

## Recent Advances on Sliding Mode Control and Its Applications in Modern Industrial Systems

**Theme:** With the increased utilization of modern equipment in wide applications such as renewable energy systems, distributed generation, smart grid, transportation, robot manipulators, power systems and automotive, emphasis on better performance in terms of the robustness, optimization, reliability and implementation simplicity has become an important requirement. Sliding mode control (SMC) is recognized as one of the popular and powerful tools in achieving these requirements in industrial systems. The robustness feature eliminates the burden of the necessity of system parameters required for accurate modeling in most applications. In spite of these attractive advantages, the SMC method suffers from chattering existing due to unmodelled dynamics and switching time delays. The effort of the researchers and industry has led to a rapid development of different SMC methods in terms of sliding surface design, sliding surface coefficient selection, sliding-mode observers, chattering reduction methods, and modulation techniques. Especially, the observer and disturbance estimation techniques are widely studied and substantial new observation and estimation techniques have been proposed in the literature. In addition to conventional SMC method, many other SMC methods (total SMC, observer-based SMC, integral SMC, and terminal SMC) have been proposed over the years. Meanwhile, the rapid development of powerful microprocessors, digital signal processors, field programmable-gate-arrays and etc. enabled the implementation of new SMC methods in modern industrial systems. Hence, the objective of this special section is to share the new ideas of researchers and industry on sliding mode control and its applications in modern industrial systems.

### This special section will focus on (but not limited to) the following topics:

- Applications of SMC in industrial electronics (power converters, renewable energy systems, distributed generation, smart grid)
- Applications of SMC in transportation, robot manipulators, and automotive systems
- Advanced observer design techniques
- Advanced disturbance/uncertainty estimation techniques
- Chattering reduction techniques
- Sliding surface design techniques
- Enhanced modulation techniques for power converters
- Enhanced SMC design in discrete-time

### Manuscript Preparation and Submission

Follow the guidelines in “Information for Authors” in the IEEE Transaction on Industrial Informatics <http://www.ieee-ies.org/pubs/transactions-on-industrial-informatics> . Please submit your manuscript in electronic form through Manuscript Central web site: <https://mc.manuscriptcentral.com/tii> . On the submitting page #1 in popup menu of manuscript type, select: SS on **Recent Advances on Sliding Mode Control and Its Applications in Modern Industrial Systems**

Submissions to this Special Section must represent original material that has been neither submitted to, nor published in, any other journal. Regular manuscript length is 8 pages.

**Note:** The recommended papers for the section are subject to final approval by the Editor-in-Chief. Some papers may be published outside the special section, at the EIC discretion.

<b>Timetable:</b>	<b>Deadline for manuscript submissions</b>	<b>May 31, 2019</b>
	<b>Expected publication date (tentative)</b>	<b>October 2019</b>

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