Machine Learning Algorithms for Intelligent Data Analytics

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Data Analytics for Disease Prediction

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Abstract— Human life in the modern era is influenced by a large number of diseases, which are the major causes of death. When patients exhibit symptoms clearly indicating abnormalities, healthcare systems can treat them. Diagnoses of intense diseases during the early stages allow patients to be treated, thus reducing their risk. In the absence of treatment, chronic conditions develop, sometimes resulting in death. Diagnosis of intensive diseases causes 59 percent of deaths annually. Medical services is a complex structure, containing a wide range of areas that are challenging to manage with excellent accuracy, while at the same time patients demand reasonable prices. In the medical services industry, fresh innovations are being incorporated. Predictive analytics and data science are changing industries because they can predict future outcomes and mitigate risks. Healthcare organizations can use these technologies to gain actionable insights into their patients' data as well as outcomes in order to lower total healthcare costs, recognize individuals at high risk more rapidly, produce real-time notifications, etc. The subjects of clinical decision assistance systems, diagnostic image interpretation, forecasting models, and universal healthcare are highlighted in this chapter.

Keywords— Data collection, Big data analytics, Biomedical image analysis, Disease Prediction models, Universal healthcare

I. INTRODUCTION

Based entirely on selected truths. In today's society, health forecasts are very significant. Every healthcare application must handle a large amount of data in various formats, and data type, data size and other features are critical to the data handling process. Detecting and predicting diseases, such as diabetes, lung cancer, brain cancer, heart diseases, and liver diseases, requires massive tests, which leads to an increase in patient medical data. Medical data are digitized thereby reforming their dimensions, increasing data size and enhancing the value of analytics. Healthcare data is both fascinating and challenging due to the variety of types of data including health surveys, patient illness information, insurance claims, electronic health records, and administrative information. There are many forms of data in healthcare, including structured, unstructured, and semi-structured data. It brings together all information from various sources, like claims, medical records, and laboratory records. With the help of statistical analysis or big data analytics, we can predict hidden information, and a healthcare analytics system can deliver multiple advantages to patients. The information will allow clinicians to make more accurate decisions and early diagnoses, enabling them to begin treatment more quickly and minimize any long-term damage caused by this disease.

As a result of data science, disease diagnostics and treatment methods can be changed and diseases can be prevented in the future. Using predictive analytics, we can tell when autoimmune patients will have flare-ups, whether their condition is improving or worsening, and how they respond to different treatments.

In order to understand such huge volumes of data, high-end computing resources and algorithms based on Artificial Intelligence (AI) are needed. In order to achieve automatic decision-making, Machine Learning (ML) approaches combine fuzzy logic and neural networks. Data management strategies that are innovative and efficient, cloud-based applications that are intelligent and effective, and user-friendly visualization are essential for gaining practical insight from big data. Data mining is the computing approach to detecting patterns in massive data sets by combining machine learning techniques, statistics and database gadgets. Sincerely, prediction is a forecast of an uncertain event and it depends on certain fact

II. THE NATURE OF BIG DATA IN THE HEALTH CARE SYSTEM

The term "Big Data" in medical services refers to the large amounts of information generated from many assets, including Electronic Health Records (EHRs), scientific imaging, payer information, drug research, genomic sequencing, wearable sensor gadgets, and clinical gadgets.

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