EFFECTS ON RESPIRATORY SYSTEM UNDER COVID 19 AND PREVENTION

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Abstract: With the covid-19 affecting and spreading all over the globe, it's significance of transmission is mainly through air, and by that it causes inflammation of lungs, the body decreases its production of oxygen level. It leads to pneumonia, where the blood exchanges oxygen and carbon dioxide. So, the machine learning (ML) model we work for is to mainly focus the respiratory system and give guidance of exercise, to keep the body and mind healthy.

IndexTerms **– Oxygen level, Covid 19, Logical regression, physical fitness.**

I. INTRODUCTION

The virus affects the respiratory system from ages varying 7-75, which can be eradicated with guidance of fitness health. Physical activities are essential for prompt oxygen level and if severed might require medication, as covid19 mainly affects the lungs. Logical regression which is used to predict the probability with the given number of observations is used in this platform with the given dataset of patients with covid19, and those affected with the virus, where it includes people varying from age 10 to 80 and amidst their age factor the oxygen level is analyzed to understand each individual's potential of respiration. The algorithm, Logical regression is used mainly to understand the variance between each attribute and gives an outcome with specified values.

II. RELATED WORKS

Coronavirus disease 2019 (COVID-19), caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (13), has become an unprecedented public health crisis. Coronavirus Resource Center at Johns Hopkins University of Medicine has reported a total of 23,638 deaths as worldwide COVID-19 infections surpass 500,000 (as on March 26, 2020). [1]

On March 16, 2020, the White House, collaborating with research institutes and tech companies, issued a call to action for global artificial intelligence (AI) researchers for developing novel text and data-mining techniques to assist COVID-19-related research. [3]

Currently, one-half of the world is under lockdown and complying with social distancing to arrest its spread.AI and ML research groups across the world are extensively working to tackle various aspects of the COVID-19 crisis including epidemiological, molecular studies and drug development medical, and socio-economical applications.[4]

The ongoing development in AI and ML has significantly improved treatment, medication, screening, prediction, forecasting, contact tracing, and drug/vaccine development process for the Covid-19 pandemic and reduce the human intervention in medical practice. However, most of the models are not deployed enough to show their real-world operation, but they are still up to the mark to tackle the SARS-CoV-2 epidemic.[7,9]

Beside clinical procedures and treatments, since Artificial Intelligence (AI) promises a new paradigm for healthcare, several different AI tools that are built upon Machine Learning (ML) algorithms are employed for analyzing data and decision-making processes. However, unlike other healthcare issues, for COVID-19, to detect COVID-19, AI-driven tools are expected to have active learning-based cross-population train/test models that employs multitudinal and multimodal data, which is the primary purpose of the paper.[6,9]

Predictive computing tools are increasingly being used and have demonstrated successfulness in providing insights that can lead to better health policy and management. However, as these technologies are still in their infancy stages, slow progress is being made in their adoption for serious consideration at national and international policy levels.[7]

Viral proteins subvert cell functions, including apoptosis and interferon release, to increase virion production.50 Infected cells fuse to create syncytia, a process mediated by the fusion machinery mediating viral entry. Syncytium formation promotes cell-cell spread of the virus and evasion of immune surveillance. Infected cells detach, leaving behind a porous alveolar-capillary barrier.[2]

Many patients with COVID-19 receive antiviral or immunosuppressive therapy. In Wuhan, a broad range of antiviral and immune therapies are being used. All patients also received treatment with Chinese medicine.[8]

In many patients these prodromal symptoms are followed by the pulmonary phase of infection, characterised by respiratory symptoms and findings including dyspnoea, radiographic pulmonary infiltrates and hypoxaemia [5].

III. OBJECTIVES OF STUDY

Oxygen level present in our body is a major factor of breathing, for the heart to pump blood. This is to understand whether the Oxygen level to those affected with covid19 is high or low. This is to primarily give guidance according to the age factor of each individual. This will also be an indicator to know what kind of activities can be given to keep the healthy status of the covid patients.

IV. METHODOLOGY

A. DATA MINING

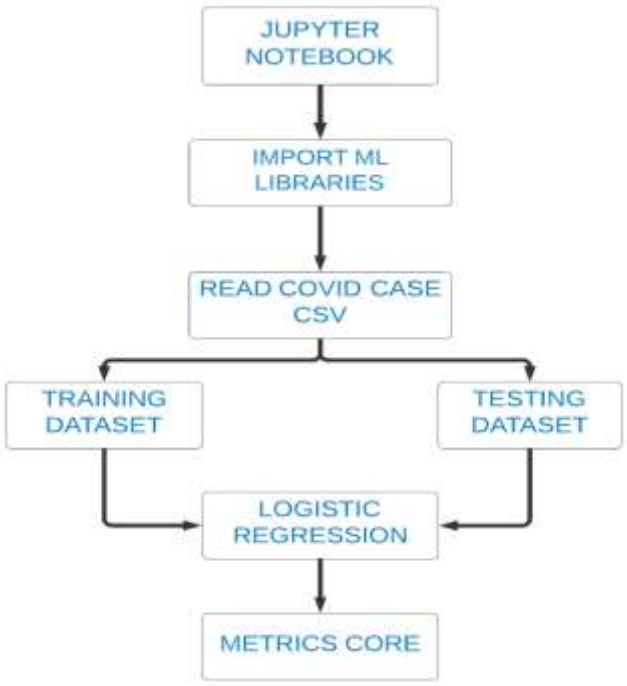
Out of the original source, data mining is a practice of analysing huge databases to generate and accumulate new information. Many MNC's use this process to collect user intervened data. Data mining has many techniques, one of which is classifier. We use logical regression algorithm to predict covid dataset.

