A Study on Impact Artificial Intelligence to Prevent Covid-19

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Abstract

Objective of the study: Healthcare requires emerging technology such as Artificial Intelligence (AI), IoT, Big Data and Deep Learning to combat and look forward to new diseases. We are looking at the position of IA as a definitive technology for studying, planning and countering COVID-19 (Coronavirus) and other pandemics.

Methods: The literature is easily checked on the PubMed database utilizing the COVID-19 or Coronavirus and Artificial Intelligence or AI keywords. The most current knowledge on COVID-19 AI was gathered and then evaluated to determine its potential use for COVID-19 AI.

Results: Seven significant AI applications have been reported for the COVID-19 pandemic. This technology is an important method for identifying the cluster of cases and for forecasting when the virus will impact all past data in future.

Conclusions: Health organizations urgently require decision-making technologies to tackle this epidemic and to enable them to collect sufficient suggestions in real time to keep it from spreading. AI aims to emulate human intellect in an expert way. It may also play a crucial role in understanding and recommending the creation of a COVID-19 vaccine. This technology focused on findings is used for adequate screening.

Keywords: Artificial Intelligence (AI) AI Applications COVID 19 Coronavirus Pandemic.

Introduction

The medical sector is pursuing modern tools to track and manage the spread of COVID-19 (Coronavirus) pandemic in the ongoing global health crisis. AI is one of the tools that can quickly detect the transmission of the virus, recognize patients at high risk, and effectively monitor this outbreak in real time. It can also estimate mortality risk by carefully examining patients' previous results. AI will support us to battle this virus through community monitoring, medical aid, warning and infection prevention suggestions. This technology is an evidence-driven medical method that enhances the preparation, care and monitoring results of COVID-19 patients. Few studies introduce the general AI and non-AI procedures that enable general physicians to recognize the symptoms of COVID-19.
The following flow map tells and measures the flow of minimum non-AI therapy to AI therapy\(^4\). The following flow map illustrates the AI's engagement in major recovery measures with high detail and decreases uncertainty and time taken. The doctor focuses not only on the care of the patient, but also on disease avoidance for AI\(^5\). Major signs and testing for the most accurate AI have been carried out. It also demonstrates that the overall measures required in the entire phase is lowered and made more affordable\(^6\).

**Method**

The existing research made an attempt to assess the potential role of Artificial Intelligence to prevent Covid-19. The study assessed the prior reviews on the same grounds and also identify the presence of relationship and association strength among the variables present in the selected articles through the application of Vos Viewer software. The formation of clusters also established to analyze the significance among the most influential variables. The present research only considers articles that written in English language. The variables assessed through Vos Viewer software includes, “Artificial Intelligence”, “Covid-19”, “Coronavirus”, “humans”, “infection”, “Pandemic”, “Viral”, “machine learning,” and “health.”
Results

The current study seeks to explore the function of Artificial Intelligence as the vital technologies for observing, planning the world for detection and combating COVID-19 and other pandemics. The study assessed the most occurred variables under study through the application of Vos Viewer software. Through mapping of most occurred variables, the present research documented the strong association among the variables (Figure 2) and informed emergence of two clusters from the selected articles (table 1) that made the strong grounds for the present research to explore further and identify the association among the most influential variables selected in the present research.
Figure 2: Network Visualization of Most Occurred Variables formed through Vos Viewer Software

Through mapping of most influential variables, the present research documented the presence of strong association among the three variables, namely, “covid-19,” “artificial intelligence”, and “humans.” (Figure 3) and informed emergence of one cluster from the selected articles (table 2). The network visualization and density visualization also depicted the association strength among the most influential variables selected in the present research constructed through Vos Viewer software(Figure 4 and 5).

