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A cloud supported model for efficient community health awareness

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Abstract: The needs for efficient and scalable community health awareness model become a crucial issue in today's health care applications. Many health care service providers need to provide their services for long terms, in real time and interactively. Many of these applications are based on the emerging Wireless Body Area networks (WBANs) technology. WBANs have developed as an effective solution for a wide range of healthcare, military, sports, general health and social applications. On the other hand, handling data in a large scale (currently known as Big Data) requires an efficient collection and processing model with scalable computing and storage capacity. Therefore, a new computing paradigm is needed such as Cloud Computing and Internet of Things (IoT). In this paper we present a novel cloud supported model for efficient community health awareness in the presence of a large scale WBANs data generation. The objective is to process this big data in order to detect the abnormal data using MapReduce infrastructure and user defined functions with minimum processing delay. The goal is to have a large monitored data of WBANs to be available to the end user or to the decision maker in reliable manner. While reducing data packet processing energy, the proposed work is minimizing the data processing delay by choosing cloudlet or local cloud model and MapReduce infrastructure. So, the overall delay is minimized, thus leading to detect the abnormal data in the cloud in real time mode. In this paper we present a multi-layer computing model composed of Local Cloud (LC) layer and Enterprise Cloud (EP) layer that aim to process the collected data from Monitored Subjects (MSs) in a large scale to generate useful facts, observations or to find abnormal phenomena within the monitored data. Performance results show that integrating the MapReduce capabilities with cloud computing model will reduce the processing delay. The proposed MapReduce infrastructure has also been applied in lower la