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Novel Corona Virus Analysis,Visualization And prediction of the COVID-19

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Abstract -Machine Learning is the Future and data is the new oil we can say Coronavirus (COVID-19) has become the most buzzed topic these days. Its outbreak has taken the world by storm. In this paper, I am going to analyze what Coronavirus is, how did it emerge, and what are its symptoms. Then, we can analyze the data and cause of it how can we safe and prevent after that what we can analyze the outbreak of Coronavirus across various regions, visualize the data by using some simple charts and graphs, and predict the number of next coming days confirmed cases by using the Linear Regression model in Python code. Finally, we'll look at the various safety measures that you can take to save yourself from getting attacked by Coronavirus.

Keywords: ***Regression,Covid-19,Corona,Virus,safety measures.***

I. INTRODUCTION

Now a days Corona virus spreading whole world and sitting on the highest of the recent topic within the world because There's currently no vaccine to stop coronavirus disease What is Corona virus? Coronavirus disease (COVID-19) is an communicable disease caused by a newly discovered coronavirus.First coronavirus (COVID-19) discovered at the end of 2019, and spread widely in China, and large number of people became infected. At present, the domestic outbreak has been effectively controlled, As corona virus is spreading the opposite areas as first . Currently, America, Italy along with 210 Countries and Territories around the world have reported a total of 2,073,383 confirmed cases of the corona virus COVID-19 that originated from Wuhan, China, and a death toll of 133,879 deaths as of 15- April 2020. [1].

In this paper by taking by taking the data from the https://www.worldometers.info/ and from the different govt. sites just gone through the data EDA and analyze the pandemic how it spreads day by day and symptoms.

Purpose

In this paper used to demonstrate analyze on the Covid 19 data by going through some analysis and visualize the outcomes and applied some machine learning algorithms to predict next some days data by observing the historical data.

Gone through some visualization tool to display the insights by some useful graphs. This also shows the power on epidemic transmission analysis and prevention decision making support.

How

Most people infected with the COVID-19 virus will experience mild to moderate respiratory illness and recover without requiring special treatment. Older people and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease, and cancer are more likely to develop serious illness.

The best way to prevent and slow down transmission is be well informed about the COVID-19 virus, the disease it causes and how it spreads. Protect yourself and others from infection by washing your hands or using an alcohol based rub frequently and not touching your face.

Used logistic regression, random forest and decision tree Support vector machines. Classification algorithm based on the data set. A dataset that has been created consists of various routes from different source.

II. HOW CORONA EMERGED

The new decade of the 21st century (2020) first stated with the emergence of novel coronavirus known as SARS-CoV-2 that caused an epidemic of coronavirus disease (COVID-19) in Wuhan, China. It is the third highly pathogenic and transmissible coronavirus after severe acute respiratory syndrome coronavirus (SARS-CoV) and Middle East respiratory syndrome coronavirus (MERS-CoV) emerged in humans. The source of origin, transmission to humans and

mechanisms associated with the pathogenicity of SARS-CoV-2 are not clear yet, however, its resemblance with SARS-CoV and several other bat coronaviruses was recently confirmed through genome sequencing related studies. The development of therapeutic strategies is necessary in order to prevent further epidemics and cure infected people. In this Review, we summarize current information about the emergence, origin, diversity, and epidemiology of three pathogenic coronaviruses with a specific focus on the current outbreak in Wuhan, China. Furthermore, we discuss the clinical features and potential therapeutic options that may be effective against SARS-CoV-2.acquainted with it. His level of confidence should be raised so he's additionally able to build some constructive criticism, that is welcome, as he's the ultimate user of the system.

III. SYMPTONS OF CORONA

Reported illnesses have ranged from mild symptoms to severe illness and death for confirmed coronavirus disease 2019 (COVID-19) cases.

These symptoms may appear **2-14 days after exposure** (based on the incubation period of MERS-CoV viruses).

1. Cough.
2. Fever.
3. Shortness of breath.
4. Trouble breathing
5. Persistent pain or pressure in the chest
6. New confusion or inability to arouse
7. Bluish lips or face.
8. Tiredness
9. Aches
10. Runny nose
11. Sore throat
12. Headache
13. Diarrhea
14. Vomiting

A. Causes

Infection with the new coronavirus (severe acute respiratory syndrome coronavirus 2, or SARS-CoV-2) causes coronavirus disease 2019 (COVID-19).

It's unclear exactly how contagious the new coronavirus is. Data has shown that it spreads from person to person among those in close contact (within about 6 feet, or 2 meters). The virus spreads by respiratory droplets released when someone with the virus coughs, sneezes or talks.

It can also spread if a person touches a surface with the virus on it and then touches his or her mouth, nose or eyes.

