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Covid-19 Prediction Based On Cartographic Variables

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ABSTRACT:

The global COVID-19 pandemic has spread, and many nations are battling to keep it under control. To comprehend the worldwide mortality risk and how the virus has affected each nation in comparison to what was predicted before the epidemic. Globally, the outbreak that started in the People's Republic of China has been delayed until December 2019.More than 180 countries and 39,500,000 patients worldwide have the condition as of October 2020, exceeding the rate of affected persons. More than 180 nations as of October 2020, there were more than 39,500,000 confirmed cases of the illness overall, although the true number of affected individuals is much higher. Due to COVID-19, more than 1,110,000 people have died. Many healthcare doctors have researched about this weird disease. This drastic situation caused lot of shortages in beds for patients, Oxygen for the effected virus victims, threat in medical supplies. Therefore, the ability to make quick clinical choices and use medical resources wisely was very essential. While many healthcare professionals have contracted the disease, Worldwide hospital bed shortages and substantial increases in patient demand are only two of the ongoing problems this pandemic is posing for healthcare systems. As the result ,the increase rate of infection is seen and people got alerted with many preventive measures to get out from this pandemic. Based on geographical data, a Machine Learning Algorithm is used to forecast how the Covid-19 affects the people. The method involves using cartographic factors, such as aspect, number of deaths, number of affected persons, spreaded region to anticipate the Covid-19. Covid-19 is predicted using a variety of approaches for data mining, such as gradient boosting machines, random forests, regression trees, and decision trees. These models are compared in an effort to determine which one will more accurately anticipate the COVID-19. Metrics like accuracy are used to compare performance. The principles used in this study was to predict the Covid-19 affected people rate,Virus spreaded region, death rates, what where the shortages seen in this pandemic. All of the individuals examined had reasons for testing, with the exception of a small percentage who was tested as part of surveys among healthcare professionals. Thus, unlike past research where such bias was a limitation, there was no evident referral bias about the great majority of participants in the dataset used in this investigation. In addition, the Machine learning algorithm used in this research helps us to find the rate of affected people by Covid-19,number deaths occurred by this disease.

KEYWORDS :

COVID-19, pandemic, forecast, research, Machine Learning Algorithm, cartographic, data mining, random forests, regression trees, decision trees.

I.   INTRODUCTION:

The COVID-19 pandemic is the severe threat caused to the entire globe. Entire world, the outbreak started in China in early December 2019 has prolonged. More than 180 Countries as of October 2020,there was rapid increase in Covid-19 cases which crossed more than 39,500,000,the accurate rate of the affected people was much more higher than we assume.

From Covid-19 the perishing rate was higher than 1,110,000.Many doctors, researchers have examined in this drastic condition. This infectious disease not only led people to death but also led to many horrible conditions such as lots of shortages in beds, medicine supplies, oxygen supply for the patients who where in ICU. In past ,many other models where used based on the patients details but was not

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accurate to that current situation. The model which we use to predict the Covid-19 should be accurate and useful for everyone to understand the situation. All the medical supplies, proper treatment plays an essential role. This should be helpful for the medical hospitals and people who are needed to come out from the threat.

II.   LITERATURE SURVEY

The best that can be done computationally is an exploration of the parameter space and common modifications for Individual learning technique. The settings utilized for Individual learning method are highlighted in this section.

Data Analysis:

The Israeli Ministry of Health have collected data on people who had RT-PCR nasopharyngeal swab testing for SARS-CoV2 publicly available. The collection comprises routine initial records for each citizen who underwent a COVID-19 test across the country. The data fetched not only comprises of when the person took the test and its result, it also includes additional information such as the symptoms he have, gender of particular individual, the age of the person(whether he is below 60 years or less than 60 years).Through these outcomes we have designed a model uses all the necessary requirements such as gender of the individual, infected person by this virus, symptoms seen in that individual.

The dataset comprises of data from 51,831 people who where undergone through COVID-19 test.

The features of the dataset that the model employed are separately described in the following list.

