

## Call for Participation – WS02

### How to make collaborative robots more collaborative for real environments

#### Organizers and Chairs

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**FOCUS** This workshop focuses on enhancing the real-world capabilities of collaborative robots (cobots) to operate effectively in dynamic, unstructured industrial environments. It addresses key challenges such as the manipulation of deformable objects, human–robot interaction, and the integration of perception and AI-driven control systems. Special attention is given to practical deployment in traditional sectors, such as agri-food, meat and plastics manufacturing, where automation remains limited. The workshop brings together academic and industrial partners from international projects such as ROBOTTA-SUDOE and REMAIN, research groups including HURO and the University of Lorraine, and industrial companies such as Seed Robotics (manufacturer of robotic hands), to present validated solutions, share real use cases in sectors like agri-food, manufacturing and rehabilitation, and discuss their extension to other domains.

#### TOPICS

- ❖ Self-sensing soft grippers and deformable object manipulation
- ❖ Human perception and multimodal sensing for collaboration
- ❖ Learning from demonstration (LfD) for complex industrial tasks
- ❖ Force control strategies for human–robot interaction and assistance

#### AIM

The aim of this workshop is to provide a practical and application-oriented perspective on the latest advances in collaborative robotics. It seeks to foster knowledge exchange between academia and industry by showcasing real implementations, discussing current technological challenges, and identifying future research directions. Ultimately, the workshop aims to accelerate the adoption of collaborative robotic solutions that improve productivity, flexibility, and working conditions in industrial environments, particularly within small and medium-sized enterprises.

#### ❖ WORKSHOP FORMAT

##### Workshop based on invited presentations.

This workshop will include 11 presentations with speakers from technological institutes (AIJU and CENTIMFE), academia (UBI, USC, CA INP, ENIM, UNIZAR and HURO-UA) and industry (CERFUNDAO and SEED ROBOTICS), involved in collaborative robotics research and applications. The contributions will showcase synergies between research, innovation, and real industrial use cases in sectors such as agri-food and plastics manufacturing. Each presentation will be allocated a 25–30-minute time slot, including time for questions and interaction with the audience. Moreover, a panel discussion will be held at the end of the workshop to encourage exchange of ideas and discussion on future challenges and opportunities.

#### Workshop Presenters

##### 1. AUTONOMOUS AND COLLABORATIVE MANIPULATION BY COBOTS

Rui Tocha, CENTIMFE

**P1:** Updates and Results of the ROBOTTA-SUDOE Project

##### 1.1. Fruit use-case

Pedro Dinis Gaspar, UBI & Filipe Costa, CERFUNDAO

**P2:** Delicate fruit handling through self-sensing soft grippers and computer vision

##### 1.2. Toy/Plastics use-case

Daniel Sánchez, AIJU

**P3:** Assisted and Collaborative Demoulding in manufacturing environments

Rui Soares, CENTIMFE

**P4:** Assembly of inserts into plastic parts

##### 2. HUMAN ASSISTANCE AND INTERACTION WITH COBOTS

##### 2.1. Meat use-case

Saltanat Seitzhan, USC

**P5:** Learning from demonstration in meat and toy sectors

Alexis Babut, CA INP

**P6:** Force control for human assistance in industrial applications

##### 3. PERCEPTION AND SENSORIZATION FOR HRI

Dionisio Cartagena, AIJU

**P7:** Sensorization and understanding of tasks before human–robot interaction

##### 4. ADVANCED APPLICATIONS IN REAL ENVIRONMENTS

Marco Prata, Seed Robotics

**P8:** Sensorized anthropomorphic robotic hands for industrial manipulation

Andrés Úbeda, HURO-UA

**P9:** Neuromechanical assessment in human-robot collaboration: from motor control to ergonomics

Miguel Aranda, University of Zaragoza (REMAIN)

**P10:** Robotic manipulation for shape control of deformable objects

Adrien Koessler, University of Lorraine

**P11:** Human–robot deformable object manipulation

##### All presenters and organizers:

Final round-table: The future of collaborative robotics in real applications