B. Risk factors

Risk factors for COVID-19 appear to include:

Recent travel from or residence in an area with ongoing community spread of COVID-19 as determined by CDC or WHO

Close contact with someone who has COVID-19 — such as when a family member or health care worker takes care of an infected person

C. Complications

Although most people with COVID-19 have mild to moderate symptoms, the disease can cause severe medical complications and lead to death in some people. Older adults or people with existing chronic medical conditions are at greater risk of becoming seriously ill with COVID-19.

Complications can include:

Pneumonia in both lungs

Organ failure in several organs

D. Prevention

Although there is no vaccine available to prevent infection with the new coronavirus, you can take steps to reduce your risk of infection. WHO and CDC recommend following these precautions for avoiding COVID-19:

Avoid large events and mass gatherings.

Avoid close contact (within about 6 feet, or 2 meters) with anyone who is sick or has symptoms.

Keep distance between yourself and others if COVID-19 is spreading in your community, especially if you have a higher risk of serious illness.

Wash your hands often with soap and water for at least 20 seconds, or use an alcohol-based hand sanitizer that contains at least 60% alcohol.

Cover your mouth and nose with your elbow or a tissue when you cough or sneeze. Throw away the used tissue.

Avoid touching your eyes, nose and mouth.

Avoid sharing dishes, glasses, bedding and other household items if you're sick.

Clean and disinfect high-touch surfaces daily.

Stay home from work, school and public areas if you're sick, unless you're going to get medical care. Avoid taking public transportation if you're sick.

The CDC recommends wearing cloth face coverings in public places, such as the grocery store, where it's difficult to avoid close contact with others. It's especially suggested in areas with ongoing community spread. This updated advice is based on data showing that people with COVID-19 can transmit the virus before they realize they have it. Using masks in public may help reduce the spread from people who don't have symptoms. Non-medical cloth masks are recommended for the public. Surgical masks and N-95 respirators are in short supply and should be reserved for health care providers.

If you have a chronic medical condition and may have a higher risk of serious illness, check with your doctor about other ways to protect yourself.

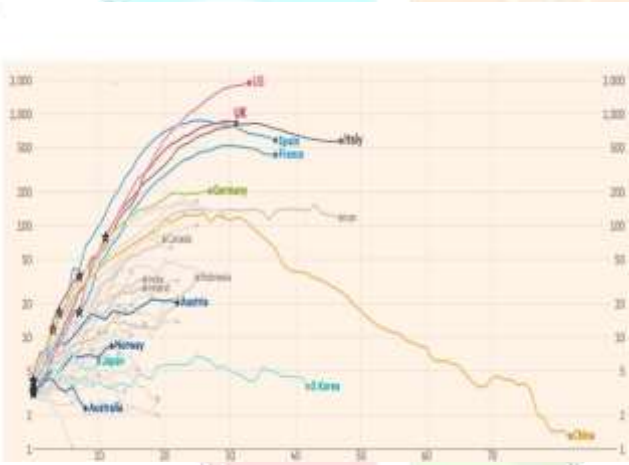
Global Impact of Corona Virus: The World Health Organization (WHO) officially declared the coronavirus outbreak a global pandemic on March 11th, as the outbreak has now spread to 100+ countries. Total infections outside of China are accelerating, with the global infection toll surpassing 200,000 as of March 18, with China's contribution at more than 81,000. As coronavirus spreads at the community level, public health policies are shifting from 'containment' to 'delaying' and/or 'mitigation.' This approach accepts the idea that the virus will spread in society and emphasizes slowing the speed and scale of the diffusion process. Containing Coronavirus Triggers a Global Recession in the First Half of 2020. The U.S. economy

is projected to contract by 14% in the second quarter, after experiencing a 4% contraction in the first quarter, before recovering to 8% and 4% growth in the third and fourth quarters. Euro area GDP will suffer an even deeper contraction, with double-digit declines of 15% and 22% in the first and second quarters, before rebounding by 45% and 3.5% in the third and fourth quarters.

Data Set:*Covid -19 data set is collected from some various govt web sites and kaggle for future analysis.*

Corona virus Out break Analysis:

The daily death tolls in more than 10 countries are in the hundreds or even thousands, and in all but a few cases those numbers are still rising.



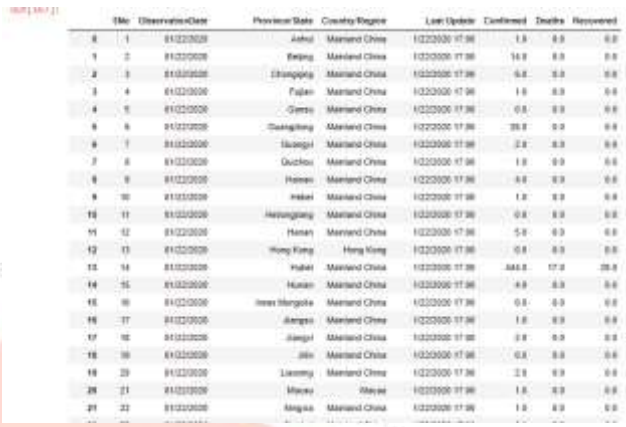
Linear Regression: The term regression is used when you try to find the relationship between variables.

