



Chapter 13

Revolutionary Role of Bioinformatics and Data Analytics in the Healthcare Sector

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ABSTRACT

Big data is a rapidly expanding and applied field that offers the potential to transform the healthcare industry. It enables efficient data modification for patient physiological analysis in bioinformatics. This assessment highlights the current status of big data and analytical techniques in all five healthcare subdisciplines. Stakeholders, including government agencies, healthcare professionals, hardware manufacturers, pharmaceutical companies, individuals, data scientists, scholars, and vendors, are responsible for developing and evaluating big data policies to improve patient outcomes.

INTRODUCTION

The velocity of technology advancement has brought enormous potential to make

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an extraordinary influence on our everyday lives in several disciplines, particularly in the healthcare industry, because of the sheer magnitude and availability of multidimensional information. Big data is a new, enormous word that will be introduced by the quickly expanding and applied data. Finding information in such complex data is frequently a difficult task. The creation and examination of instruments and techniques for examining such vast amounts of data presents us with a chance to facilitate the shift into a new age. Executing the organization's plans may be greatly aided by having analytics provide data-driven, real-time insights that the organization can access. The greatest advantage of big data analytics is its potential and the necessity of developing novel approaches to deliver the services we require. In contrast to other domains, big data analytics has great promise for the healthcare industry and has garnered more attention in recent years. Decisions made by clinicians are becoming increasingly evidence-based, which means they are depending less on their training and professional judgement and more on vast amounts of studies and clinical data. Larger and more complex electronic health datasets that are difficult or almost impossible to handle using standard, conventional techniques, tools, or software are referred to as "big data" in the context of healthcare. Big data in healthcare is produced by medical records (such as patient records, illness surveillance, hospital records, prescription drug records, health management records, physician records, clinical decision support, or patient feedback). and clinical data (such as electronic medical records, genetic and pharmacological data, financial records, personal images, etc.). Because the creation and administration of these massive health records are thought to be extremely complicated, big data analytics is presented. Big data analytics has the ability to significantly affect our lives by assisting in the prediction, prevention, management, treatment, and cure of disease. This is especially true with the growth of personalised medicine and technological innovation. It also aids in resource management, the advancement of medical research, the development of preventative measures, and the management of epidemics for government organizations, legislators, and hospitals. Due to advancements in information and communication technologies, hard-copy medical data is shifting to cloud-based health records and electronic medical records systems. Data from these systems grew exponentially.

In addition to clinical records, telemonitoring, and medical testing, a growing variety of healthcare applications are now used to collect healthcare data. There are a tonne of subscriptions for these apps. As more and more individuals subscribe to fresh and useful data about health and well-being every day, there were 7.9 billion mobile subscriptions worldwide as of the end of the quarter, referring to the Ericsson Mobility Report of 2019. During that time, 49 million additional subscriptions were added. Because of the world of social media, many applications include large amounts of data. The internet is used by almost 4 billion individuals for a variety

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