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J-BHI Special Issue on “AIoMT-Enabled Medical Sensors for Remote Patient Monitoring and Body-Area Interfacing: Design and Implementation, Practical Use, and Real Measurements”

The rapid advances in the Internet of Things (IoT) and the needs to distributed intelligence and artificial intelligence of things (AIoT) in sensor systems have brought some new challenges of big e-health data with itself where massive data are collected by different medical and healthcare monitoring sensors. The health sensing technologies have become more demandable in IoT-based healthcare systems for a development, testing, and trials such that they should be a part of both clinics and homes to reach the concept of smart monitoring of patients. This special issue wishes to give a deep perception on how to sense, process, and intelligently communicate biomedical data through remote access. The integration of medical sensors and AIoT is named Artificial Intelligence of Medical Things (AIoMT) and will be a future development towards the Internet of Medical Things (IoMT). With AIoMT technologies, we can obtain a great ability to predict future conditions of patients, prescribe potential medicines, prevent further damage through remote monitoring by physicians and also self-control by the monitored persons. AIoMT is specifically helpful for providing remote diagnosis, near real-time decision making, and preventive, predictive, reliable, and affordable healthcare. In this special issue, we aim to address the care and safety challenges and limitations of practical medical and healthcare sensors to realize the concept of AIoMT for medical sensors towards applied body area monitoring systems and interfaces. This special issue does not cover synthetically generated or simulated data for sensors, or any other aspect of AIoMT for virtual sensor systems (e.g., data communications in wireless sensor networks as physically unavailable).

Since this large volume of sensory data, often called big data, cannot readily be processed by the traditional data processing algorithms and applications, the intelligence of sensors can enhance the decision-making process and early disease diagnosis. Hence, there is a need for scalable and collaborative machine learning algorithms in medical sensors. We welcome contributions in both aspects of theoretical and practical use of AIoMT in medical sensors. With the integration of modern-day technologies, care providers can take much better and informed decisions than ever before. Internet of healthcare technology is specifically helpful in providing remote diagnosis, near real-time decision making, preventive, predictive, reliable, and affordable healthcare, etc. Along with such exemplary benefits of Smart Healthcare technology, there exist several issues and challenges which need to be addressed to provide equitable, reliable, affordable, secure, and privacy preserved smart healthcare facilities to the masses.

With this Special Issue, we aim to address these topics across multiple abstraction levels including novel data models for efficient storage and processing of big medical data, mechanisms, and algorithms for predictive and preventive healthcare, security, and privacy measures for protecting sensitive data of patients, decision-making systems, etc. We further invite original researches, state-of-the-art reviews, and surveys for smart healthcare systems addressing scalability, security, energy efficiency, reachability, and affordable treatment approaches for the masses. Considering the urgency and need for the current sustainable society, we believe that the proposed theme can attract excellent contributions from both academia and industry.

Topics of interest include, but are not limited to, the following:

- Intelligent medical data sensing and processing for distributed monitoring
- AIoMT through body area sensor systems with a real implementation of sensors
- Smart sensors for IoMT
- Big data analytics for healthcare sensors in use
- Distributed sensor networks for biomedical intelligence, remote surgery, and robot-assisted wearable sensors for healthcare
- Cloud/fog/edge computing and big medical data collected by real sensors
- Internet of medical things and federated learning through next-generation networks (6G and beyond)
- Applied sensors for remote human's health and activities monitoring
- Advances of medical sensor data fusion
- Decision-making systems for AIoMT applied to medical sensors
- Data mining and fusion algorithms for AIoMT-enabled sensors
- VR/AR sensors, mixed reality, and data visualization for AIoMT
- AIoMT for EEG/ECG sensors and brain interfacing

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