A. Basic details:

1. Gender (male or female).

2. The age is under 60 (true/false)

3. Cough (yes/no).

4. Is a fever real or fake?

5. A scratchy throat (true or untrue) (true or untrue)

6. Lack of breath (true or untrue).

7. Do you have a headache?

8. Known contact with a person who has COVID-19 who has been verified (true/false).

[1] Sheikh Muzaffar Shakeel

The purpose of this work was to compile data on COVID-19 prediction models. To illustrate the data trends according to various parameters, visualisations were made. The findings of the study are crucially relevant for both healthcare management and prediction model developers, according to the results of this comprehensive literature review. Managers in the healthcare industry can select the prediction model output that works best for their organisation or process management. In the interim, managers and developers of prediction models can pinpoint the gaps in their models and enhance their data-driven methodologies.

[2] Durga Mahesh Matta:

To determine which algorithms are best suited for the predictor, a thorough literature review is conducted. In order to forecast COVID-19 and determine the features that affect the model, an experimental model is then created using the results of the literature study.

[3] Farah Samier Yahya

It is a challenging medical undertaking to anticipate diseases brought on by viral infections since it requires the use of several real data sets made up of various variables. The most hazardous disease in the world is COVID-19, yet no cure has yet been discovered. Finding a logical way that illustrates the spread of this virus by depending on data from numerous afflicted individuals is crucial if we are to stop it. For the purpose of forecasting COVID-19, a model made up of three ANN functions was created.

[4] M.H.D.M. Ribeiro

Since the initial report till the present, the novel corona virus (COVID-19), an emerging disease, has infected millions of individuals. Forecasting the quantity of upcoming

instances is possible by creating effective short-term forecasting models. In this situation, the public health system may adopt a strategic plan to reduce fatalities. The task of time series forecasting with one, three, and six days ahead of the COVID-19 is examined in this study using the following methods: autoregressive integrated moving average (ARIMA), cubist regression (CUBIST), random forest (RF), ridge regression (RIDGE), support vector regression (SVR), and stacking-ensemble learning.

[5] P. Arora

In this study, Deep Learning-based models are used to forecast the number of novel corona virus (COVID-19) positive reported cases for 32 Indian states and union territories. On an Indian dataset, the number of positive instances is predicted using recurrent neural network (RNN) based long-short term memory (LSTM) variations such as Deep LSTM, Convolution LSTM, and Bi-directional LSTM. For forecasting daily and weekly cases, the LSTM model with the lowest error is used.

[6] Roseline O. Ogundokun

The purpose of the paper is to develop a straightforward average aggregated machine learning method to forecast the quantity, magnitude, and duration of COVID-19 cases across India, as well as their wind-up phase. The Autoregressive Integrated Moving Average Model was used in this work to analyze the datasets (ARIMA). The performance of three regression techniques, including Support Vector Regression (SVR, NN, and LR), Neural Network, and Linear Regression, was also built upon in the study to provide a straightforward mean aggregated method.

[7] Vedran Mrzljak

He predicted Covid-19 using a Multilayer Perceptron (MLP), an artificial neural network (ANN).

S.NO.	AUTHOR NAME	INVENTIONS
1	Sheikh Muzaffar Shakeel	He suggested SLR as an additional methodology. He developed a method that was applied to the specified demand for quality assessment, analysis, and prediction.
2	Durga Mahesh Matta	The use of machine learning to predict COVID-19 may speed up the diagnosis of diseases and lower death rates.

3	Farah Samier Yahya	In order to assist the increasing number of infected individuals, he proposed a model that would give the opportunity to set up suitable quarantine locations and offer the necessary medical supplies in accordance with forecasted infected cases.
4	M.H.D.M. Ribeiro	He employed stacking-ensemble learning, support vector regression, cubist regression, random forest, ridge regression, and ARIMA.
5	P. Arora	Deep LSTM/Stacked LSTM and Convolutional LSTM were used to predict Covid-19.
6	Roseline O. Ogundokun	He forecasted using a linear regression model.
7	Vedran Mrzljak	Using an artificial neural network called a Multilayer Perceptron (MLP), he predicted Covid-19 (ANN).

CONCLUSION :

This study aims to forecast the COVID-19 using characteristics from cartography. Covid-19 Prediction on several methodologies used The accuracy and performance of regression and decision trees have been compared. The results show that the Random Covid-19 prediction has a 74.8% accuracy rate.

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