FUTURE FORECASTING USING SUPERVISEDMACHINE-LEARNING MODELS COVID-19

Arunabraham J[1], Mohammedabbas G J[2], Selva R[3], Vallarasu C[4], S.Suganya[5]

1,2, 3,4 - B.Tech., Students, Department of Information technology, K.S.R. College of Engineering, Tiruchengode, Tamil Nadu, India.

5 - B.Tech.,Assistant Professor, Department of Information technology, K.S.R. College of Engineering,Tiruchengode, Tamil Nadu, India.

ABSTRACT

The spread of COVID-19 in the whole world has put the humanity at risk. The resources ofsome of the largest economies are stressed out due to the large infectivity and transmissibility ofthis disease. The capability of ML models to forecast the number of upcoming patients affected byCOVID-19 which is presently considered as a potential threat to mankind. In particular, fourstandard forecasting models, least absolute shrinkage and selection operator (LR, LASSO, SVM,ES) have been used in this study to forecast the threatening factors of COVID-19.Three types ofpredictions are made by each of the models, such as the number of newly infected cases, the numberof deaths, and the number of recoveries But in the cannot predict the accurate result for the patients.

To overcome the issue, proposed method using **LR, LASSO, SVM, ES** predict the numberof COVID-19 cases in next 30 days ahead and effect of preventive measures like social isolation and lockdown on the spread of COVID-19.

I. INTRODUCTION

COVID-19, the pandemic that is spreading worldwide, has revealed the vulnerability of human society to severe infectious diseases and the difficulty of solving this problem in a globally interconnected complex system. COVID-19 affected more than 100 countries in a span of weeks. As a result, the whole human race should not only collaborate to overcome the epidemic but also reasonably arrange to return to work and production according to the actual situation of each region and carry out geographical risk assessment. Many attempts have been conducted to find a suitable and fast way to detect infected patients in an early stage. After making chest CT scans of 21 patientsinfected with COVID19 in China, Guan et al found that CT scan analysis included bilateral pulmonary parenchymal ground-glass and consolidative pulmonary opacities, sometimes with a rounded morphology and a peripheral lung distribution. Consequently, COVID-19 diagnosis can berepresented as an image segmentation problem to extract the main features of the disease. The disease caused by the novel coronavirus, or Coronavirus Disease 2019 (COVID-19) is quickly spreading globally. It has infected more than 1,436,000 people in more than 200 countries and territories as of April 9, 2020.

Coronavirus disease 2019 (COVID-19) is a contagious respiratory and vascular disease, caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). First identified in Wuhan, China, it is currently an ongoing pandemic. Common symptoms include fever, cough, fatigue, breathing difficulties, and loss of smell and taste Symptoms begin one to fourteen days after exposure to the virus. While most people have mild symptoms, some people develop acute respiratory distress syndrome (ARDS), which can be precipitated by cytokine storms, multi-organ failure, septic shock, and blood clots. Longer-term damage to organs (in particular, the lungs and heart) has been observed, and there is concern about a significant number of patients who have recovered from the acute phase of the disease but continue to experience a range of effects—known as long COVID—for months afterwards, including severe fatigue, memory loss and other cognitive issues, low grade fever, muscle weakness, and breathlessness.

II. RELATED WORK

Forecasting is the process of making predictions of the future based on past and present data and most commonly by analysis of trends. A commonplace example might be estimation of some variable of interest at some specified future date. Prediction is a similar, but more general term. Both might refer to formal statistical methods employing time series, cross-sectional or longitudinal data, or alternatively to less formal judgmental methods. Usage can differ between areas of application: for example, in hydrology the terms "forecast" and "forecasting" are sometimes reserved for estimates of values at certain specific future times, while the term "prediction" is used for more general estimates, such as the number of times floods will occur over a long period. Risk and uncertainty are central to forecasting and prediction; it is generally considered good practice to indicate the degree of uncertainty attaching to forecasts. In any case, the data must be up to date in order for the forecast to be as accurate as possible. In some cases the data used to predict the variableof interest is itself forecast.

Supervised learning is the machine learning task of learning a function that maps an input to an output based on example input-output pairs. It infers a function from labeled training data consisting of a set of training examples. In supervised learning, each example is a pair consisting ofan input object (typically a vector) and a desired output value (also called the supervisory signal).

The global COVID-19 pandemic is easily spread by people in close proximity, especially in crowds with mobile individuals. A widely accepted strategy to mitigate its spread is social distancing, avoiding crowded areas. There is an urgent need for different mitigation strategies to slow the spread of this disease.

The economic feasibility study (EFS) should demonstrate the net benefit of the proposed application in light of the benefits and costs to the agency, other state agencies and the general public as a whole. The agency must submit its EFS and request for approval to the Office of Financial Management (OFM) prior to accepting or disbursing electronic funds/benefits. Approval from OFM is required for pilot and permanent applications, and both Internet and retail applications.

Behavioral feasibility pertains, in part, to the degree to which public attitudes and beliefs about restoration of wildlife species are shaped by the abilities of local residents and otherstakeholders to identify and build on restoration-related opportunities and to overcome or mitigate potential restoration-related problems.

III. EXISTING SYSTEM

COVID 19 is currently considered a potential threat to humanity. In four standard predictionmodels, such as linear regression (left to right), at least complete summary and select operator, Support Vector Machine (SVM), have been used to predict COVID-19 threatening factors in this study.

Predictions are made on each of the models, such as the number of new infections, the numberof deaths, and the number of recurrences over the next 10 days. For the effects of the study it demonstrates a promising mechanism for the use of these methods in the current context of COVID 19 infection. Predictions are made on each of the models, such as the number of new infections, thenumber of deaths, and the number of recurrences over the next 10 days. For the effects of the study it demonstrates a promising mechanism for the use of these methods in the current context of COVID 19 infection.

