TRANSACTIONS ON
EMERGING TELECOMMUNICATIONS TECHNOLOGIES

Call for Papers
Emerging Telecommunications Technologies (ETT)
Special Issue Proposal on "Deep Learning Based Industrial Internet of Things Applications"

Aim and Scope:

With the rapid growth of connected technologies, the industrial world is transforming in a trend that conforms to a number of headlined names including the fourth industrial revolution, smart manufacturing, and Industrial Internet of Things (IIoT). Sensor technology has been around in industries for over a decade but the emergence of Big Data coupled with manufacturers' increased software proficiencies, pressures on inventory levels and lead times have led many businesses to procure sensor-enabled machinery. That situation has enabled researchers to search for combining advanced technologies for better outcomes in the context of industrial applications.

Industry 4.0 enables industrial advancements with the help of advanced computing, analytics, low-cost sensing, and new levels of connectivity enabled through the Internet. Some of known technologies supporting this revolution are cloud services, big data analytics, and pervasive, intelligent, sensing technologies. In modern industry, productivity, quality, reliability, and safety heavily depend on the performance of the sensors employed. They form an interface between the production equipment and the surrounding environment providing feedback based on the results of the executed operations. The significant benefits of using intelligent sensing technology in industries are accuracy and consistency, which enable functions such as picking, placing, labeling, and printing to be performed at higher production rates, leading to low wastage, minimal down time, and better-quality control. Though intelligent sensors are indispensable in Industry 4.0, there are still existing obstacles for sensors to be widely adopted in the production environment. For example, it is not possible to distinguish between correct and incorrect information provided by a sensor, unless additional information provided by another sensor is used. Also, in addition to fulfilling their primary role, sensors used in industry have to possess additional functionality features such as self-diagnostics, self-calibration, autonomous operation with minimum power consumption, wired or wireless sensor network (WSN) compatibility, and a small form factor. It is also certain that there is a need for extremely robust and reliable industrial sensors. In order to meet all the aforementioned requirements, such sensors need to possess a certain level of intelligence or smartness. Considering today's conditions that may need better analyzing of great amount of

data. One trendy and less followed idea regarding that is employment of Deep Learning, which is current, big approach of the field of Artificial Intelligence. These days, Deep Learning has a great importance because of its network models achieving effective results in multidisciplinary applications. Moving from that, there is an opportunity to ensure high level of accurate intelligence or smartness required for sensors in Industry 4.0 applications. Power of Deep Learning techniques can be used for better organization of intelligent sensors, optimizing their roles within the industrial system and even enabling them to have support from an advanced system giving layered role models for multi-sensors. Although direct use of Deep Learning within IIoT seems difficult to apply, there is open chance to indirect use for optimized and accurately managed systems (i.e. Deep Learning for optimized codes to run, advanced solutions for multi-tasking, pre-organization approaches).

Objective of this special issue is to gather original research works contributing to the literature in terms of using Deep Learning techniques for effective Industry 4.0 applications including active role of intelligent sensors. This special issue emphasizes several topics in the area of intelligent sensors for industrial real-world applications. However more consideration will be given to a less visited solution scope: Deep Learning. In order to shape both current and future literature better, the authors are encouraged to provide also negative results and any additional components such as data or open source applications in the context of their research works.

The topics of interests in this special issue include, but are not limited to:

- Deep Learning for sensing technology domains: smart grid, water supply system, medicine, smart city and other industrial applications
- Deep Learning supported mobile sensing devices and applications in industrial sensor networks
- Deep Learning based solutions for security issues in industrial sensor networks
- Fault tolerance with Deep Learning in industrial sensor networks
- Hybridization with Deep Learning techniques and other techniques of Data Mining, data analysis for advanced use of industrial sensor networks
- Deep Learning based IIoT related to production, safety, and/or health in the workplace, including pollution;
- Deep Learning based IIoT and integration between workers and process automation to produce a more comprehensive perspective;
- Deep Learning for improving intelligent sensors using experience.

Submission Instructions:

The editors maintain the right to reject papers they deem to be out of scope of this special issue. Only originally unpublished contributions and invited articles will be considered for the issue. The submission should not be under consideration for publication elsewhere. Extended

version of conference papers should contain additional original material for at least 70% in terms of methodology, new results and validation.

The papers should be formatted according to the ETT guidelines (https://onlinelibrary.wiley.com/page/journal/21613915/homepage/forauthors.html). Authors should submit a PDF version of their complete manuscript via Manuscriptcentral (http://mc.manuscriptcentral.com/ett) according to the timetable below.

Schedule:

Submission of manuscript:	July 31, 2020
First notification:	Sept 30, 2020
Submission of revised manuscript:	Nov 30, 2020
Final notification:	Dec 31, 2020

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