Prediction of Covid-19 Evolution Using Time-Series Methods

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Abstract

Background: Coronavirus (COVID-19) originated from China, is an infectious disease caused by SARS-coV-2virus, resulting in a global threat [1]. An assumption went like 'a spoonful of covid-19 was enough to infect the whole population'. This pandemic has generated total of 21.9Cr cases worldwide and deaths of 45.5L of total population [2]. As per reports from September 2021,over 3.3m fresh cases and over 55K deaths were reported till date[3].

Objectives: This work mainly focuses on the data analytics based on COVID-19 resources. In this research work, Python and its libraries are used. The main aim is to look forward into covid19 evolution in next 2 to 5years.

Methodology: The methodology used in this research consists of prediction of covid19 evolution in the coming years using Autoregressive Integrated Moving Average (ARIMA henceforth). Additionally, we evaluated the accuracy of the predictions using a training set and a test set.

Result and discussion: As per worldwide record, as of October 2021, there have been 233,503,524 affirmed instances of COVID-19, including 4,777,503 passing, reported to WHO. The United States has recorded the biggest number of cases (44,443,405) [4] India has announced (33,791,061). As of September 2021, a sum of 6,14,33,69,655 vaccine dosages have been done. Through foreseeing the number of passing from COVID-19, the most appropriate methodology is the dumped pattern strategy. Therefore, RMSE value for the proposed strategy is 22.31.

Conclusions and Future Work: The ARIMA models are an alternative for measuring the covid19 evolution in the next coming years which helps in modeling the behavior of the spread of COVID-19. However, a full prediction is made on the research paper which is helpful in certain other ways.

References

[1] Fadly, Ferdian, and Erika Sari. "An approach to measure the death impact of Covid-19 in Jakarta using autoregressive integrated moving average (ARIMA)." Unnes Journal of Public Health 9.2 (2020): 108-116.

[2] Fotiadis, Anestis, Stathis Polyzos, and Tzung-Cheng TC Huan. "The good, the bad and the ugly on COVID-19 tourism recovery." Annals of Tourism Research 87 (2021): 103117.

[3] Rahimi, Iman, Fang Chen, and Amir H. Gandomi. "A review on COVID-19 forecasting models." Neural Computing and Applications (2021): 1-11.