

Chapter 12

Apollo Hospital's Proposed Use of Big Data Healthcare Analytics

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ABSTRACT

This chapter describes how one may stock clinical data in digital forms, such as patient reports as an electronic health record, and how one may create meaningful information from these records utilizing analytics methods and tools. Apollo Hospital is the biggest hospital in West Bengal. It collects a huge quantity of heterogeneous data from various sources, including patient health records, lab test results, digital diagnostic supplies, healthcare insurance data, social media data, pharmaceutical data, gene expression records, transactions, and data from MY hospital's Mahatma Gandhi Memorial Medical College. Data analytics could be used to organise this data and make it retrievable. As a result, the term "big data" may be used. Big data is defined as exceptionally big datasets which may be analysed computationally to uncover trends, patterns, and relationships, as well as visualisation, querying, information privacy, and predictive analytics on a huge dataset.

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1. INTRODUCTION

Today's healthcare business creates a vast quantity of data from patient records, health and medical device records, pharmaceutical experimentation data, healthcare insured data, medical data, patient feedback data lab findings, images (like CT scan and X-ray), health policy data audio and video data. The data which are produced may be unstructured or structured. In this modern digital world, digitization of this data is required. In exchange, the digitalization of healthcare data will aid in the provision of higher-quality treatment at lower costs. Healthcare companies may leverage current tools and technology to evaluate data in digital form and provide significant insights in treating patients. Big data is characterised as a high amount of structured (RDBMS) and un-structured (multimedia, text and web pages) data that is challenging to manage utilizing standard databases and software (MySQL, MongoDB and Oracle). Big data denotes a technique which consists of both tools and procedures that a company needs to manage massive amounts of data and storage. To enhance the standard of medical treatment, it is required for extraction of hidden facts and statistics from a vast amount of acquired data in order to address new difficulties such as lowering healthcare costs. Similarly, hospitals like the Apollo hospital in Kolkata that is taken into granted to be Kolkata's largest hospital in Kolkata, generate huge volumes of data that may be classified as "Big data" because millions of people are served every day, the majority of who are below the poverty-level and mostly work as daily-earners. If these persons go to the hospital, they would have to stand in a lengthy line for medication, wasting the entire day and losing their income for the whole day, leaving them hungry. So, to get out of this predicament, we may save patient information in electronic medium such as the EHR (Mahajan, H.B., et al. 2023) that will retain both money and time for patients and healthcare providers, and the government. An electronic health record (EHR) is a standardised assemblage of a patient's e-health record that may be exchanged across multiple hospital branches in a network. Demographics, medical history, medications, prior lab test reports, radiology-based records, major organ reports, and individual record may all be stored in EHRs.

With the utilization of decision tree (Chellam, V. V. Et al. 2023), clustering, association, sequence analysis, classification, segmentation, regression, and web mining techniques, big data analysis aids in the discovery of important judgments by identifying data patterns and their relationships. Hadoop is an open-source software architecture stores data that enables massive repository of various data, tremendous computation power having the capacity for executing almost unlimited parallel operations or tasks.

2. REVIEW OF THE LITERATURE

It has been discovered that digitalizing denotes a necessary in medical organisations since a great quantity of record is created connecting a patient's wellbeing data to its genomic investigation, and effective storage is sought utilising big data and analytics to maintain track of this information.

Doctors may produce profound insights, according to (Won *et al* 2021), via the digitalization of health records, which may expedite clinical processes, enhance treatment, build-patient associations, save expenditures, and better things.

In a research published in (Bi, H. et al. 2021) showed how big data analysis consists of having the ability for altering sophisticated technology for getting insight from healthcare and other datasets and making judgments.

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