BIG Data Analytics: A boon for SMART Healthcare

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Abstract: This concise communication deals with BIG data analytics. It gives a brief outline how the health sector can be benefited from the effective use of it. Citing a recent application in combating Covid-19, we assert that BIG data can go a long way in the domain of SMART healthcare.

Opinion

BIG data of late has become a recent trend that shows a steady growth in tandem with development in information technology. Referring to voluminous information, this can be game changer in the healthcare. In this sector, BIG data engages the enormous data spanning biological, clinical, and environmental as well as lifestyle information concerning large individuals, which corresponds to their health and wellbeing along a time span. As such, emphasis is laid on the parameters involving size and volume. Revolving around three technical terms, namely, variety, veracity and velocity, BIG data handles a mammoth information. To further bolster the activity of Big Data, Internet of Things (IoT) goes in synchrony with it.

Of late, IoT has become a common technological term for big enterprises. With the advent of smart objects growing at a rate higher than the population of world, IoT has now become an obligatory part of the modern era. However, it goes with a caution of acceptability followed by adaptability [1-9]. In short, Big Data Analytics refers to effective integration and efficient analysis of various forms of data over a period; thus, catering to some impending problems. One very recent application of BIG data is towards finding effective solution for contending the ongoing pandemic.

Since the outbreak of Covid-19 in Wuhan, China, the pandemic as declared by WHO has totally jolted the global scenario. Last year, the world had come to a halt because of the continued lockdown. Not only developing nations but also the developed nations has come under the devastating grip of this. The SARS-COV-2 virus has caused a sizeable fatality worldwide and still, there is still the counter going on; albeit in a slower rate. All big pharma as well as drug companies are in a dilemma in the journey of finding best vaccine for this [8-11]. Although couple of organizations have somehow been able to come up with vaccination, the side effects as well as growing confusion of administering

vaccine to various age groups cannot be ruled out. In this context, IoT driven BIG data analytics has been widely used by health professionals to find out best remedies in the fight against Covid-19 [12-19].

In one of the remarkable use of BIG data analytics, we can cite the massive use of Supercomputer Taking part in data analysis part for Covid-19. We can cite the well-known IBM' Blue Gene supercomputer. It has been endowed with a supreme computing facility. As per reports, it efficiently surpassed the petascale barrier around sixteen years ago. Accordingly, this supercomputer played a crucial role in analyzing the sequencing of human genome, thereby paving way for designing novel drugs and treatments. Clinicians were quite bamboozled by the rapid spread of Covid-19; infecting millions of people globally. To track down it, the Dept of Energy of United States of America, which has been severely affected by this Covid-19, deployed a powerful ally-the IBM-built Summit supercomputer in combating COVID-19 [19]. In general, the infection of cells by virus is caused by an injection of spike to genetic material belonging to the host cells. The practitioners in wet labs patiently inspect the reaction of the microorganism in response to new compounds. Although, this kind of practices although bears fruit; in terms of time and handling, they may prove cumbersome. In such cases, computer simulations will not only save ample amount of time but also provide unique solutions. In the cautionary aspect, these simulations being endowed with the ability of analyzing reactions of different virus corresponding to several variables handle terabytes of data pertaining to each variable. Consequently, the multiple simulations emerge out to be a very tedious process in the context of time as well as hardware involved. Accordingly, through an efficient IoT enabled Big data analytics scheme, Summit helped researchers to simulate approximately 8,000 compounds in a short span of time. The main goal was to identify the optimum model for constraining the infections of SARS-COV-2. As such, seventy-seven small-molecule compounds, such as medications and natural compounds have been identified; exhibiting

ability of weakening COVID-19's ability to dock with and infect host cells. Although, these finding are not a direct mean to cure the viral disease; however, the results will be a direct boon for future studies and provide a basis such that experimentalists will deploy these compounds and find the best suitable one as a potential tool for mitigating the COVID-19[19]. This is just one of the very recent uses of BIG data analytics. In many occasion, BIG data analytics has been found to be useful in prescribing drugs as well as medications.

Conclusively, BIG data analytics can play a vital role in SMART healthcare. However, we cannot utilize its full potential if we are not well aware of targeted research endeavor. Security and quality of big data arise as major challenges. When there occurs synergy of privacy and ethical principles in monitoring BIG data, use can have a deeper insight in understanding the objectives of implementation and quality, which will eventually, lead to developed and optimized care processes, early diagnosis etc. leading to SMART healthcare.

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