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Analyze & Predict COVID-19 Outbreak in Bangladesh by Using Machine Learning.

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Abstract

This 21st century is remarkable for witnessing so many upheavals at social, cultural, economic and political levels in Bangladesh. These changes have affected the lives of every Bangladeshi drastically. Nowadays, a new challenge is in front of us all which has not only made our present miserable with its dreadful consequences but it will also not leave its painful clutches to spare our future life. The name of this threat is Covid-19, a highly contagious virus whose ruthless grip has left the humanity to breathe in fear and danger. Keeping this into mind we have tried to use the machine learning to analyse the current situation created by covid-19 and what may be its impact in future days.

Keywords: COVID-19; Corona; Time Series Analysis; Prophet.

Introduction

This is the very first time after the second world war people have facing a massive hindrance of their daily life in terms of health and economic due to COVID-19 outbreak. It's almost 212 countries, more than 35 lac people affected and near about 2.5 lac deaths by COVID-19 by today. Bangladesh is one of the victim countries of COVID-19. It's 9455 confirmed cases and 177 deaths in Bangladesh due to corona virus. Bangladesh prime minister has already declared a country lock down up to 15 May. It would play a massive effect in the country's economy. In this project, I have tried to predict the next 7 days corona affected cases in Bangladesh by using Facebook prophet library.

Aim of the Project

The aim of this project is to predict the effect of corona virus for upcoming days in Bangladesh. By using Machine Learning I have tried to identified the trend of spread the corona virus over Bangladesh and what maybe the number of infection in next 7 days.

Data Source

To do this project I used the data from Institute of Epidemiology, Disease Control and Research (IEDCR) of Bangladesh. (www.iedcr.gov.bd). Beside this, I also followed WorldOmeter (www.worldometers.info/coronavirus/) and John Hopkins University (coronavirus.jhu.edu/map.html) websites.

Machine Learning Tools and Packages

To predict the trend of spread the corona virus for upcoming days, obviously we have to choose a time series forecasting technique. There has a lot of time series

forecasting technique like as SIR model, Fuzzy Time Series Forecasting Technique, Facebook Prophet Library and so on.
Among all those well established techniques, I choose Facebook Prophet Library due to its comprehensiveness and easy to understand. Time series prediction are difficult and always require a very specialized data scientist to implement it. But Prophet is very easy to understand and anybody can implement it who has a little knowledge in time series.

Predicting the COVID-19 Cases Using Prophet

As we know Prophet can only take a certain format of data and that's why I made my data in two columns: 'Date' and 'Confirmed cases'. I made a .xlsx format data file from the very first confirmed cases 8 March, 2020 to 1 May, 2020. Here I took 55 days of historical COVID-19 data.
I did everything of analysis in Google Colab and at first I install 'pystan', because Prophet made with this package. Then I installed 'fbprophet' and call 'prophet' from it. Also I imported 'numpy', 'pandas' and 'matplotlib' library. After import data file I made some visualization of data and finally went in forecasting. Here I didn't take seasonality because COVID-19 isn't seasonal. I made 7 days forecasting and found an exponentially increasing trend. That means corona will infecting increasingly for upcoming days.

Conclusion

This prediction indicate an alarming spread of corona for upcoming days in Bangladesh. Government should take more proper steps to protect the spread of virus.