B. LOGICAL REGRESSION:

This supervised learning method gives the probability of a target variable. Logistic regression uses fairly common machine learning algorithms that's accustomed to predict categorical outcomes. Logistic regression uses classification algorithms, used when the worth of the target variable is categorical in nature. Logistic regression is most ordinarily used when the information in question has binary output, so when it belongs to at least one class or another, or is either a 0 or 1. The following steps for logistic regression**:**

STEP 1: Generate a dataset and download necessary packages.
STEP 2: Splinter the dataset into test and training dataset.
Training set - used to train the model.
Testing set – describes the evaluation of the models.
STEP 3: Visualization gives a better scope of interactivity of the algorithm to convey a better understanding of the data set.
STEP 4: Define a prediction value using logistic regression.

3.4 FLOWCHART



IV. RESULTS

4.1 SCATTER PLOT

```
In [22]: plt.scatter(data['age'],data['oxygen_level'])
         plt.xlabel("age")
         plt.ylabel("oxygen_level")
         plt.title("Plotting for oxygen_level")
         plt.grid()
```

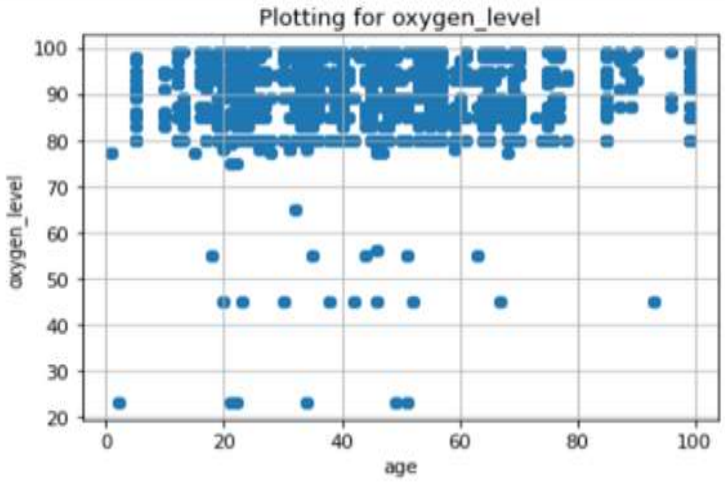


Fig 4.1

Here we have plotted using the attribute oxygen level on x axis, it's rows from 0-4000 and in y axis it's marked as age.

4.2 LOGISTIC REGRESSION

```
Out[39]: LogisticRegression()

In [40]: #Testing the algorithm Status
         predicted_value=logistic_model.predict(test_X)

In [41]: #Testing the algorithm for Current status
         predicted_value_1=logistic_model_1.predict(test_X)

In [42]: #Testing the algorithm for Symptoms
         predicted_value_2=logistic_model_2.predict(test_X)

In [43]: #SYMPTOMS
         #accuracy for Symptoms
         metrics.accuracy_score(test_Y1,predicted_value)

Out[43]: 0.0

In [44]: #prediction using symptoms
         pd.DataFrame({'predicted_value':predicted_value_2,'KnowO/P':test_Y1})
```

Out[44]:

	predicted_value	KnowO/P
3529	80	99
2406	80	80
3335	80	87
2509	80	95
1597	80	89
...	...	...
1382	80	85
3299	80	89
2561	80	85
3959	80	85
1684	80	87

1201 rows × 2 columns

Fig 4.2

COVID-19 causes respiratory illness, one that especially reaches into your respiratory track, which goes to your lungs. COVID-19 can cause a variety of breathing problems, from mild to critical. Older adults and other people who produce other health conditions like heart condition, cancer, and diabetes may have more serious symptoms. Think of your respiratory track as an upside-down tree. The trunk is your trachea, or windpipe. It splits further into small r branches in your lungs. At the tip of each branch are tiny air sacs called alveoli. That is the place where oxygen goes into your blood and carbon dioxide comes out. Taking the oxygen level by majority, this table depicts the expected value and known OP taking oxygen level risk, to know if it's high or low. It may not be very specific but it gives an assumption of what it'd cause. The metrics shows us the values of patients affected with respiratory problems, the values depicted are 80% of oxygen level, which requires a correct guidance of fitness

V. CONCLUSION

This paper indulges the performance in Jupyter notebook, by incorporating a dataset, importing the packages, visualizing it, using logical regression to understand what impact covid 19 has over the respiratory system of the human body. As it is worldwide concern WHO also giving guidelines, must be followed in order to overcome this virus contamination.

FURTHER WORK:

The risk of respiration occurs as the lungs which are like an upside down trunk are affected, and that requires guidance of physical activities. Those can be identified by analyzing the oxygen level of each patient, by doing this, it helps affected people recover sooner in a healthy manner.

VI. REFERENCES :

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