REVIEW ARTICLE

Artificial Intelligence & Covid- 19- A Review

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ABSTRACT:
Covid- 19 has caused serious problems in humans. Artificial Intelligence is a way of making a computer, a computer-controlled robot, or a software think intelligently, in the similar manner the intelligent humans think. The application of artificial intelligence in pandemic of Covid- 19 may be helpful in detection and prevention of spread to great extent.
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INTRODUCTION

Several coronaviruses have caused serious problems in humans and animals in the past two decades. The best known examples are severe acute respiratory syndrome coronavirus (SARS-CoV), Middle East respiratory syndrome coronavirus (MERS-CoV) and porcine epidemic diarrhea virus (PEDV).[1] Urbanization and the increasingly frequent mixing of different animals in densely populated areas may have facilitated the emergence and re-emergence of some of these viruses.[2] WHO is profoundly concerned the exceptional quick worldwide spread and seriousness of the virus, and by obliviousness and inaction of certain nations. Thus, WHO reported the COVID-19 can be portrayed as a pandemic.[3]

What is Intelligence?

The ability of a system to calculate, reason, perceive relationships and analogies, learn from experience, store and retrieve information from memory, solve problems, comprehend complex ideas, use natural language fluently, classify, generalize, and adapt new situations.[4]

Artificial Intelligence

Artificial Intelligence according to the father of John McCarthy, it is "The science and engineering of making intelligent machines, especially intelligent computer programs". Artificial Intelligence is a way of making a computer, a computer-controlled robot, or

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a software think intelligently, in the similar manner the intelligent humans think. AI is accomplished by studying how human brain thinks, and how humans learn, decide, and work while trying to solve a problem, and then using the outcomes of this study as a basis of developing intelligent software and systems.[5]

The COVID-19 pandemic poses a number of challenges to the Artificial Intelligence (AI) Community. Among these challenges are "Can AI help track and predict the spread of the infection?", "Can AI help in making diagnoses and prognoses?", "Can it be used in the search for treatments and a vaccine?" and "Can it be used for social control?"

In the real world, the knowledge has some unwelcomed properties. AI volume is huge, next to unimaginable. It is not well-organized or well-formatted. It keeps changing constantly. AI technique is a manner to organize and use the knowledge efficiently in such a way that it should be perceivable by the people who provide it. It should be easily modifiable to correct errors. It should be useful in many situations though it is incomplete or inaccurate. AI techniques elevate the speed of execution of the complex program it is equipped with.[6]

Goals of AI

To Create Expert Systems: The systems which exhibit intelligent behavior, learn, demonstrate, explain, and advice its users. To Implement Human Intelligence in Machines: Creating systems that understand, think, learn, and behave like humans.[7]

A robotized entire genome sequencing and investigation stage has been set up so as to advance fast and precise infection detection. Case evaluation utilizes AI frameworks for COV1D-19 giving adequate exactness with maximum efficiency. Phonetic interface frameworks and discourse perceiving robots are habitually utilized in social insurance settings to give astute direction and services. In certain networks and open places, with such frameworks requirement for staff to play out some normal undertakings is minimized, for example, temperature estimation, as this is done consequently and precisely through a mix of profound learning, picture acknowledgment innovation, and infrared imaging sensors. Automatic phone dialing system is utilized to lead phonetic confirmation with discussion on content such as, health condition, contact and travel history etc so that occupant's health conditions can be effectively investigated.[8]

Potential Contributions of AI against COVID-19

There are six areas where AI can contribute to the fight against COVID-19: i) early warnings and alerts, ii) tracking and prediction, iii) data dashboards, iv) diagnosis and prognosis, v) treatments, and cures, and vi) social control.

Early warnings and Alerts

Bluedot, a Canadian-based AI model, has already become legendary. It illustrates that a relatively low-cost AI tool can out-predict humans in spotting infectious disease outbreaks. It predicted the outbreak of the infection at the end of 2019, issuing a warning to its clients on 31 December 2019, before the World Health Organization did on 9 January 2020.[9]

Arogya Setu App has really helped to stop false information, with respect to COVID-19. The topics of discussion, starting point of those discussions, wrong information shared about the virus, and connection of other internal and external links and websites that spreads false information were also taken in to considerations of the study. The Arogya Setu App developed by NIC, Govt. of India is intended to connect with the citizens of the country to provide essential health services and disseminate true news and updates about the COVID 19 virus. The preliminary findings suggest that a relation between space and time in the information flow and new cases of COVID-19, and at the same time poor information regarding the virus was also flowing through the other side.[10]

