# ABSTRACT

The world is facing problems such as uneven distribution of medical resources, the growing chronic diseases, and the increasing medical expenses. Blending the latest information technology into the healthcare system will greatly mitigate the problems. The advances in information technology have witnessed great progress on healthcare technologies in various domains nowadays. However, these new technologies have also made healthcare data not only much bigger but also much more difficult to handle and process. Moreover, because the data are created from a variety of devices within a short time span, the characteristics of these data are that they are stored in different formats and created quickly, which can, to a large extent, be regarded as a big data problem. To provide a more convenient service and environment of healthcare, this paper proposes a cyber-physical system for patient-centric healthcare applications and services, called Health-CPS, built on cloud and big data analytics technologies. This system consists of a data collection layer with a unified standard, a data management layer for distributed storage and parallel computing, and a data-oriented service layer. The results of the study show that the technologies of cloud and big data can be used to enhance the performance of the healthcare system so that humans can then enjoy various smart healthcare applications and services.

***Index Terms***—Body area networks (BANs), big data, cloud computing, healthcare, cyber-physical systems (CPS),

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