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Guest Editorial

Sensing and computing for smart healthcare

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The emerging technology and innovation on sensing technology, data computing, and artificial intelligence (AI) has resulted in an accelerated development of smart healthcare. This thematic issue on Sensing and Computing for Smart Healthcare aims to highlight the diverse advances and the latest developments and emergent technologies in healthcare applications concerning remote human health monitoring, physiological sensing and imaging, wearable biosensors, intelligent computing and AI. The thematic issue attracted a good number of submissions from researchers in these domains. After critical peer-review and selection, four manuscripts were accepted for publication in this thematic issue, covering the topics of image analysis and AI, physiological signal processing and disease detection, and ambient assisted living.

The paper "**Ambient assisted living framework for elderly care using internet of medical things, smart sensors, and GRU deep learning techniques**" by Syed et al. proposes an Ambient Assisted Living (AAL) system with Internet of Medical Things (IoMT) that leverages deep learning techniques to monitor and evaluate the elderly's activities and vital signs for clinical decision support. By combining smart sensors (including accelerometers, gyroscopes, and magnetometers), IoMT infrastructure, and AI algorithms, elderly activities can be recognized and their heart rate variability over time can be monitored. The proposed AAL system is expected to be beneficial during crucial situations such as the pandemics to remotely monitor elderly patients and their health-related status or risks.

The paper "**Predicting dose-volume histogram of organ-at-risk using spatial geometric-encoding network for esophageal treatment planning**" by Nian et al. proposes a spatial geometric-encoding network (SGEN) to incorporate 3D spatial information with an efficient 2D convolutional neural networks (CNN) for accurate prediction of dose-volume histogram (DVH) for esophageal radiation treatments. The proposed method can handle 3D CT scans, 3D PTV scans and 3D distance images directly, simultaneously, and has demonstrated superior performance over typical baselines.

The paper "**An improved method for recognizing pediatric epileptic seizures based on advanced learning and moving window technique**" by Chakrabarti et al. proposes a generalized framework in seizure classification from electroencephalogram (EEG) signals in a pediatric population. Feature extraction techniques based on time domain, frequency domain, and time-frequency domain have been used, and four different machine learning methods (decision tree, random forest, artificial neural network, and ensemble learning) have been evaluated. A high detection performance has been reported by the paper. The proposed framework would pave the way for more refined or dedicated algorithmic frameworks for pediatric seizure detection with maximum accuracy that could be deployed and used in real scenarios.

The paper "**Attention-based graph ResNet with focal loss for epileptic seizure detection**" by Dong et al. proposes an epileptic seizure detection system via modeling multi-channel EEG data with an Attention-based Graph ResNet (AGRN). In particular, topological information of the multi-channel EEG signal is expressed as a graph, and

attention-based deep residual learning is employed to cope with the degradation problem in deeper networks. The proposed method achieves promising results in multiple seizure detection tasks and is expected to assist clinicians in the screening or diagnosis of epilepsy.

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