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Cloud support for large scale e-healthcare systems

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Abstract: t Rapid development of wearable devices and mobile cloud computing technologies has led to new opportunities for large scale e-healthcare systems. In these systems, individuals' health information are remotely detected using wearable sensors and forwarded through wireless devices to a dedicated computing system for processing and evaluation where a set of specialists namely, hospitals, healthcare agencies and physicians will take care of such health information. Real-time or semi-real time health information are used for online monitoring of patients at home. This in fact enables the doctors and specialists to provide immediate medical treatments. Large scale e-healthcare systems aim at extending the monitoring coverage from individuals to include a crowd of people who live in communities, cities, or even up to a whole country. In this paper, we propose a large scale e-healthcare monitoring system that targets a crowd of individuals in a wide geographical area. The system is efficiently integrating many emerging technologies such as mobile computing, edge computing, wearable sensors, cloud computing, big data techniques, and decision support systems. It can offer remote monitoring of patients anytime and anywhere in a timely manner. The system also features some unique functions that are of great importance for patients' health as well as for societies, cities, and countries. These unique features are characterized by taking long-term, proactive, and intelligent decisions for expected risks that might arise by detecting abnormal health patterns shown after analyzing huge amounts of patients' data. Furthermore, it is using a set of supportive information to enhance the decision support system outcome. A rigorous set of evaluation experiments are conducted and presented to validate the efficiency of the proposed model. The obtained results show that the proposed model is scalable by handling a large number of monitored individuals with