In Machine Learning, and in statistical modeling, that relationship is used to predict the outcome of future events.

Simple:Y=mX+c

Code snap:

The data set looks like as below



What is Support Vector Machine?

The objective of the support vector machine algorithm is to find a hyperplane in an N-dimensional space(N — the number of features) that distinctly classifies the data points.

$$\frac{\delta}{\delta w_k}\lambda \parallel w \parallel^2 = 2\lambda w_k$$

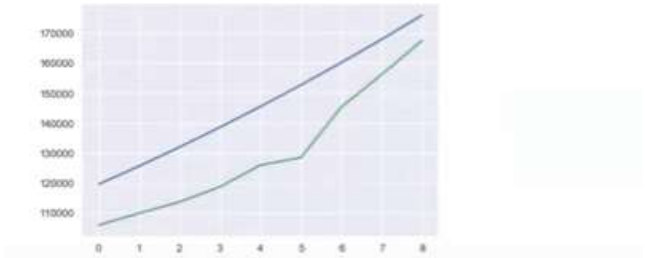
$$\frac{\delta}{\delta w_k}\left(1 - y_i\langle x_i, w\rangle\right)_+ = \begin{cases} 0, & \text{if } y_i\langle x_i, w\rangle \geq 1 \\ -y_i x_{ik}, & \text{else} \end{cases}$$

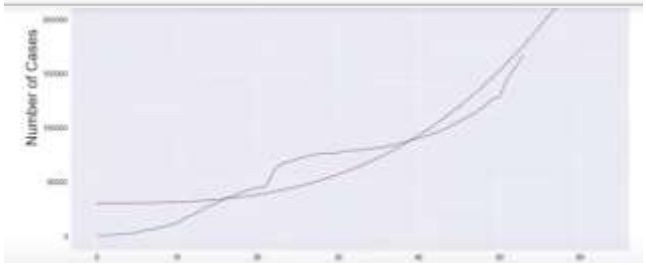
Applied SVM :

Shows the graph and error values,

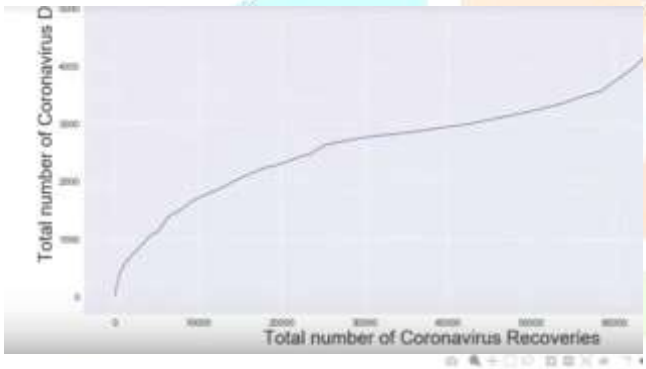
```
print('MSE:',mean_squared_error(svm_test_pred, y_test_confirmed))
```

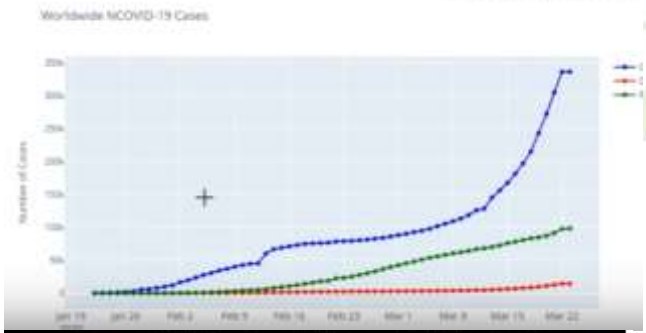
```
MAE: 16262.299241035274
MSE: 284685673.1830624
```





Linear regression:





	ds	yhat	yhat_lower	yhat_upper
64	2020-03-26	15411.877522	14492.216010	16350.775063
65	2020-03-27	16199.617603	15245.678873	17132.459470
66	2020-03-28	17006.904589	16006.294418	18028.736722
67	2020-03-29	17831.505383	16778.179463	18859.481185
68	2020-03-30	18490.986176	17448.791196	19511.622409

IV. CONCLUSION:

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As of now as there is no vaccination for this novel corona virus but we know prevention is better than cure. As of now Lockdown stay at home maintain social distancing

We can protect our self and help prevent spreading the virus to others if we:

Do

Wash your hands regularly for 20 seconds, with soap and water or alcohol-based hand rub

Cover your nose and mouth with a disposable tissue or flexed elbow when you cough or sneeze

Avoid close contact (1 meter or 3 feet) with people who are unwell

Stay home and self-isolate from others in the household if you feel unwell

Don't

Touch your eyes, nose, or mouth if your hands are not clean

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[3] https://www.worldometers.info/.

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