



IoT-based health monitoring system to handle pandemic diseases using estimated computing

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IoT-based health monitoring systems are used for the detection of pandemic diseases at early stages. Due to IoT-based health monitoring systems, real-time monitoring system for pneumonia patients is possible. IoT-based health monitoring systems can be used to trace COVID-19-positive individuals and isolate them from non-infected individuals during the pandemic. IoT-based health monitoring systems can help reduce preventive expenditures and provide better treatment for infected individuals. IoT-based health monitoring systems are 95% accurate in terms of monitoring and tracking COVID-19.

IoT-based health monitoring systems-enabled health monitoring and management can facilitate a proactive approach to healthcare, with personalized treatment and management options. IoT-based health monitoring systems-enabled health monitoring and management can

reduce the cost of healthcare while simultaneously improving outcomes. However, IoT-based health monitoring systems and management present both opportunities and challenges that must be addressed. These considerations have led to this special issue as a venue for IoT-based health monitoring systems research around the world to share their state-of-the-art research and development that could be beneficial to protect the patient and improve their quality of life. Specifically, this special issue addresses various security, privacy, and forensics issues in IoT-based health monitoring systems and related areas. This has helped us collect high-quality articles that reported recent research advances regarding security, privacy, and forensics issues in IoT-based health monitoring systems, covering various topics of interest.

This special issue contains sixteen papers dealing with different aspects of IoT-based health monitoring systems and other related areas. The papers included in this issue cover a wide range of topics, including machine learning-based diffusion models for predicting the outbreak of COVID-19, smart healthcare frameworks for detecting and monitoring COVID-19 using IoT and cloud computing, and real-time cardiovascular monitoring for COVID-19 patients using 5G-enabled wearable medical devices. Additionally, some of the papers explore the potential of IoT devices in tracking and mitigating the spread of pandemics, including contact tracing and botnet detection approaches in large-scale cooperative IoT environments. The issue also features papers on novel applications of IoT-based health monitoring systems, such as gesture recognition based on sEMG for remote control and postpartum pelvic organ prolapse assessment via adversarial feature complementation in heterogeneous data. Moreover, the issue covers various linguistic methods in healthcare applications, including COVID-19 variant classification. The first paper “Classification of lower limb motor imagery based on iterative EEG source localization and feature fusion” proposes a new method for classifying lower limb motor imagery based on iterative EEG source localization

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and feature fusion. The second paper “A privacy-preserving botnet detection approach in large-scale cooperative IoT environment” proposes a novel approach for detecting botnets in large-scale cooperative IoT environments while preserving the privacy of users. The third paper “PA during the COVID-19 outbreak in China: a cross-sectional study” investigates the impact of the COVID-19 pandemic on physical activity (PA) levels among Chinese adults. The fourth paper “Machine learning-based diffusion model for prediction of coronavirus-19 outbreak” presents a machine learning-based diffusion model for predicting the outbreak of COVID-19. The fifth paper “A smart healthcare framework for detection and monitoring of COVID-19 using IoT and cloud computing” proposes a smart healthcare framework for detecting and monitoring COVID-19 using IoT and cloud computing. The sixth paper “Alleviating pseudo-touching in attention U-Net-based binarization approach for the historical Tibetan document images” proposes a new method for binarizing historical Tibetan document images by alleviating the problem of pseudo-touching. The seventh paper “Real-time running workouts monitoring using Cloud-Edge computing” presents a real-time running workouts monitoring system using cloud-edge computing. The eighth paper “A cyber warfare perspective on risks related to health IoT devices and contact tracing” explores the risks related to health IoT devices and contact tracing from a cyber warfare perspective. The ninth paper “Gesture recognition based on sEMG using multi-attention mechanism for remote control” proposes a new method for gesture recognition based on sEMG using a multi-attention mechanism for remote control. The tenth paper “Postpartum pelvic organ prolapse assessment via adversarial feature complementation in heterogeneous data” presents a new method for postpartum pelvic organ prolapse assessment using adversarial feature complementation in heterogeneous data. The eleventh paper “Enhancing COVID-19 tracking apps with human activity

recognition using a deep convolutional neural network and HAR-images” proposes a new method for enhancing COVID-19 tracking apps using human activity recognition with a deep convolutional neural network and HAR-images. The twelfth paper “Design and verification of secure communication scheme for industrial IoT intelligent production line system with multi-path redundancy and collaboration” proposes a secure communication scheme for industrial IoT intelligent production line systems with multi-path redundancy and collaboration. The thirteenth paper “A detection algorithm for cherry fruits based on the improved YOLO-v4 model” presents a detection algorithm for cherry fruits based on the improved YOLO-v4 model. The fourteenth paper “Res-CovNet: an internet of medical health things driven COVID-19 framework using transfer learning” proposes Res-CovNet, an IoT-driven COVID-19 framework using transfer learning. The fifteenth “Toward real-time and efficient cardiovascular monitoring for COVID-19 patients by 5G-enabled wearable medical devices: a deep learning approach” presents a deep learning approach for real-time and efficient cardiovascular monitoring for COVID-19 patients using 5G-enabled wearable medical devices. The sixteenth paper “Linguistic methods in healthcare application and COVID-19 variants classification” explores the potential of linguistic methods in healthcare applications, including COVID-19 variant classification.

Overall, this special issue aims to showcase the latest research in IoT-based health monitoring systems and estimated computing to combat pandemics such as COVID-19. We hope that the papers presented here will provide valuable insights and contribute to the ongoing efforts to mitigate the impact of pandemics on public health.

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