



CALL FOR PAPERS

IEEE Sensors Journal Special Issue on Smart Sensing and Artificial Intelligence-Enabled Data Analytics for Health Monitoring of Engineering Systems

The recent advances in sensing technologies significantly improve the observability of engineering systems towards improved system controllability and reliability. These advances include novel sensing principles that allow multivariate sensing on one sensor node, miniature sensing that provides accessibility to monitor complex structures, low-power data transmission and self-powering that enables extended sensor service life, etc. Also, emerging sensing techniques integrate sensing elements with in-situ data processing to transform the sensors to be “smart”, which are capable to transmit raw data or extracted information as needed, perform self- and cross-evaluation of trustworthiness, etc. The broad applications of smart sensing for health monitoring in engineering systems provide a large amount of data with high variety and pose a big challenge on the data processing side. The significant development on artificial intelligence provides a promising approach for effectively learning from the complex and integrated multimodal data. This special issue is envisioned to drive the fundamental advances in the field of smart sensing and data analytics for health monitoring of engineering systems, ranging from automated manufacturing to healthcare, civil, and energy systems.

It is intended that this Special Issue of the IEEE Sensors Journal will show the current state of the art of smart sensing and artificial intelligence techniques for sensing data analytics, and outline a roadmap to a generalized approach for health monitoring of engineering systems across many domains and sectors. Original research contributions and review papers are sought in areas including (but not limited to):

- Design, implementation, and test of novel sensing principles and multi-modal sensing
- Miniature and high-precision sensing with self-powering
- Distributed and connected sensing with sensing synchronization
- Sensors with embedded efficient in-situ data analytics
- Sensors with anomaly detection, trustworthy evaluation, and security management
- Sensors with low-power data transmission and comprehensive sensing
- Feature **extraction** through unsupervised learning and decision-making through supervised learning
- Fusion of physical knowledge and data-driven models for reliable and robust decision-making
- Fusion of homogenous and/or heterogeneous data at data, feature, and decision level
- Management of data uncertainty coming from noisy, missing, and conflicting data

Solicited and invited papers shall undergo the standard IEEE Sensors Journal peer review process. All manuscripts must be submitted on-line, via the IEEE Manuscript Central™, see <http://mc.manuscriptcentral.com/sensors>. When submitting, please indicate in the “Manuscript Type” roll down menu, and also by e-mail to Ms. Lauren Young, l.young@ieee.org, that the paper is intended for the “AI-Health Monitoring” Special Issue. Authors are particularly encouraged to suggest names of potential reviewers for their manuscripts in the space provided for these recommendations in Manuscript Central. For manuscript preparation and submission, please follow the guidelines in the Information for Authors at the IEEE Sensors Journal web page, <http://www.ieee-sensors.org/journals>.

Deadlines:

- Manuscript Submission: September 30, 2019
- Notification of Acceptance: December 31, 2019
- Final Manuscript published in IEEE Xplore: May 1, 2020

Guest Editors:

Lead GE, Ruqiang Yan
Xi'an Jiaotong University
China
yanruqiang@xjtu.edu.cn

Asoke Nandi
Brunel University London
UK
Asoke.Nandi@brunel.ac.uk

Peng Wang
Case Western Reserve University
USA
pxw206@case.edu

Weihua Li
South China University of Technology
China
whlee@scut.edu.cn