

Role of Science and Technology To Combat COVID-19

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ABSTRACT

Modern technology is now able to give suitable information and better services in the delivery of healthcare. These technologies have been essential in providing cutting-edge and digital solutions during the COVID-19 epidemic. This essay's main goal is to examine several contemporary technology. The significant applications of these technologies for the COVID-19 pandemic are further described in this article. In this article, we present research papers on COVID-19 uses of contemporary technologies that we found in the Scopus, Google Scholar, Science direct, and Research Gate databases. In this essay, we have discussed the major difficulties that the ongoing COVID-19 pandemic has brought about as well as the potential applications of a number of contemporary technology. These technologies significant advantages and restrictions are briefly reviewed. The report would then go on to disclose crucial information about these technologies and their substantial contribution to the COVID-19 epidemic. Rapid technology advancements are being made to save human lives by offering creative solutions that can make the theories of medical professionals and researchers a reality. Today, a variety of digital tools and software are available to manage these technologies and deliver improved healthcare services online.

Keywords: Pandemic, Technology, Coronavirus, Civilization.

Objective

Data science, machine learning, and artificial intelligence are part of the scientific and technology sector that contribute to COVID-19. The purpose of the current study is to analyse the various parts of contemporary technology utilised to combat the COVID-19 issue at multiple scales, including medical image processing, disease tracking, outcome prediction, computational biology, and medications.

INTRODUCTION

As of April 21, 2020, two million cases and more than 120,000 fatalities had been reported worldwide as a result of the Coronavirus Disease 2019 (COVID-19), which was initially reported in Wuhan, China in December 2019. As the crisis worsens, businesses and researchers from all over the world are looking for solutions to the problems caused by the virus, strategies to stop its spread, and ways to find a cure. Science and technology are crucial in this perplexing conflict. For instance, when China first started responding to the virus outbreak, it concentrated on artificial intelligence (AI) by using technologies like facial recognition cameras to track infected patients with travel histories, robots to deliver food and medications, drones to disinfect public spaces, to patrol, and to broadcast audio messages to the general public encouraging them to stay at home [1]. On the path of treating COVID-19, AI has been heavily utilised to locate novel compounds. Along with certain computer science researchers focused on identifying infectious patients through medical image processing like X-rays and CT scans, many researchers are utilising AI to develop novel treatments and therapies for the cure.

AI is even creating tracking tools, such as monitoring bracelets, to help identify those who violate quarantine regulations. Fever and infected individuals are also being detected using smart phones and thermal cameras with AI enhancements.

Countries like Taiwan incorporated data from the immigration and customs databases into the national medical insurance database, presenting coronavirus patients based on their travel history and symptoms.

In all, AI is used to identify, track and forecast outbreaks, it is helping in diagnosing the virus. It is used in processing the healthcare claims.

The current work focuses on using improvements in artificial intelligence to combat the coronavirus epidemic. It provides an in-depth analysis of the technological breakthroughs employed to lessen and suppress the significant impact of the outburst.

The purpose of the current study is to recommend the use of the treatments that are described as well as to evaluate their impact. This essay illustrates the uses of AI and provides a conceptual framework for how contemporary technology can respond to the COVID-19 pandemic.

Techniques, systems, and technologies that are the result of applying scientific knowledge to real-world problems are referred to as technology. Machine learning (ML), natural language processing (NLP), and computer vision applications are examples of artificial intelligence.

These capabilities teach computers how to construct, represent, and anticipate using large information-based models. We talked about several ways that technology is being used to combat the COVID-19 pandemic. AI's primary focus in the fight against the coronavirus is on patient and virus diagnosis, medical imaging, disease tracking, and disease prediction. On the other side, it also discusses social control, awareness-raising, and alerting using the internet.

The following are some ways that technology is being used to combat COVID-19.

REVIEW LITERATURE

The COVID-19 epidemic in Somaliland has prompted numerous businesses and establishments to close, causing an unexpected disruption of trade in various industry sectors. The supply chain, the workforce, cash flow, consumer demand, sales, and marketing are just a few of the short-term problems that retailers and brands must overcome. Due to their dependence on foreign fuel imports, private electrical companies increased the cost of bills. Price adjustments in all services therefore have significant effects on all business sectors in Somaliland (Rius & Diallo, 2020).

Coronavirus disease in 2019 not only had an effect on public health but also brought about a significant economic shock. Just a few weeks after it started, the pandemic had already severely disrupted small enterprises; 25% of them had temporarily closed, and

COVID-19 was largely to blame for all of these closures (Bartik et al., 2020). Business owners have been astonished by issues facing their companies, which may include unpredictable business operations, work procedures, and potential financial constraints on companies with unclear futures (Stephen, 2020).

Given that people would stay at home and that economies will shut down, the COVID-19 is likely to result in the bankruptcy of several well-known brands in various industries (McKee & Tucker, 2020).

The effects of this go beyond the economy; they have an impact on every aspect of society. As a result, there have been significant changes in how firms and customers interact (Donthu & Gustafsson, 2020).

The only major industry that did not experience a significant decline in the number of business owners was agriculture. Due to COVID-19, there was a significant decrease in the number of business owners in the industries of construction, restaurants, hotels, and transportation.

