Artificial Intelligence Application with Contact Tracing for Post COVID -19 Epidemic Management

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Abstract

INTRODUCTION: Post COVID -19 epidemics is in a critical situation which has to be properly managed with right preventive and curative measures to protect the economy and welfare of the Human beings.

OBJECTIVES: Effective management of this terrific situation may be possible through the help of contact tracing and its application of AI mechanism. Here the authors as taken the available data for the testing of the significance of AI approach for contract tracing proper management of the post COVID epidemic situation.

METHODS: Here contact tracing data are collected analysed interpreted and validity is tested with the help of statistical tools like egression, coefficient and Annova for the testing of the available data with its further application.

R ESULTS: AI application creates more awareness, vaccination, self-testing, isolation and intake medicine

CONCLUSION: Artificial Intelligence &social media plays a vital role for the creation of social awareness and proper manage of post COVID-19 epidemics.

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1. Introduction

Post COVID -19, there are number of epidemic diseases are flowing in the society in their terrific functions. It has the need of proper awareness and preventive measures for smooth and easy life balance of the people whereas to communicate it effectively needed the help of the in time right and preventive action can be held through the help of Artificial Intelligence. Artificial Intelligence is a tool to make the value-added work decisions. This machine learning tool works as leverage or helping aid towards the creation of awareness with individual behaviours, preferences, beliefs, interest to personalise it. Creation of awareness program can adopt the application of Artificial Intelligence for its more efficiency. This epidemic can be properly managed with the help of certain measures like isolation, contact tracing, quarantine, hygienic measures, social distancing and usage of mass. AI approached contact tracing can be effectively used for the diagnosis of post COVID epidemic management. AI approach helps to forecast the spread of virus and development of early information, calls news sites and provides useful information to the vulnerable regions and for reduction of morbidity and mortality. To test the efficiency & validity of AI approach, the researchers have collected both the secondary and primary data and tested and interpreted with the application of statistical tool SPSS.
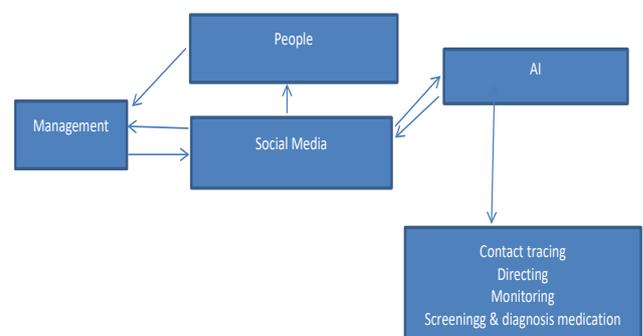
2. Related work

Research had been done on the various preventive measures for the infectious disease with the suggestion that the preventive measures have to be taken by the healthcare workers to block or make a barrier for the transmission with its continuity by tracing the moments very firstly with the available source of infection and to find out the potential patient being monitored or treated [6]. The contact tracing network is a very good tool for the epidemic management [3]. The research study is about the importance and joint role of contact tracing and social networking with the findings of the fact that contact tracing can be an effective tool for maintenance of timeliness and completeness of access with accuracy of the information in an individual social network [9]. One study report revealed the major reasons behind the spread of the epidemics. This report suggested that situation got its complicacy due to lack of communication whereas social network sites play a vital role for its application and eradiation with its effective usage rather than the traditional way of communication [2]. Social Network sites help to grow the messages towards the targeting group by limiting the spread of information to only those who really are at increased risk [10] [14]. The number of research reports are with the example of Face book in the form of a descriptive report that the available facilities in the face book like limiting the spread sheet of the messages with its closed group members and with the prohibition of those people are not the member of this group [15]. One research proposed location-based network approach for the identification of human geo social network for vaccine design. The study found that the infectious disease can be controlled by manipulating networks. [20] One scholar had proposed the Poisson and logistic regression for visualising and analysing syndromic surveillance data for Ebola in Moyamba District in Sierra Leone [5]. UCINET and Net Draw software were used for the work. The methods were used for multivariable analysis [4]. Contact tracing which is complemented with genotyping is used to understand the behavioural pattern of Tuberculosis [7]. This is a study about the sensitivity and specificity of Whole 'Genome Sequencing for identification of the transmission of Tuberculosis. Discursive construction method is suggested by the scholars as a solution towards the current problem where discursive resources are identified and linguistic resources are analysed and deployed by the members. It gave the way for computer mediated discourse research by understanding community of practice [16] [17]. Determination of the containment zone for vaccination of any air borne disease is important as these are treated as geo social interaction patterns which can act as the supporting tool for deciding effective scales for designing the strategies for the disease [18]. Contact tracing models act as an evaluation tool for evaluation of different control measures, estimation of infected persons, for severe acute respiratory syndrome (SARS) and Middle East Respiratory Syndrome (MERS) transmissions [11],[12]. It can be extended with closed loop communication between public

health administrator and modelling researcher to establish and include additional logistical details for better modelling [10]. AI with Machine learning programme serves the system with accuracy development and prediction for the screening of infectious and non-infectious diseases [1], [19]. There is a need of detection of any disease as first as possible to meet the first treatment both for the infectious and non- infectious diseases [13]. COVID-19 can be controlled with the help of isolation and development of contact tracing through the help of simple network graphs called a contact network [8].

