

LIVING MACHINES 2020

SHARED WORKSPACE BETWEEN HUMANS AND ROBOTS

Tuesday, July 28th 2020, 09:30am – 13:30pm

Organisers:

- **Dr. Apostolos Axenopoulos**, Centre for Research and Technology Hellas – Information Technologies Institute, axenop@iti.gr, https://www.iti.gr/iti/people/Apostolos_Axenopoulos.html
- **Dr. Dimitrios Giakoumis**, Centre for Research and Technology Hellas – Information Technologies Institute, dgiakoum@iti.gr, https://www.iti.gr/iti/people/Dimitrios_Giakoumis.html
- **Dr. Anna Mura**, Institute for Bioengineering of Catalonia (IBEC), Synthetic, Perceptive, Emotive and Cognitive Systems Lab, amura@ibecbarcelona.eu <http://specs-lab.com/portfolio-items/staff-anna-mura/>
- **Dr. Vicky Vouloutsi**, Institute for Bioengineering of Catalonia (IBEC), Synthetic, Perceptive, Emotive and Cognitive Systems Lab, vvouloutsi@ibecbarcelona.eu <http://specs-lab.com/portfolio-items/staff-vicky-vouloutsi/>
- **Eva Salgado Etxebarria**, TECNALIA, Research and Technological Development Centre, Multisectoral and Multi-Technology, eva.salgado@tecnalia.com, <https://www.linkedin.com/in/eva-salgado-a82aab40/?originalSubdomain=es>
- **Sara Sillaurren**, TECNALIA, Research and Technological Development Centre, Multisectoral and Multi-Technology, sara.sillaurren@tecnalia.com <https://www.linkedin.com/in/sara-sillaurren-1073b0a/>

Abstract

Human-robot collaboration has been recently introduced in industrial environments, where the fast and precise, but at the same time dangerous, traditional industrial robots have started being replaced with industrial collaborative robots. The rationale behind the selection of the latter is to combine the endurance and precision of the robot with the dexterity and problem-solving ability of humans. An advantage of industrial collaborative robots (or cobots) is that they can coexist with humans without the need to be kept behind fences. Cobots can be utilised in numerous industrial tasks for automated parts assembly, disassembly, inspection, and co-manipulation. The aim of this workshop is to present novel technological approaches that facilitate the collaboration between robots and humans towards solving challenging tasks, in a shared working space without fences. The workshop will leverage the results of the EU-funded project HR-Recycler, which introduces the use of industrial collaborative robots for

disassembling WEEE devices, but it also welcomes contributions from projects in industrial collaborative robotics as well as the broader research community.

The workshop will consist of technical presentations that cover topics related to:

- Smart mechatronics
- Computer vision in robot-assisted tasks
- Human-robot collaboration
- Safety in the workspace

Each talk will have a duration of 20 minutes, including 5 minutes for questions and answers. Speakers will involve participants using an interactive modality of presentation to animate the discussion. A conclusive session of 30 minutes, moderated by the organizers and involving all the speakers and participants, will be dedicated to discussing perspectives and roadmaps for human-robot collaboration, smart mechatronics, safety in the workspace and computer vision in robot-assisted tasks technologies.

09:30 – 09:45	Welcome and overview of event
HR-Recycler: human-robot collaboration in a WEEE recycling plant	
09:45 – 10:10	<p>Apostolos Axenopoulos, Centre for Research and Technology Hellas – Information Technologies Institute Topic: " Efficient fine-grained object detection for robot-assisted WEEE disassembly " https://www.hr-recycler.eu/</p>
10:10 – 10:35	<p>Sebastian Kerz, Technical University of Munich Topic: " Advanced Robotic skills for recycling processes" https://www.hr-recycler.eu/</p>
10:35 – 11: 00	<p>Albert Tissot Muns, Sadako Technologies Topic: " Applications of computer vision and AI in the field of electronic waste management and smart recycling processes" https://www.hr-recycler.eu/</p>
11:00 – 11:20	Coffee break
Human-robot collaboration in the workspace	
11:20 – 11:45	<p>Néstor Garcia Hidalgo, Responsible of the Collaborative Robotics Research line Topic: " Manufacturing environment tracking for an effective human-robot interaction" https://sharework-project.eu/</p>
11:45 – 12:10	<p>Fotios Dimeas, Aristotle University of Thessaloniki Topic: "Human-robot collaboration in assembly tasks - Project CoLLaboratE" https://collaborate-project.eu/</p>
12:10 - 12:35	<p>Matteo Zanaroli, Datalogic Topic: "Project Rossini at a glance" https://www.rossini-project.com/</p>
12:35 – 13:00	Coffee break

Registration: Participation to the workshop requires registration and no additional costs are required. The link to the registration can be found online at <http://livingmachinesconference.eu/2020/>.

This workshop is sponsored by the Hybrid Human-Robot RECYcling plant for electriCal and eLEctRonic equipment (HR-Recycler) project with grant agreement ID: 820742.

