THE 4TH IEEE INTERNATIONAL CONFERENCE ON INDUSTRIAL CYBER-PHYSICAL SYSTEMS

ICPS 2021

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Special Session on

"Cyber-Physical Systems for Deformable Object Manipulation"

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Accepted papers will be published in an IEEE proceedings volume and will be also submitted for the International Publication in *IEEE xplore*

Call for Papers

Manipulation of flexible objects such as clothes, cables and food is relevant to both industrial and household environments. In particular, the factory of the future will witness the increase of robotic manipulation skills allowing robots to carry autonomous tasks, independently of materials, sizes, shapes and other product proprieties thanks to enhanced perception and interaction capabilities provided by devoted sensors, processing and control algorithms as well as purposely designed handling tools. This will bring new opportunities to human-intensive labor manufacturing processes like the ones dealing with fabrics, ropes, cables and wires where the routing and fitting tasks are calling for advanced manipulation techniques. This new robotic ability will impact several production scenarios in which human work is widely adopted due to the complexity in the objects, materials and manipulation tasks, characterized unpredictable initial configuration as well as large deformability and plasticity.

These objectives fall in the area of smart manufacturing and robotics, and they are particularly related to the field of interest of the IEEE TEMS from the point of view of manufacturing operations and of the IEEE System Council from the point of view of systems Modelling, simulation, integration, resilience and product transition, design, production, test, deployment, disposal.

To foster the scientific and technological development in this field, this special session focus on topics in the area of, but not restricted to

- integrated approach to the modelling and simulation
- perception
- embedded control
- digital components
- sensors
- actuators
- manipulation tools
- programming-by-demonstration

for deformable object manipulation tasks for industrial applications.

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