Editorial on “Special issue on fog computing for healthcare”

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Fog Computing improves traditional cloud infrastructure by processing and storing data between Internet of Things (IoT) medical devices and cloud platforms. The fog nodes extract context-aware information from multiple wearable nodes such as blood pressure and electrocardiogram to diagnose and treat cardiovascular diseases, and may successfully report fall detection of critical patients. Furthermore, in the context of body area networks, fog nodes may communicate with the coordinators for real-time health monitoring, which may eventually reduce latency caused by data classification and processing at the coordinators. Since fog nodes collect and process life-critical data, strong encryption and security mechanisms may be required to prevent patients' privacy, confidentiality, integrity, and any other malicious interactions with the fog infrastructure.

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The objective of this special issue was to attract high quality research articles on the development of fog computing infrastructure for next generation healthcare networks. We have received approximately 27 papers in different areas. The submitted papers were rigorously reviewed, and six papers were finally accepted. The first paper entitled “Vulnerability assessment as a service for fog-centric ICT ecosystems: A healthcare use case” by Yannis et al. proposed a cross-layered system that utilizes software defined networking and distributed fog architecture for large scale ICT infrastructure. The proposed system is evaluated through controlled conditions simulation environment. The second paper entitled “Fog computing for assisting and tracking elder patients with neurodegenerative diseases” by Ivan et al. focused on application of fog computing in the U.S. hospital infrastructure. Simulation results obtained for neurodegenerative diseases in 14 states in the U.S. showed that the proposed approach is effective for regular use by considering one hospital per state. The third paper entitled “Fog computing in internet of things: Practical applications and future directions” by Rida et al. presented the fundamental concepts of fog three-tier model and highlights its open issues, challenges, and security risks. The fourth paper entitled “An IoT based efficient hybrid recommender system for cardiovascular disease” by Fouzia et al. proposed an IoT based efficient community-based recommender system that diagnoses and classifies cardiac diseases with recommendations. Performance analysis conducted on a dataset collected from a hospital showed efficiency of the recommender system in terms of precision, recall and mean absolute error. The fifth paper entitled “Joint radio resource allocation in fog radio access network for healthcare” by Shiyuan et al. proposed a novel fog radio access network that optimizes caching strategy and content transmission. The proposed joint-optimization design uses a novel matching algorithm that improves the performance of the fog radio access network. The final paper entitled “Secure and efficient data delivery for fog-assisted wireless body area networks” by Thaier et al. proposed an efficient data delivery protocol that reduces delay and protects the system against malicious attacks. The simulation results showed that the proposed

protocol achieves better performance by considering different conditions such as mutual interference, human mobility, fog density and attacks by jamming nodes.

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