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IEEE TRANSACTIONS ON AUTOMATION SCIENCE AND ENGINEERING

IEEE

Special Issue on Challenges and Responses of Automation Science and Engineering to the COVID-19 Pandemic

The recent COVID-19 pandemic outbreak has posed a significant threat to health, life, economy, and the whole society, but also led to numerous challenges and opportunities to automation science and engineering research. Accurate and efficient testing and tracing of infective patients, rapid response of medical workforce, quick reconfiguration of manufacturing system for protective equipment, secured supply chain of medical resources, reliable tele-health and online services, safe reopening of business operations, and future fast production of vaccines, etc., are essential to help reduce system risk, prevent further infections, stabilize economy, and restore social life. Advanced automation science and engineering technologies, such as AI, data analytics, optimization, robotics, additive and digital manufacturing, 5G network, are critical to ensure effective responses. Such challenges and opportunities have significantly expanded the scopes of traditional automation science and engineering.

In an effort to increase the visibility and impact, and highlight the work responding to the challenges, IEEE T-ASE will launch a special issue to address the challenges and responses of automation science and engineering to COVID-19 Pandemic. The central theme of the proposed special issue is on *challenges and responses in automation science and engineering for fighting against COVID-19 pandemic*, where healthcare delivery, pandemic analysis, and manufacturing and supply chain planning are the focus areas, and broad aspects and issues will be discussed. Topics to be covered include, but are not limited to:

- Emergency response to pandemic outbreak
- Simulation of outbreak events
- Infection testing and tracing
- Infection prevention, control and treatment devices and techniques
- Big data analytics of infection risk
- AI based pandemic analysis
- Models for pandemic disease propagation
- Resource allocation during pandemic outbreaks
- Smart containment, home, and community management under pandemic events
- Factory reconfiguration for PPE production
- Secured and sustainable medical supply chains
- Logistic and scheduling under pandemic events
- Technology applications (e.g., robotics, drones, wearables, additive and digital manufacturing, 5G communication)
- Telehealth and mobile/online services
- Hospital management under pandemic events
- Vaccine production and supply
- Planning and scheduling of business and operation reopening

Note that the special features of COVID-19 pandemic need to be clearly addressed through data, model, experiment design and outcomes in the submitted manuscripts, and discussed in the Note to Practitioners.

Important Dates

- February 1, 2021: paper submission deadline.
- June 1, 2021: completion of the first-round review.
- October 1, 2021: completion of the second-round review.
- November 1, 2021: final submission due.
- January 1, 2022: tentative publication date.

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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 "Special Issue" under Manuscript Category of your submission. 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 jingshan.li@wisc.edu.