WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

Analysis and Prediction of Covid -19 Cases Using Machine Learning Techniques

Annapurna Gosavi, Chaitrali Nilvarn, Minakshi Bastapure, Pranjali More

Anantrao Pawar College of Engineering and Research,Pune.
Corresponding Author Email ID : annapurnagosavi25@gmail.com

ABSTRACT:

Corona virus is a global pandemic that caused millions of death worldwide. Thispandemic has devastated our civilization and had cause a major outbreak. It is one of the greatest pandemics in the world history. In today's era, data visualization and predictive analysis has become a key component in the field of machine learning. It would have been better if we knew the number of positive cases the day earlier, it might have saved lives and help for taking better measures and control. Many prediction methods and models have been used popularly for the outbreak modelling. This paper focuses on prediction of number of cases of coronavirus few days earlier and data visualization have implemented two machine learning standard models like linear regression (LR), polynomial regression (PR) and support vector machine (SVM). We have taken data of Covid-19 positive patients of pune district and it will help predicting number of positive cases beforehand. For better accuracy, we can use differentalgorithms at time when active cases cease to increase or decrease accordingly.For future references, different data sets can be used and analyzed for severe predictive analysis and more accurate results can be obtained.

Keywords: Coronavirus, machine learning, pandemic, regression, live analysis, covid-19.

Introduction:

Throughout our history, covid-19 has really devastated our lives and affected Coronavirus disease 2019 (COVID - 19) is an infectious disease caused by severeacute respiratory syndrome coronavirus 2 (SARS-CoV-2).The first case of this disease was found in Wuhan, Hubei region of China and spread worldwide and resulted in global pandemic. The sign and indications of novel coronavirus include cough,fever,fatigue,loss of smell-taste and breathlessness. The world health organization (WHO) announced the high spread overall and the pandemic in march 2020.Total cases of covid - 19 positive in world is 239,481,625 and in India itself is 34,001,743. The recent recovery rate is 97.96%, it is the highest recovery rate since march 2020.The death toll has climbed up to 45,01,27 with 271 fatalities, according to the data given by the Union ministry of health and family welfare. In this paper, prediction of positive cases is done by using various effectively machine learning algorithms such as Linear Regression (LR), Polynomial Regression (PR) and Support Vector Machine (SVM). To contribute to the current human crisis and issues faced by developing countries, our attempt is to develop a predicting system for covid-19.The learning models have been trained by the covid-19 patient dataset provided by Pune Municipal Corporation. Data visualization is also done by importing different libraries to analyze the trend of Covid patients. This work will provide a good visualization over coronavirus and help us planning better strategies and will help the health department taking practical decisions and importing restrictions on peopleaccordingly.

Objective:

From the past year the spread of Covid -19 virus is affecting many lives. The fastgrowth of digital technologies is playing an important role in resolving different problems arising from various sectors. The existing crisis is also taking the support of digital methods to deal with the pandemic. Live analyzing the data that is collected helps in knowing the nature of the data and get more knowledge of the trend in covid cases. Due to huge growth in Machine learning,Deep learning, different models and algorithms helps in making proper and precise predictions and analysis. Machine learning plays a vital role in predictingaccurate results and live forecasting the virus hand before. In this paper, we reviewed different regression methods and algorithms to detect covid 19. Linear Regression, Polynomial Regression and Support Vector Machine (SVM) can be used to make predictions of future covid cases.

Survey:

