IEEE JOURNAL OF

BIOMEDICAL AND HEALTH INFORMATICS

J-BHI Special Issue on "Emerging IoT-driven Smart Health: from Cloud to Edge"

Introduction

Smart health is a real-time, intelligent, ubiquitous healthcare service based on Internet of bioMedical Things (IoMT). With the rapid development of related technologies such as deep learning, edge computing and IoT, smart health is playing vital role in healthcare industry to increase the accuracy, reliability and productivity of mobile sensory devices. To meet the computational requirements of deep learning, a common approach is to leverage cloud computing. To use cloud resources, data must be moved from the data source location on the network edge [e.g., from smartphones and IoT sensors] to a centralized location in the cloud. This potential solution of transferring the data from the source to the cloud brings about several challenges: latency, bandwidth and privacy. A large amount of biomedical data is difficult to tolerate network latency and needs to be processed in real time, which challenges the way of cloud computing. Therefore, there are many studies that do not perform the computation and processing of biomedical and health data in cloud center, but migrate tasks to edge end, through edge computing to effectively improve the real-time service, to meet the high real-time needs of smart health services.

However, the IoMT data analysis and managing still represent the main trend due to a huge number of devices that connect to the server environments which generate a significant biomedical data. Besides, many challenges remain in deploying deep learning on the edge, not only on end devices but also on the edge servers and on a combination of end devices, edge servers, and the cloud. Therefore, there is a necessity for providing real-time, efficient and scalable intelligent algorithms that lead to additional sophisticated solutions and that can make operative decisions in emerging IoT-driven smart health.

This special issue focuses on smart sensors challenges in IoMT, and solutions that leverage techniques and insights from the domains of artificial intelligence, edge computing, and IoT. Specifically, it also solicits high quality contributions investigating the usage of biometric signals in the context of IoMT for continuous monitoring for patient-centric healthcare.

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

- Cloud, fog, and edge computing architecture for IoMT
- Computation and sensor offloading for IoMT
- Multimodal data collection, fusion, analysis, visualization of biomedical sensor

data

- Deep learning-based processing and diagnostic analysis of biomedical sensor data
- Transfer learning and multi-task learning
- Intelligent interrogation systems based on smart wearable sensors
- Adversarial training on biomedical sensor data
- Visualization and understanding of machine learning in biomedical sensor data
- Hardware or database architectures that can implicitly capture intricate structures of large-scale multi-modal biomedical sensor data
- Improvising on the computation of biomedical processing models, exploiting parallel computation techniques, and GPU programming
- Malware detection in IoMT using deep learning
- Security, and privacy issues in biomedical sensor data
- Knowledge discovery for biomedical sensor data
- Patient-specific health-signals based identification and monitoring
- Novel applications and case studies for IoMT based on group wearable sensors.

Important Dates

Deadline for Submission: 30 June, 2021
First Reviews Due: 30 September, 2021
Revised Manuscript Due: 31 October, 2021
Final Decision: 31 December, 2021

Guest Editors:

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