Table 1: Cluster formation through application of Vos Viewer Software

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Cluster Names</th>
<th>Description of items under each cluster</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Cluster 1(8 items)</td>
<td>• Artificial Intelligence</td>
</tr>
<tr>
<td></td>
<td>(Total 12 items, 4 items removed because of duplication)</td>
<td>• Coronavirus</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Covid-19</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Machine learning</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Artificial Intelligence</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Coronavirus Infection</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Humans Pandemics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Pneumonia, Viral</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Risk factors</td>
</tr>
</tbody>
</table>
| 2.  | Cluster 2 (7 items)                                                                                                                                                                                                 | • Beta coronavirus  
|     |                                                                                                                                                                                                                 | • Covid-19 vaccines  
|     |                                                                                                                                                                                                                 | • Delivery of Health care  
|     |                                                                                                                                                                                                                 | • Health Personnel  
|     |                                                                                                                                                                                                                 | • Pandemics  
|     |                                                                                                                                                                                                                 | • Sars-Cov-2  
|     |                                                                                                                                                                                                                 | • Viral Vaccines  

Figure 3: Network Visualization of Most Influential Variables formed through Vos Viewer Software
Figure 4: Network Visualization of Most Occurred Variables formed through Vos Viewer Software-Broader View

Figure 4: Density Visualization of Most Occurred Variables formed through Vos Viewer Software
Table 2: Cluster formation of Most Influential Variables in the Study

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Cluster Names</th>
<th>Description of items under each cluster</th>
</tr>
</thead>
</table>
| 1.    | Cluster 1(3items)   | • Artificial Intelligence  
                      • Humans  
                      • Covid-19 |

Discussion

Key AI implementations in COVID-19

Table 3: Key AI implementations in COVID-19

Primary Identification and Diagnosis of Infection:
AI will analyze unusual signs and other 'warning flags' easily and alert patients and medical authorities\(^7\). It allows you make quicker, cost-effective choices. It helps to build a modern diagnostic and treatment framework of effective algorithms for COVID 19 instances\(^8\). AI is effective in diagnosing contaminated patients using diagnostic imaging equipment\(^9\).

Regulation of Medication
AI will create an intelligent platform to track and forecast the spread of this virus automatically\(^10\). A neural network may also be built for the retrieval of the visual characteristics of this condition, which will allow the infected individuals to better track and manage\(^11\). It has the potential to provide day-to-day patient updates and to provide options for tracking\(^12\).

Touch Monitoring of People
AI will help analyze the extent of contamination with this virus to recognize the clusters and hot spots, map the connections of people and control them effectively. It may forecast the potential path and possible reappearance of this disease\(^13\).
### Cases and Mortality Prediction
This technology will detect and anticipate the existence of the virus from accessible data, social network sites and media, the threats and the possible spread of the infection. In addition, the number of positive cases and fatalities in any area may be estimated. AI will help to recognize and take steps to identify the most disadvantaged territories, persons and countries.

### Drug and Vaccine Production
AI is used by the study of usable COVID-19 data for drug testing. It is useful for the design and production of drug distribution. This device is used to speed the testing of drugs in real time when normal experiments require a lot of time and hence allows to speed up this phase considerably, which a person cannot accelerate. It may help classify effective medications for CO care.

### Reducing Healthcare Employees' Workload
The rapid and massive spike in the number of patients since the COVID 19 pandemic has culminated in a very heavy workload for healthcare professionals. In this situation AI is used to minimize healthcare employees' workload. It supports early detection and provides early care using digital methods and decision-making, provides students and doctors with the best training in this new problem.

### Inhibition or Prevention of Disease
AI will include up-to-date knowledge, useful in preventing this disease, by real-time data processing. It may be used to forecast the possible locations of transmission, virus influx, beds and healthcare providers during this crisis. AI is beneficial for the potential prevention of viruses and diseases with the aid of past mentored research on the incidence of data.
Conclusion

Artificial Intelligence is an upcoming and valuable method for detecting early coronavirus infections and also allows to track the status of infected patients\textsuperscript{21}. It may enhance treatment quality and decision-making dramatically by designing effective algorithms. AI is not just effective in COVID-19 therapy. Infected patients, but also for careful control of their wellbeing. It's possible.

References


