A comprehensive analysis of healthcare big data management, analytics and scientific programming

ABSTRACT

Healthcare systems are transformed digitally with the help of medical technology, information systems, electronic medical records, wearable and smart devices, and handheld devices. The advancement in the medical big data, along with the availability of new computational models in the field of healthcare, has enabled the caretakers and researchers to extract relevant information and visualize the healthcare big data in a new spectrum. The role of medical big data becomes a challenging task in the form of storage, required information retrieval within a limited time, cost efficient solutions in terms care, and many others. Early decision making based healthcare system has massive potential for dropping the cost of care, refining quality of care, and reducing waste and error. Scientific programming play a significant role to overcome the existing issues and future problems involved in the management of large scale data in healthcare, such as by assisting in the processing of huge data volumes, complex system modelling, and sourcing derivations from healthcare data and simulations. Therefore, to address this problem efficiently a detailed study and analysis of the available literature work is required to facilitate the doctors and practitioners for making the decisions in identifying the disease and suggest treatment accordingly. The peer reviewed reputed journals are selected for the accumulated of published research work during the period ranges from 2015 - 2019 (a portion of 2020 is also included). A total of 127 relevant articles (conference papers, journal papers, book section, and survey papers) are selected for the assessment and analysis purposes. The proposed research work organizes and summarizes the existing published research work based on the research questions defined and keywords identified for the search process. This analysis on the existence research work will help the doctors and practitioners to make more authentic decisions, which ultimately will help to use the study as evidence for treating patients and suggest medicines accordingly.

Keyword: Healthcare; Big data; Big data management; Big data analytics