**Call for Papers**

**Special Issue on**

**"Advanced CPS for Industry 4.0 - Enabling Technologies, Real-world Implementations, and Impact Assessments"**

**IEEE Transactions on Systems, Man, and Cybernetics: Systems**

The *IEEE Transactions on Systems, Man, and Cybernetics: Systems* calls for research paper submissions for considering in a Special Issue publication featuring on advanced cyber physical systems (CPS) as key enabling technologies applied in the context of advanced manufacturing and services [1] and Industry 4.0 [2]. Unpublished original contributions from prospective authors are invited for consideration by the special issue, subject to blind reviews, with main focus on innovative CPS enabling methodologies (e.g., systems architectures and designs [3], modeling, algorithms, performance evaluation), real world CPS applications, and impact assessments in the context of Industry 4.0. Comprehensive case studies and in-depth review papers will be considered.

Industry 4.0 is the next incremental advancement in manufacturing services that enables objects with micro intelligence using underlying and integrated technologies such as CPS, Internet of Things (IoT), cloud computing, and big data analytics. CPS is a transformative technology for upgrading, interconnecting, and managing inter-operable and networked physical devices with intelligent computational capabilities. CPS is a broad area of system science and engineering, which supports applications across industries (in productions, supply chain integration, logistic management, and other service sectors) and is viewed as a key enabler with the availability and affordability of sensors, data acquisition and digitization, computer networks, and computational power [4]. CPS embedding in manufacturing is expected to grow at an exponential pace. The dynamic pace of CPS technology evolution creates new identification and implementation challenges for Industry 4.0 [5]. This special issue seeks to explore the areas related to these challenges.

**Topics of the special issue interests and focuses include, but not limited to**
- Vertical/horizontal integration and M2M Communication
- Industrial interoperability and compatibility
- Decentralized control, decision making and technical support
- Seamless digital engineering
- End-to-end industry value chain integration
- Product lifecycle assessment and management
- Assembly line optimization and increased productivity
- Mass customization
- Digital twins: coupling of real and virtual worlds in the production planning
- Modular embedded platforms
- Self-organizing assembly processes with flexibility
- Digital Transformation

- Machine Learning methods for big data analytics in CPS
- Modeling and representation methods for CPS big data visualization
- Intelligent gateway architecture for CPS communication, control and data management
- Service Platforms for CPS
- Smart process and workflow management for Service-Oriented CPS
- Deployable and re-configurable services for CPS

**Important Dates**

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| Manuscript Submission Deadline: | April 1, 2017 |
| Notification of Paper Decision: | July, 2017 |
| Revised Paper Submission Deadline: | October, 2017 |
| Final Paper Submission Deadline: | December, 2017 |
| Publication Date: | January, 2018 |

**Manuscript and Submission**

Preparation of manuscripts should refer to the guidelines in the "Information for Authors" on the IEEE Transaction on System, Man Cybernetics: System website:
http://www.ieeesmc.org/publications/transactions-on-smc-systems/information-for-authors

Submission for the special issue should be submitted through the Manuscript Central web site: https://mc.manuscriptcentral.com/systems. In the Cover Letter to Editor-in-Chief Section, authors should explicitly include the following statement: This manuscript is submitted for the Special Issue on "**Advanced CPS for Industry 4.0**".

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**References**
[1] M. Brettel, N. Friederichsen, M. Keller, and M. Rosenberg, "How Virtualization, Decentralization and Network Building Change the Manufacturing Landscape: An Industry 4.0 Perspective," International Journal of Mechanical, Industrial Science and Engineering, vol. 8, pp. 37-44, 2014.
[2] DIN, "German Standardization Roadmap – Industry 4.0 (Version 2)," DIN e. V., Berlin, January 2016. [Online]. Available:

http://www.din.de/blob/65354/f5252239daa596d8c4d1f24b40e4486d/roadmap-i4-0-e-data.pdf, Accessed on September 10, 2016.

[3]  J. Lee, B. Bagheri, and H.-A. Kao, "A Cyber-Physical Systems Architecture for Industry 4.0-based Manufacturing Systems," Manufacturing Letters, vol. 3, pp. 18-23, 2015.

[4]  A. Trappey, C. Trappey, U. Govindarajan, J. Sun, A. Chuang, "A review of technology standards and patent portfolios for enabling cyber-physical systems (CPS) in advanced manufacturing," IEEE Access, 2016.

[5]  J. Kasser, "Applying holistic thinking to the problem of determining the future availability of technology," IEEE Transactions on Systems, Man, and Cybernetics: Systems, vol. 46, issue 3, pp. 440-444, 2016.