Past pandemics and technology : Without a question, the present pandemic has completely altered the planet. But sadly, there have been a lot of epidemics and illness outbreaks throughout the past century. While the majority of these outbreaks have been caused by corona viruses like SARS-CoV and MERS-CoV, other influenza viruses like H1N1, H2N2, and H3N2 have been in charge of all four pandemics in recent years. Two further pandemics were brought on by the H1N1 virus:

(1) the Spanish Flu of 1918–19.

(2) The 2009–2010 swine flu season.

METHODOLOGY

Electrocardiography (EKG)

The existence of an electric current in the heart, which enables doctors to monitor it with the aid of an external device, is a benefit of this technology. Electrocardiography (EKG) uses electrodes that are externally affixed to the skin to track the electrical activity occurring throughout the thorax. The outcome is referred to as an electrocardiogram.

X-ray

Wilhelm Roentgen, a German physics professor, discovered a radiation that could

pass through solid objects of low density, and the process could be observed on a fluorescent screen and captured on photographic film. This discovery made it easier for medical professionals to diagnose diseases and gain access to the human body's internal workings.

Ultrasound

Images of the inside of the body are produced by an ultrasound. High-frequency sound waves are employed. The structure and motion of the organs can be seen in real-time ultrasound images, which are taken.

MRI

This method uses a magnetic field and radio waves to visualise internal organs while causing the least amount of harm possible. It is widely utilised for the assessment of cancer patients as well as the diagnosis of neurologic and musculoskeletal diseases. MRI is better than other imaging methods because it can reveal issues that would not otherwise be visible.

RESULT AND DISCUSSION

▪ CHALLENGES

We go over some of the most important issues surrounding the post-pandemic digital explosion in this part. These themes highlight the various angles on which IS research might concentrate in respect to effects on technology.

Rising levels of digitization

Organizations will expand their technological infrastructure to accommodate the huge increase in the use of video- and audio-conferencing equipment. Increased spending on network infrastructure, bandwidth growth, and cloud-based applications will result from this.

Firms will adopt work-from-home (WFH) as the rule rather than the exception as employees get used to the concept, meet and transact online, and so on. Numerous businesses are using this (Akala, 2020; BBC News, 2020; Khetarpal, 2020),

Another industry that has dramatically shifted to conducting business online is education. Schools, colleges, and institutions all over the world have switched their classes over to video conferencing technologies like Zoom and Google Meet since the

lockdown began. (New York Times, 2020).

Work-from-home and gig workers

Online platforms that recruit workers on an as-needed, short-term, and primarily informal basis are the engines behind the gig economy.

We believe that in the post-pandemic future, the "evil side" of virtual teams and distributed work will also become significant. These circumstances give rise to substantive difficulties associated to technostress, including work overload and presenteeism. The design of collaborative work, evaluation, team performance and motivation, stress, and the issue of continual learning will all need to be studied.

Workplace monitoring and technostress

The continual monitoring of the workplace and being on the job are further aspects of digital use by significant portions of the working population. It is likely that workers' organizations will demand no-digital hours, where they will find refuge from the constant work pressure. Research may address the concerns of work equity, balance, and managing stress.

▪ SOLUTIONS

Tracking people with facial recognition and big data

Big data analytics can aid in the rapid identification of sick people, communication with them, tracking of contacts they have made, and other pandemic management tasks. Even if a person is disguised, facial recognition technologies and data can still precisely identify them.

These tools can be used to track and monitor the movement of isolated individuals.

Additionally, it can be useful for monitoring people and determining whether they have come into contact with an infected person. CCTV cameras and facial recognition software can assist in locating infectious individuals who disobey the restrictions and leave the quarantine area.

Drones and Autonomous Robots used to fight Coronavirus in China

The monitoring of temperature was aided by technology. The most crucial medical equipment employed at checkpoints of offices, airports, hotels, hospitals,

train stations, stores, and other public areas has evolved into wireless thermometer guns and other comparable infrared body temperature monitoring devices. These technologies make it possible to measure body temperature remotely and are useful for identifying people who may require additional research. The procedure is being made quicker and more efficient by automated heat monitoring and facial recognition.

Remote working technologies to support social distancing and maintain business continuity

Working from home both ensures business continuity and makes it easier to distance oneself from social interactions as pandemics or other tragedies continue to threaten the commercial sector. Technology that allows for secure data access, business applications, virtual meetings, cloud conferencing, and virtual/mixed/augmented reality are the front-runners in this situation to ensure that deliverables are not impacted. Technology has been a blessing, and one of the best ways to combat social isolation is through remote work.

▪ CONCLUSION

Pandemic, a highly contagious virus that is more deadly and may kill many people, is currently the greatest threat to global catastrophe. We now realise that we were not prepared for this pandemic crisis because to the clarity we have received from the current COVID-19 situation. When the next pandemic strikes, it won't be a question of "if it happens," but rather "when," will we be ready to combat it both personally and as a society. Actually, what we need is readiness. In spite of the fact that technology has grown more and will do so exponentially, human institutions and civilizations still need to react quickly and keep spending money on creating technology systems for preparedness. The COVID-19 outbreak has made it clear that, from AI to robotics, The technological advancements are assisting in the management of the pandemic and in better preparing for any public health emergencies in a timely, methodical, and calm manner.

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