-robot collaboration (HRC) applications in manufacturing.



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Seamless and safe human - centred robotic applications for novel collaborative workplaces



SHERLOCK project aims to introduce the latest safe robotic technologies including high payload collaborative arms, exoskeletons and mobile manipulators in diverse production environments, enhancing them with smart mechatronics and AI based cognition, creating efficient

HRC stations that are designed to be safe and guarantee the acceptance and wellbeing of operators.



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



SHAREWORK project develops a Europe-wide smart modular solution integrated by different software and hardware modules to allow robots to physically interact with humans within a collaborative production environment without the need for physical protection barriers.

The project boosts process productivity and improves the ergonomics of those workstations where it is implemented.



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