Big Data focused information mining on pandemic era: COVID-19 analysis, challenges and impacts

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Abstract

In the modern era, information technology based applications significantly impact the global pandemic like COVID-19. The research areas like big data and data mining can serve as the platform for the execution of information technology based solutions. These applications affect daily life activities and assist us to deal with epidemiological situations. COVID-19 was emerged as a global pandemic in 2019. From the initiation of the COVID-19 era to the present scenario, there is huge drift in the progress of society in different sectors. These sectors include healthcare, education, transportation, military etc. Dramatic changes have been observed in the economy after the COVID-19 scenario. The steep fall in the economy of different nations has been analysed in the past. Now, the entire world is recovering from this pandemic era and economy is recovering with the time.

Introduction

There is a significant role of data mining and analysis to plan the forthcoming applications in order to deal with such pandemic situations. Machine learning and online analytical processing can be applied to extract the information related to pandemic like symptoms, number of patients suffered, recovery rate, death data etc. This information can only be helpful for the society if it has stored in the databases across the globe. This can only be evaluated if there remains availability of rich data from different sources in the repositories. From these repositories, information can be retrieved to deal with pandemic situations and plan for corrective and preventive measures. Data science serves as an effective way to cope up with various problematic situations like COVID-19 and can be extended to the spatial databases for extracting the information related to epidemiological diseases.Technological compliant solutions are required to handle the pandemic situations. Recommendations have been suggested to incorporate technology based applications.

In recent years, the term "Big Data" has become widely used to describe the exponential growth of data (Yu et al. 2017; Wasim et al. 2019). Because of its widespread use, it has a wide range of meanings. It may be defined as a large amount of data flowing from many sources, such as mobile phones, social networks, sensors, and other devices, with high speed, diversity of themes, and variety, that requires particular approaches and tools for processing (Manogaran and Lopez 2018). Big Data

Science, in this sense, is the study that incorporates several elements of Big Data, such as data storage capacity and analysis speed, to name a few. It may be used to investigate a variety of topics, including health data, genomics, the environment, social media, and economic operations (Rana and Mugavero 2019). All of these studies have a requirement for data analysis in common, and ordinary, or simpler analyses do not have the same setups or capabilities as Big Data Analytcs. As a result, Big Data Analytics (BDA) has emerged as a modern method for data analysis, as well as a particular analysis for this new scenario (Saggi and Jain 2018; Eken 2020).

BDA is a set of advanced analytical techniques borrowed from related fields such as statistics, data mining, and business analysis that allow users to discover knowledge from large amounts of data (Saggi and Jain 2018; Ajayi et al. 2020), allowing for the extraction of valuable data generated by various Internet-connected devices (Babar and Arif 2019). Among the several sectors that benefit from BDA, health is one that may be researched deeper and thoroughly. The rationale for this is because correlating a vast quantity of data, for example, may make controlling, monitoring, and studying patients, illnesses, and epidemiology easier and more trustworthy (Huang et al. 2015; Yang et al. 2015; Kraemer et al. 2018). BDA may be utilised as a valuable tool in studies and analyses of data obtained during the times of their occurrence in the discipline of epidemiology, which analyses contamination, determinants, and control of health issues such as outbreaks, endemics, epidemics, and pandemics (Last 2001).

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