

Using Artificial Intelligence to Leverage against COVID-19

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Abstract

Coronavirus disease (COVID-19) is a pandemic disease cases are increasing exponentially, which has made it difficult to identify and treat the patients challenging the treatment strategy. Thanks to the latest evolution in the field of information and communication technologies (ICT), artificial intelligence (AI) and Big Data which helps in surveying, forecasting and curing the outbreak. AI's specialty to develop models from large amount of information and data – fusing atomic, analytic and illustrate data – may accelerate solutions to detect and treat COVID-19. AI not only helps in identifying COVID-19 outbreaks but also forecast their nature of spread across the world. The blend of AI with nearby, public and global medical care frameworks will save lives, and present explicit techniques by which execution can happen quickly and productively. In this paper we have studied the use AI in the field of health and its application in this field which can eventually help us in fighting against such type of infectious diseases.

Keywords: COVID-19, Artificial Intelligence(AI), Big Data, Machine learning(ML)

INTRODUCTION

Covid Disease 2019 (COVID-19) is an irresistible infection instigated by serious intense respiratory problem Covid 2 (SARS-CoV-2). The principal event was recognized in Wuhan, China, in December 2019. Since then it has spread worldwide, leading to an ongoing pandemic. Symptoms of COVID-19 are variable, but often include fever, cough, tiredness, difficulty in breathing, and loss of smell and taste. The seriousness of COVID-19 manifestations can go from gentle to extreme. A few group may have a couple of side effects, and some may have no manifestations by any means. Some people may experience worsened symptoms, such as shortness of breath and pneumonia, in a week after symptoms start. People who are older have a higher risk of serious breakdown from COVID-19, and the risk increases with age. People who have existing recurring medical conditions also may have a higher risk of serious illness.

What is AI?

Artificial intelligence (AI) is broadened part of software engineering associated with building shrewd machines equipped for performing undertakings that generally require human knowledge. Artificial intelligence is an integrative science with numerous methodologies, however headways in AI and profound learning are making a standard change in practically every area of the tech business.

Use of AI in fighting against diseases like COVID-19:

Early Detection and Diagnosis of the Infection

AI can quickly detect infectious symptom. It helps to give faster decision making, which is

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beneficial.

Monitoring the treatment

AI can assemble a shrewd stage for programmed observing and prediction of the spread of this virus. A visual organization stage can likewise be created to separate the visual highlights of this sickness, and this would help in appropriate checking and therapy of the influenced people.

Contact tracing of the individuals

AI can help analyze the level of infection by this virus analyzing the array and containment zones and can successfully trace individuals influence and also to monitor them.

Projection of cases

This technology can track and predict the nature of the virus from the available data and media platforms, about the risks of the infection and its likely spread.

Development of drugs and vaccines

Artificial intelligence is utilized for drug research by investigating the accessible information on COVID-19. It is effective for drug distribution design and advancement.

LITERATURE REVIEW

Vaishya et al. investigated and recognized conceivable application in AI for COVID-19. He stated that AI is helpful for prevention of this disease by Monitoring the treatment, Projection of cases, Development of drugs and vaccines, Reducing the workload of healthcare workers etc.[1].

Ke et al. established an AI based platform to identify potential old drugs with anti-coronavirusActivities. Then the AI predicted drugs were then tested against COVID-19[2].

Fang et al. developed an early warning system with deep learning techniques (i.e. AI based) for predicting COVID-19 effect progression. The system was also capable of identifying COVID-19 patient using an inexpensive, widely available test[3].

Chowdhury et al. investigated the utility of AI in a fast and accurate detection of COVID-19 from chest X-Ray images. He basically made a computer aided diagnostic tool which improve the speed and accuracy in the screening of COVID-19 positive cases [4].

Bragazzi et al. reviewed the capabilities of AI and Big data in the global effort to manage the pandemic. And resulted that AI and Big Data can be used to track the spread of the virus in real time, monitor their effectiveness, re-adapt old compounds and discover new drugs, as well as identify potential vaccine candidates[5].

Naudé.W expressed that AI has not yet been effective against COVID-19. He pointed out on the benefits of AI and the extent to which it is used which according to him is at a basic stage [6].

Pham et al. overviewed the AI and enormous information and their application in battling against COVID-19. He has also listed some examples on its application such as use of mobile phones in outbreak identification, detection and diagnosis, treatment and infected case management[7].

Kundu et al. expressed that AI can possibly grow the part of chest imaging in COVID-19. AI can generate models from large volumes of information which may accelerate solutions to detect, contain, and for treatment COVID-19 [8].

Mei et al. used AI algorithms to integrate chest CT findings with clinical symptoms and laboratory testing to rapidly treat patients who are COVID-19 positive. The AI model proposed joins CT

imaging and clinical data and shows identical precision to a senior chest radiologist, could be a helpful evaluating device for COVID-19[9].

Luengo-Oroz et al. expressed prerequisite for collaboration and unity across borders just as the inclusion of numerous pertinent gatherings, including medical care laborers for AI applications against COVID-19 to have a worldwide effect, large-scale data and model sharing. So that accuracy of AI driven tool can be increased[10].

Santosh et al. stated that AI-driven tools help identify COVID-19 outbreaks as well as forecast their nature of spread across the globe. Also the AI-driven tools are required to be used from the beginning of data collection, i.e., parallel with the experts in the field, where active learning needs to be employed [11].

Schaar et al. introduced 4 most important challenges in responding to COVID-19 (i.e. managing limited healthcare resources, developing personalized patient management and treatment plans, enabling policies for collaboration, make clinical trials, research challenges) and show how each of them can be developed by machine learning (ML) and artificial intelligence (AI)[12].

CONCLUSION

So it can be concluded that AI has a vital role in field of healthcare to fight from such type of infectious diseases like COVID-19. The significance of the AI-driven apparatuses and their proper train and test models have been presented and talked about. AI algorithms can be used to detect, diagnose, track and predicting the outbreak. Although AI's use has so far been rather limited because of lack of analyze data and operational maturity in AI driven tools. One of the challenges of making a greater influence with AI applications is not knowing where to start and how attempt can be most efficient. For that AI-driven tools are required to be implemented from the beginning of data collection, in parallel with the experts in the field, where active learning needs to be employed. Also Flexibility together and analyze big data promptly is essential in preventing the pandemic, even if it may require that the authorities collect more personal data than many people would feel comfortable with. Altogether it can be said that AI systems are still at a preliminary stage.

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