Tracking and Prediction

AI can be used to track and to predict how the COVID-19 disease will spread over time and over space. For instance, following a previous pandemic, that of the 2015 Zika-virus, a dynamic neural network was developed to detect its spread. Models such as these will, however, need to be re-trained using data from the COVID-19 pandemic. The group of researchers in China developed a new system which is used for the prediction of survival rates of COVID-19 virus infected people and claimed that it is having more than 90% accuracy. They have used the clinical data for from one of the hospitals in Wuhan, China.[11]

Kaggle, a data science competition platform, has issued a data competition based on this data, a COVID-19 Open Research Dataset Challenge. And contributing to the need for more (accessible) data, Elsevier made publicly available in its Novel Coronavirus Information Center early-stage and peer-reviewed research on COVID-19 and to around 20,000 related articles on ScienceDirect, as well as the full texts for data mining. Similarly, The Lens has made available all its data on patents in what it calls the Human Coronavirus Innovation Landscape Patent and Research Works Open Datasets to support the search for new and repurposed drugs.[12]

Data Dashboards

The tracking and forecasting of COVID-19 has caused the emergence of an industry of data dashboards that visualizes the pandemic. MIT Technology Review has produced a ranking of these tracking and forecasting it. While these dashboards give a global overview, an increasing number of countries already have their own dashboards in place; for instance, South Africa

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established the dashboard COVID 19 ZA, which is maintained by the Data Science for Social Impact Research Group at the University of Pretoria.[13]

Diagnosis and Prognosis

Fast and accurate diagnosis of COVID-19 can save lives, limit the spread of the disease, and generate data on which to train AI models. AI may provide useful input in this regard, in particular with an image-based medical diagnosis. According to studies AI can be as accurate as humans, can save radiologists' time, and perform a diagnosis faster and cheaper than with standard tests for COVID-19. Both X-rays and Computed Tomography (CT) scans can be used. An AI COVID-Net has been developed to diagnose COVID-19 in chest x-rays using data from patients with various lung conditions, including COVID-19.[14]

Largely, the potential of AI is diagnosis is not yet carried over into practice, although it has been reported that a number of Chinese hospitals have deployed "AI-assisted" radiology technologies. Radiologists elsewhere have expressed their concern that there is not enough data available to train AI models, that most of the available COVID-19 images come from Chinese hospitals and may suffer from selection bias, and that using CT-scans and X-rays may contaminate equipment and spread the disease further.[15]

Treatments and Cures

AI was known for its potential to contribute to new drug discovery. In the case of COVID-19, a number of research labs and data centers have indicated that they are recruiting AI to search for treatments for and a vaccine against COVID-19. The hope is that AI can accelerate both the processes of discovering new drugs as well as for repurposing existing drugs. Vaccines help human body to produce the defensive white blood cells and antigens. The main role of vaccine is to stimulate an immune response system of human body. United States has started the trials on the vaccine targeting Covid-19. AI is useful in accelerating the development of such vaccine preparation in many ways.[16]

Social Control

AI can further used to manage the pandemic by scanning public spaces for people potentially infected, and by enforcing social distancing and lockdown measures. It is found that these cameras can scan 200 persons per minute and will recognize those whose body temperature exceeds 37degrees. Thermal imaging has however been opposed as being inadequate to identify from a distance a fever in people who are wearing glasses (because scanning the inner tear duct gives the most reliable indication) and because it cannot identify whether a person's temperature is raised because of COVID-19, or some other reason.[17]

Related technologies, such as mobile phones with AI-powered apps or wearables that harvest location, usage, and health data of their owners, are also more likely to be employed. According to Petropoulos[18] such apps can "enable patients to receive real-time waiting-time information from their medical providers, to provide people with advice and updates about their medical condition without them having to visit a hospital in person, and to notify individuals of potential infection hotspots in real-time so those areas can be avoided".

Conclusion

Artificial Intelligence has provided solution to many a great problems so far as medical system are considered, but yet AI is not yet been impactful to fight COVID-19 due to lack of proper data. If accurate data is available to train the AI model then AI can be a good solution to prevent and detect the COVID-19.

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