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AN IMPROVISED MACHINE LEARING FORCASTING MODEL FOR COVID-19

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ABSTRACT

Corona virus disease (COVID-19) is a deadly disease caused by the Novel Corona virus. Due to the outbreak of this virus it disturbed the functioning of life as a whole. Identifying and forecasting emerging outbreaks caused by novel pathogens can stop their rapid spread. This project attempts to perform future forecasting on the daily confirmed cases count. It employs an optimized machine learning model to achieve higher forecasting accuracy compared to the techniques used in the base paper specified. The dataset used for this project is collected from GitHub repo maintained by John Hopkins University. The models used in the base paper are linear regression, LASSO regression, Support Vector Machine, Exponential Smoothing. This project aims in achieving higher accuracy using a better approach to produce stable and accurate forecasts outperforming the above studied models.

I.INTRODUCTION

To prevent the spread of corona virus, most countries have been restricting social interactions through preventive measures such as quarantine and following social distancing. However, many patients who are infected have not benefited from adequate treatment due to the delay in diagnosis and due to the unknown nature of the virus. Recently, many researchers have focused on the development of novel methodologies for detecting infected patients at multiple stages to find distinct relevance to the patient's clinical features and disease sufficiency potential. The aim of this study is to develop a predictive model for calculating the number of new cases that is going to happen.

II.LITERATURE SURVEY

Machine learning (ML) based forecasting mechanisms have proved their significance to anticipate in preoperative outcomes to improve the decision making on the future course of actions.

Four standard forecasting models, such as linear regression (LR), least absolute shrinkage and selection operator (LASSO), support vector machine (SVM), and exponential smoothing (ES) have been used in this study to forecast the threatening factors of COVID-19. Three types of predictions are made by each of the models, such as the number of newly infected cases, the number of deaths, and the number of recoveries in the next 10 days.

III.PROPOSED SYSTEM

Here we are using polynomial regression and Multi-layer Perceptron models to predict the future cases.

Polynomial regression fits the data better and provides a great defined relationship between the independent and dependent variable. This increases the accuracy.

Using Neural Networks for forecasting has many advantages over other methods , they can auto detect informative and important features and are highly noise resistant and offer higher accuracy.

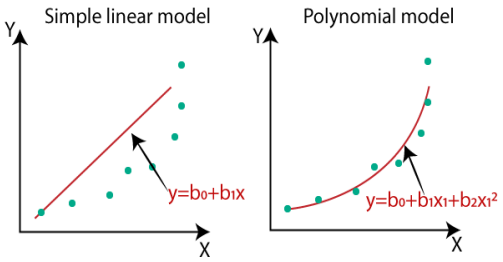

Fig 1.Graphs for simple linear model and polynomial model

IV. WORKING

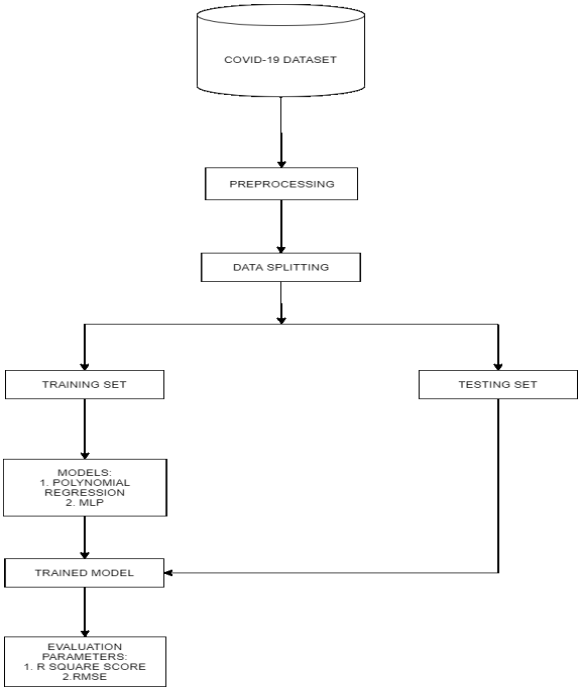

Fig 2.Workflow of the system

The working of this system starts by taking the COVID-19 dataset, then we perform the preprocessing on the dataset and we split the data into training and testing set.

Now on the training set we apply polynomial regression and MLP regression and as a result we get a trained model.

On the trained model we apply testing and we evaluate its performance by using R-Square score and root- mean square error.

V.RESULTS

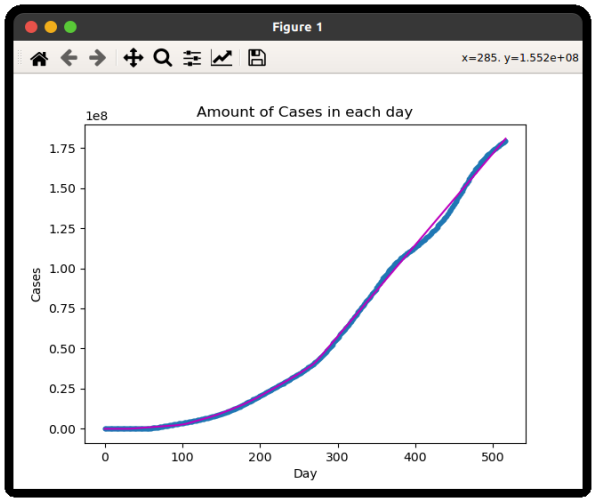

Fig 3.Graph representing the number of cases in the upcoming days in world using MLP Regression

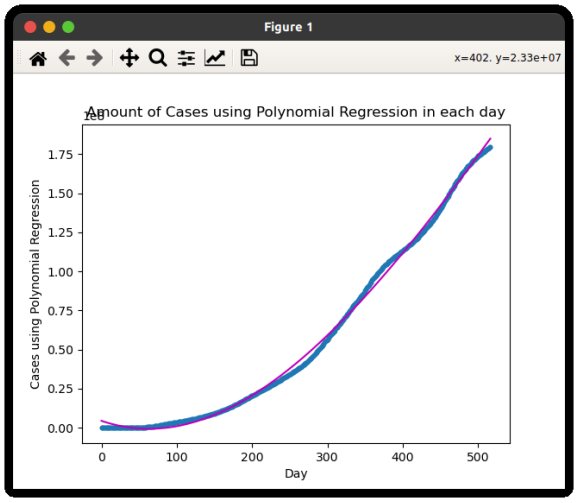

Fig 4. Graph representing the number of cases in the upcoming days in world using Polynomial Regression

	Root mean square error	R-Squared score
Polynomial Regression	16562.524	0.97
MLP (Multi-layer Perceptron)	12746.605	0.99

Table 1.Represents the root mean square error and the R^2 Score corresponding to polynomial regression and MLP

VI.CONCLUSION

Research results show that performs better in the field of current prediction from the perspective of the

existence and dimension of the data set. Both PR and MLP have effectively estimated and verified the mortality rate and has shown higher accuracy.

Generally speaking, we assume that the current state predicted by the model is correct, which will help us understand the future. Therefore, the predictions of the study will also enable the government to take timely actions and make decisions to avoid the COVID19 crisis. This analysis will continue to evolve. We will use the modified data set to analyse the forecasting process and apply the ML forecasting method with the highest accuracy and appropriateness.

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