Critical Thinking Requirement

Modeling and tracking Covid-19 cases using Big Data analytics on HPCC system platform.

By combining huge amounts of data from laboratory tests, clinical investigations, healthcare records, and the internet of things, big data is changing biomedical research. Specifically, the increased rate at which data from omics technologies (genomics, epigenomics, transcriptomics, proteomics, metabolomics, and pharmacogenomics) is being gathered is paving the way for future improvements in customized medicine and better patient care. Recent advancements in omics technologies are making a significant contribution to big data in biomedicine, and they are expected to help with illness diagnosis and patient care management. We examine the important computational tools, algorithms, and outcomes that have contributed to recent improvements in big data created from biomedical research in a variety of complicated human diseases, including cancer and infectious diseases.

According to several research and analysis businesses, the worldwide big data market for healthcare is expected to approach 70 billion dollars by 2025. By 2025, the United States is predicted to dominate the North American big data market, accounting for more than 90% of the total. Healthcare data, which includes patient-specific clinical data, is currently seeing extraordinary increase. As a result, a variety of businesses are employing analytical tools, artificial intelligence (AI), and machine learning (ML) approaches to extract data-driven insights in order to save healthcare costs, increase income streams, produce personalized medicine, and manage proactive patient care. Several companies have mastered the use of big data to better their corporate operations and identify consumer trends in their marketplaces. The application of big data in biomedical businesses, on the other hand, is rapidly gaining traction (Jiang et al., 2017; Dash et al., 2019; Madanian et al., 2019; Wang and Alexander, 2020; Shilo et al., 2020; Mehta and Pandit, 2018; Austin and Kusumoto, 2016; Davenport and Kalakota, 2019). The amount of research data generated per day is currently projected to be comparable to that generated in the previous decade.

According to recent reports from many commercial data analysis firms, including the World Economic Forum, we currently have 44 zettabytes of data, which will grow to 463 exabytes every day globally (Vuleta, 2021). Because of their global access to digital technologies, big technological companies like Google, Facebook, Amazon, and Microsoft hold over 1200 petabytes of data. Given the rapid expansion of digital networks and availability to IoTs, it is expected that 90 percent of the world population over the age of 6 will have an online presence (Vuleta, 2021). These figures show that the rise in digitization, web access, and the impact of IoTs are all adding to data overload on a daily basis.

References

Cremin, C. J., Dash, S., & Huang, X. (2022, February 26). *Big data: Historic Advances and Emerging Trends in Biomedical Research*. Current Research in Biotechnology. Retrieved March 21, 2022, from https://www.sciencedirect.com/science/article/pii/S2590262822000090