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# IEEE

### IEEE TRANSACTIONS ON AUTOMATION SCIENCE AND ENGINEERING

#### **Special Issue/Section on New Frontiers in Smart Factories: Smart Automation and Human-Robot Interaction**

Recent events, such as the spread of the COVID-19 pandemic, have shown the extreme importance of industrial processes that are fully or partially automated, thus allowing the production and the work in (smart) factories during events that can affect the production. In the smart factory, robots - which are becoming more and more advanced and adaptive to the surrounding environment and to external stimuli and which have improved their mobility and their learning capacity - can be employed in more difficult and demanding tasks such as quality control and process automation. The deployment of Automation and Robotics and of I4.0 key technologies in smart disassembly, recycling and enhancing waste materials obtained from production processes is radically changing the way to conceive and manufacture products and at the same time it is enhancing workers' safety and health conditions.

The main objective of this Special Section/Issue is to present perspectives and recent, promising, research results and industrial applications of different key technologies for smart automation and human-robot interaction. In fact, human-robot interaction will become more and more preminent in the future and workers are already complementing and integrating activities of robots and vice-versa. In such a scenario, it is crucial to focus on how the nature of work itself is changing, by involving the massive presence of collaborative robots and related technologies. Understanding how Robotics and Automation are reshaping the job market is essential to contextualize enhancements in the quantity and quality of jobs and launch new types of jobs, which will require revolutionary education and training paradigms, emotional intelligence and new skills.

The core topics to be addressed in this Special Section/Issue are (not limited to):

- Automation amid and post COVID-19;
- Digital manufacturing; Human-Centered Automation; Anthropocentric robotic systems for Automation;
- Smart Factories; Smart Automation;
- Networked and Collaborative Robotics; Industrial Robots; Service Robots; Consumer Robots;
- Robotics and AI; Robotics in Automation; Robots for Logistics;
- AI tools, such as machine learning, deep learning, predictive analysis, etc., as well as novel mathematical optimization methods intended to increase the planning, learning, and action-taking abilities of machines;
- Key technologies such as Robotics, Augmented Reality, 3D printing, Internet of Things (IoT), Cloud Robotics, etc., to develop solutions to supply materials and parts to the production site; store finished products in warehouses; capture data generated by the production facility; store and analyze data generated in real-time.
- Safe and intuitive interaction with workers and enhanced human-machine co-operation (Human-Robot interaction);
- Wearable robots and exoskeletons; Characterization of worker's gestures to evaluate the stress suffered by their musculoskeletal system and new solutions to ease workers' repetitive movements and relieve their effort;
- Safety and efficient processes to reduce human hazard and the risk of human error;
- Precision, accuracy, and repeatability in Robotics;
- Eco-sustainability of industrial processes; Circular Economy and new manufacturing processes;
- Ethics, Legal, Economic, and Social (ELES) aspects; and more.

### Important Dates

- Paper submission deadline: February 28, 2021;
- Completion of the first review round: April 30, 2021;
- Completion of the second review round: May 31, 2021;
- Final submission due: June 30, 2021;
- Tentative publication date: October 2021.

### Guest Editors

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### Paper Submission

All papers are to be submitted through the IEEE's Manuscript Central for Transactions on Automation Science and Engineering <http://mc.manuscriptcentral.com/t-ase>. Please select the Manuscript Category "Topic-Based Special Issue" under "Type" in Step 1 and this specific Special Issue/Section in Step 6 of your article's submission process. **All manuscripts must be prepared according to the IEEE Transactions on Automation Science and Engineering publication guidelines** (<http://www.ieee-ras.org/publications/t-ase>). Please address inquiries to [[paolo.dario@santannapisa.it](mailto:paolo.dario@santannapisa.it)].