3. Methodology of this research

This research work is one with the collections of both primary and secondary data from the available related literature sources. The related literature sources are analysed with the findings that the epidemic after COVID – 19 are the diseases with the infections among the people. It has its spreadsheet from 21 to till today. But application of AI for contract tracing creates awareness and reduced the infections. Through vaccine is developed, it can only prevent the people, but still not able enough to completely erase it from the environment which has the need of a proper management model. Here the authors have developed an AI application model.
Figure-1 for the proper management of the upcoming Post COVID -19 situation.

Figure-1 (Proposed Model)

The present research is held to test the efficiency of model which is developed the authors for data collection interpretation and validity testing. The primary data collection is held through the interview method or from views of the people who are associated with the COVID - 19 augment process with the secondary data from WHO. All the collected data are analysed and interpreted with the help of SPSS software for the validity and reliability. Interview method the target subjects are the serving agent

like doctor, nurse, pharmacist medical staffs, administrative staffs according to their convenient time adopting a random sampling method.

4. Sample of the study

Here the authors have the target subject 500, due to lack of sufficient data 200 are rejected and 300 samples from the total population is collected in a random sampling method to find out the role of artificial intelligence for creation of awareness, contact tracing and proper management of the post COVID -19 epidemic.

5. Scales for the Management

This study collects the demographic data set like gender, income, usage of communication channel with the application of AI for the management of post COVID -19 epidemic. Here to test the validity of the application of AI, these hypotheses is formulated.

H_0= Artificial Intelligence application a has no role for awareness and management of post COVID-19 epidemic.

H_1 =Artificial Intelligence plays a vital role for creation of social awareness and proper management of post COVID-19 epidemic.

6. Discussion and interpretation

The collected secondary data are analysed and interpreted by the authors with the derived findings. Awareness creation and contact tracing are important preventive measures which may be possible with the help of communication. Manual way of information updating is not only a time-consuming task but also may be hazardous to the society with its bad impact towards the human life. So, critical contact tracing zone has the need of technological strength to be supported by the Artificial Intelligence tool to meet the objective.   To meet the challenge and smooth management of epidemic after COVID-19, management need the help of AI approach. To test effectiveness, the result of current year ad previous year is compared through the statistical tools. This AI application   and its achievement is to create the awareness among the people, proper monitoring and guidance is tested with the help of statistical tools like regression, correlation and f- test . The regression report is the relation between the AI approach and creation of awareness among the people.

Table-1(result of regression)

Model	R	R^2	Adjusted R^2	Standard error estimate
1	.071	.931	.961	167478

Table – 1 presents the result of regression with the value of R^2 which is .871 shows that 87% of the awareness are held through and developing with the help of present AI and it is developing with the value of R^2 in the simple regression model with the inclusion of AI approach.

Table -2 Anova statistics result analysis

Model	Sum of square	Degree of freedom	Mean square	F	Significance
Regression	38824338.32	3	1254482023.238	.360	.203
Residual	2243.2	66	3472764.25		.000
Total	4324328.23	09			

Table – 2 represents the F statistics result between the early recovery as the dependent variable and vaccination, usage of medicine, total testing, isolation and awareness programme as independent variable. The result is positive and 3.203 in .000 level of significance level. It shows the positive relationship between dependent variable AI approach and independent variable growth of vaccination, usage of medicine properly, total testing, isolation, awareness among the people.

Table- 3 (Co-efficient between the dependent and independent variable)

Model	Un-standardised coefficient		Standardized coefficient		Significance
	B	Standard error	B	Error	
Constant	27020.479	9516.849	1.151	4.062	.000
Social media ad AI approach	.074	.001	.204	41.131	.000
Vaccination	.908	21.19	.021	7.461	.000
Medicine usage	.501	.008	.25	8.230	.000
Total testing	.408	.001	.61	7.261	.000
Isolation	.801	23.4	.73	6.232	.000
Awareness	312.209	74.19	.91	5.261	.000

The coefficient between the independent & dependent variable in table 3 interprets that 4 unit of changes of independent variable is changing with 1 unit of changes of dependent variable early recovery and less death. People's awareness about the epidemic has the highest correlation, which are 312.209 for the changes of one unit of changes of dependent variable. Here all the p- value is positive at .000 significance level. It reveals that AI approach is one effective mechanism for the post COVID-19 epidemic management.

7. Conclusions

The hazardous post COVID- 19 epidemic demands early action and proper management planning & implementation. Implementation of strategy depends upon the proper communication & awareness among the people. This digitalised World is no more communicated with only communicating media and but adopting the AI approach. By utilising AI application within one year more and more awareness, vaccination, self- testing, isolation and in taking medicine was done and with the decrement of spread of this epidemic disease with early recovery, less death, less spread of the epidemic. After making the testing of the data and analysis of the report, it is concluded that Artificial Intelligence and social media plays a vital role for the creation of social awareness and proper management of post COVID -19 epidemics.

8. References

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