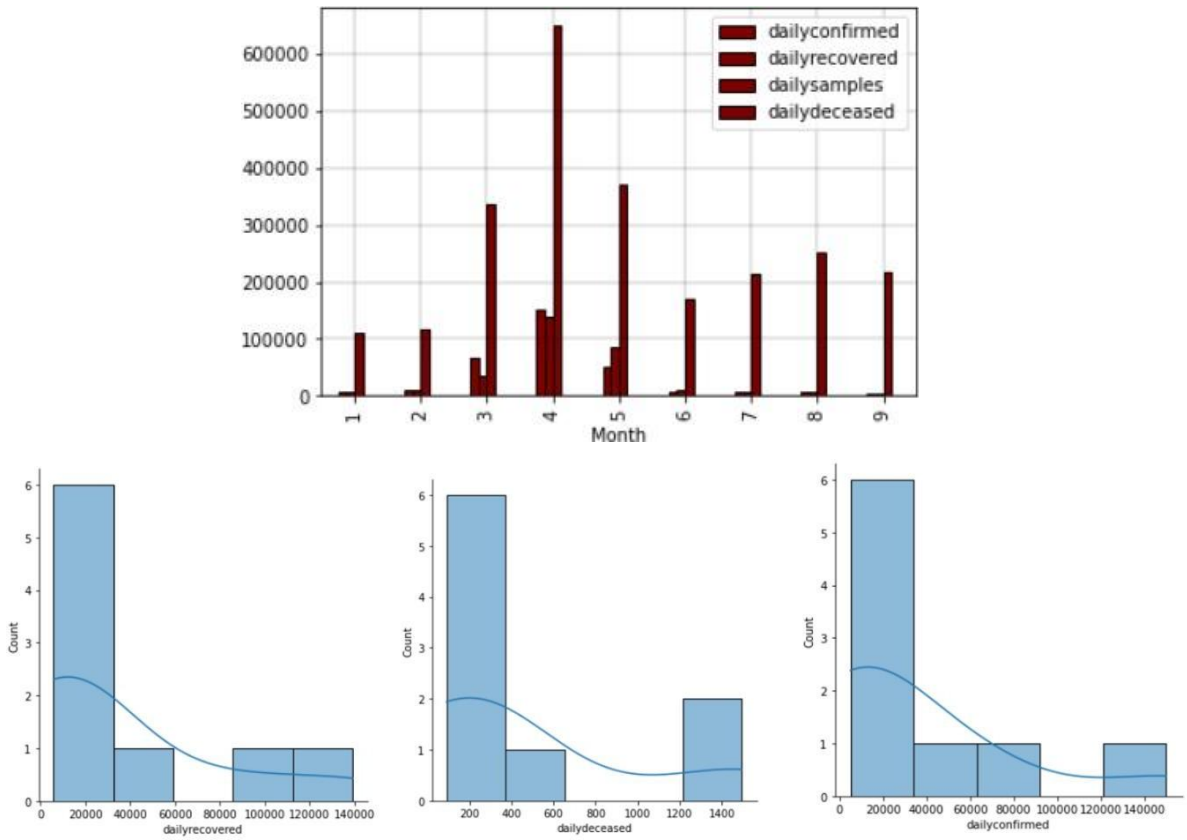
In this study we have done research on different and valid datasets, including IEEE Xplore, Science Direct, SpringerLink, ACM, and ArXiv, have been used to search for Covid-19 papers. More ever a detailed Google scholar search is done. The articles are selected using keywords such as COVID-19, corona virus, Machine learning, Regression, Data analysis, forecasting and support vector machine. The latest selection of papers is done using above keywords. The Covid -19 analysis and prediction is based on published papers using ML algorithms. The data received from every single paper is considered for the study are data set used, method used, type of input used, type of graph used, predicted outcomes as well as usage levels.

Discussion:

In this study corona virus infection and techniques for the prediction of corona virus are discussed in detail. The main focus of the survey paper is to select the best and accurate ML algorithms that are used to predict the covid patients using the ML techniques. It can be observed most of the researchers have used Deep learning, Machine Learning .AI and Supervised Models. The detail description of the methodology of this paper is summarized as

i. Data Analysis:

In this section the methodology of Data analysis on Covid -19 are discussed. The analysis operations can be carried out by using different programming languages such as Python, R-Studio, etc. The programming we preferred is Python. Analysis helps in understanding the data we are working on. Data collection, preprocessing are the most important steps in Data analysis process. The is collected in csv file format. Exploratory data analysis is conducted to get insight of the data. Using different Python libraries like matplotlib, seaborn ,plotly, pandas the analysis is carried out. Bar graphs, histogram , scatter plots and different plot are used to visualize the data. The plots are shown as below:



ii. Machine Learning Models for prediction:

For predicting, a quality supervised ML models are used. Regression and Support Vector (SVM) is used for forecasting covid – 19 cases in Pune. Regression is considered for forecasting the future evolution. By comparing different algorithm Linear Regression, Polynomial Regression and SVM are widely used in this paper.

Linear Regression is popular for simple algorithms and for having its well-known features. Polynomial Regression is the special form of regression, where the relationship between independent and dependent variable aremodeled.

Recently there has been a number of research papers that considers regression for predicting number of confirmed Covid -19 cases. In the

following, Regression models are used on the number of confirmed cases in the dataset available in Pune city. In this paper Linear Regression, Polynomial Regression and Support Vector Machine methods are taken into consideration. In the following machine learning algorithms the dataset was provided by www.cessi.com and website of Pune Municipal Corporation (PMC). This dataset contains of daily confirmed, recovered and deceased covid cases in Pune district.

Conclusion:

In this paper, we analyze the state of Covid-19 as result of its rapid growth in theaffected cases and predict the number of positive cases for the following week with different machine learning algorithms. The various machine learning techniques clearly shows us the increasing and decreasing number of cases to take preventive measures. With the help of all this study it is quite possible to take everything under control for the government and higher concerned authorities. Live Analysis of data is done by using linear and polynomial regressions. Real-time data has been used on this analysis, as real time data is approximately correct with the performance metrics. In this survey paper, a comprehensive review of the accomplished study of covid 19 diagnoses will be carried out using ML models. Hence, the features extracted from the ML modelscan be used to develop an accurate model.

Reference

Prabu IS, Franklin RG. CORONAVIRUS OUTBREAK PREDICTION USING MACHINE LEARNING. Turkish Journal of Physiotherapy and Rehabilitation.;32:2.

Ohana JJ, Ohana S, Benhamou E, Saltiel D, Guez B. Explainable AI Models of Stock Crashes: A Machine-Learning Explanation of the Covid March 2020 Equity Meltdown. Available at SSRN 3809308. 2021 Mar 21.