COVID-19 does not seem to affect children severely; many pediatrics wards have been focused more on the emergency of COVID-19-related issues. For this reason, attention on many other acute and chronic diseases, especially those rarer, may be lacking. This scarcity of interest may cause, particularly in childhood, severe problems, or even death.

DRAWBACKS OF EXISTING SYSTEM:

- COVID-19 problem cannot predict the exact result from the patients.
- Difficult to Monitor Performance - It is not easy for managers to monitor their staffs‘ progress and performance without them being in the same office space.
- This is especially escalated if the job role requires a lot of ‒background duties‖ that can‘t be monitored on a work‘s system.
- Financial burden on the world, Morbidity and mortality Social and mental distance between people.

IV. PROPOSED SYSTEM

Machine learning methods proved to be effective for prediction due to automaticallyextracting relevant features from the training samples, feeding the activation from the previous time step as input for the current time step and networks self-connections. According to the results of the model analysis, In our method we propose **LR , LASSO , SVM , ES** and comparethese algorithms with the forecasting of death rate , recovery rate and new confirmed case .

V. ADVANTAGES

- Lifestyle modifications
- Health awareness
- Importance of health
- Advantages of real-time and fast, which can predict the incidence trend of infectious diseasesas

early as possible, and are suitable for data analysis of a large number of people.

- The sensitivity, spatial resolution and accuracy of its prediction result is improved

Proposed System flow Diagram

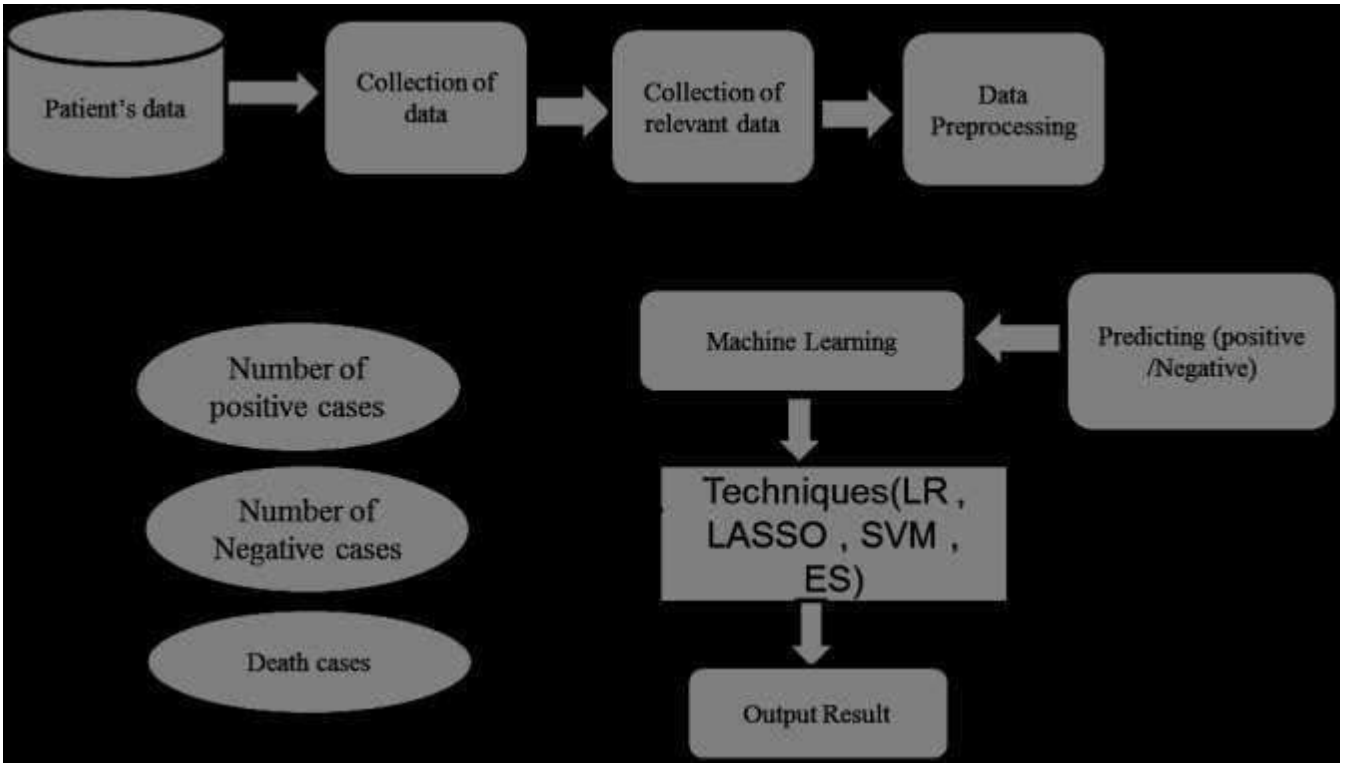

Figure 1:System flow diagram

VI. CONCLUSION

A data-driven forecasting/estimation method has been used to estimate the possible number of positive cases of COVID-19 in India for the next 30 days. The number of recovered cases **LR, LASSO, SVM, ES** daily positive cases, and deceased cases has also been estimated by using and curve fitting. The effect of preventing measures as social isolation and lockdown has also been observed which shows that by these preventive measures, the spread of the virus can be reduced significantly. Although this method often requires sufficient data to support it, in the early stages of epidemic transmission, this method can still be used to more accurately predict the indicators of epidemic transmission in the short term, so as to provide intervention control at all levels of the departments and policy implementation provides short-term emergency prevention programs. The prediction results of three different mathematical models are differentfor different parameters and in different regions. In general, the fitting effect of Logistic model may be the best among the three models.

VII. REFERENCES

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