A Study and Analysis of Covid Effected Patients

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Abstract. Due to COVID-19 pandemic public health emergency was created throughout the world. So, we took the base data and perform analysis on how the effect of vaccination on the human lives in terms of recovery, severity, side effects and deaths on the globe. We also analyzed the country wise vaccination to understand the scenarios in the world, because the covid virus is transforming in different countries in different ways, therefore the understanding the mutations of the virus and the use of the drug analysis also very much important for the future generations and also useful to face the future covid virus mutations.

Keywords: covid-19, Analysis, Vaccination.

1 INTRODUCTION

In china a new virus called "corona" (COVID-19) was identified in Wuhan city, and it was spreader all over the world. The COVID-19 vaccination analysis of research serious of the critical cases and visualizing active cases, cured and deaths cases. Due to COVID-19 pandemic public health emergency was created throughout the world.

The covid-19 pandemic impact heavily on every citizen of the world till now, even though the effort of intervention and vaccination. COVID-19 is still there resulting more number of cases and deaths. More number of articles reviewed and recommended for publication throughout the world.

This resource is to provide guidance for countries which are receives, stores, ditribute and manage COVID-19 vaccines. Distribute COVID-19 vaccines to remote vaccination sites to ensure efficacy, quality, tracking and reporting of vaccine utilization. To protect the environment and populations, we need to assess, develop and implement appropriate safety and waste management mechanisms.

2 LITERATURE SURVEY

COVID-19 is a novel disease caused by respiratory syndrome [1]. In two manners, the citizens can be protected by increasing antibodies.The relationship between population immunity and transmission of highly infected diseases like COVID-19[2]. This study will help to protect the people by implementing best practices.

Understand the efficacy and potency of different vaccines available in the market to challenge new viruses are explained [3]. To improve herd immunity,

vaccines are very important [4]. In this paper author stated that vaccines are not suitable for elder people sometimes.

2.1 Security and Privacy Analysis Methodology

Any study should focus on sequence of steps that are performed on any data. It requires hypothetical analysis to understand the outcome of the pattern. This leads to extract useful information for good decision making.

Dataset was taken from Kaggle.com [5] and WorldinData.com [6]. The changes in COVID-19 were identified by drawing statistical graphs in python.

2.2 Sentiment Analysis and Stance Detection

Opinion mining play important role to determine view points towards goal of internet, which can be done using computational methods [7]. To find whether a text has positive, negative or neutral, we need to apply different sentiment analysis [8]. Uncover emotions can be detecting by using emotion identification [9]. Determine the text is subject can objective can be done by using subjective detection [10].

Stance detection is different from polarity detection, which determines the agreement or disagreement in relation to a specific target [11]. State of art results are obtained from Recurrent Neural Networks (RNN) and Convolutional Neural Network (CNN) for machine translation [12], document generation [13] and syntactic parsing [14]. Open-AI GPT and Bidirectional Encoder Representations from Transformers (BERT) are easily fine-tuned for Natural Language Processing (NLP) tasks [15], [16].

Polarity detection from football-specific Tweets using several machine learning algorithms [17]. polarity analysis and stance detection various approaches explained in lexical-based methods [18] and machine learning methods [19].

2.3 Twitter Sentiment Analysis on COVID-19 Data

Social media plays vital role to maintain social distance during lockdown period [20].

3 METHODOLOGY

Algorithms: -

Genetic Algorithms show great performance in many domains. There are three main operations, which are selection, crossover, and mutation. Genetic Algorithms is repetitive algorithms which repeated until condition met.

Based on population size, GA generates random set of solutions. Fitness function used to evaluate each solution. Then crossover function performed after selection function. Based on fitness value, the current population is updated.

Input:

-nP: Size of base population
-nI: Total number of iterations
-rC: Crossover rate
-rM: Mutation rate
-cI: Current iteration

Method :

Generate initial population of size nP.

According to fitness function, Evaluate initial population

While (cI≤nI)

// Breed rC×nP new solutions.

from current population select two parent solution

From offspring's solutions via crossover.

IF (rand (0.0, 1.0) < rM) Mutate the offspring's solutions.

end IF

According to the fitness function, Evaluate each child solution

Add offspring to population.

Remove the rC×nP least – fit solutions from population.

end While

output:

Best solution.

E: Overall error rate obtained from ANN,

□: Predetermined fixed value (□=5),

|R|: Number of the selected features

|N|: Total.

Fitness

It is a measure of the body's Ability.

Fitness is more specific for sport. Fitness has two main components, Health – Related fitness.

Formula:

$$\text{Fitness} = E*(1+\beta * \frac{|R|}{|N|}) \quad (1)$$

E: Over all error rate.

R: The number of selected features count

N: Original features count

Accuracy

Accuracy is ratio of correct predicted observation to total number of observations. If accuracy is more than model is best.

Formula:

$$\text{Accuracy} = \frac{TP+TN}{TP+FP+FN+TN} \quad (2)$$

TP: Number of real positive

TN: Number of negative

FP: Number of real negatives

FN: Number of real positive.

Precision

Precision is rate of correctly predicted positive observation to total predictive positive operations.

Formula

Precision $= \frac{TP}{TP+FP}$

(3)

TP: Number of real positive
FP: Number of real negatives

Recall
Recall is the ratio of correctly predicted positive observations to all observations.
Formula
Recall $= \frac{TP}{TP+FN}$

(4)

TP: Number of real positive
FN: Number of real positive
F-measure
It is weighted average of precision and recall.
Formula
F-measure $= \frac{2*(Recall*Precision)}{Recall+Precision}$

(5)

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I. COMPUTATION OF BASE PREVELANCE AND HERD IMMUNITY
Base prevalence is the ratio of sum of number of people vaccinated and people who are recovered to total population size.

$BP= \frac{VC+VE+PR}{P} *100\%$

(6)

Where,
BP : Base prevalence metric value
VC : Number of people vaccinated
PR : Number of people who recovered
P is the total size of the population

$$\text{Herd Immunity} = \left(1 - \frac{1}{R_0}\right) \times 100 \quad (7)$$

Where,
R_0 : Reproduction number of the virus COVID-19
Herd Immunity calculation for the countries UAE and Bahrain is given below.
UAE:

$$\text{Herd Immunity} = \left(1 - \frac{1}{R_0}\right) \times 100$$
$$= \left(1 - \frac{1}{2{\cdot}75}\right) \times 100$$
$$= 63.63\%$$

Bahrain:

$$\text{Herd Immunity} = \left(1 - \frac{1}{\square_0}\right) \times 100$$
$$= \left(1 - \frac{1}{3 \cdot 39}\right) \times 100$$
$$= 70.5\%$$

Herd Immunity of above countries is minimum so that the disease is an epidemic
The formulae from (1) to (7) are used in various computations for analytics.

4 IMPLEMENTATION & RESULT

For the implementation we have Covid-19 Vaccination analysis data set features used the CSV file means comma separated values, each line of the file is a data record. each row and column in a csv file represent a set of values delimited with a particular delimiter. Each row has the same number of values from all rows with the column. Each column in a csv file by print the contents vertically in the output file. Given column is written the subsequent column. and NumPy in the Jupiter note book in windows operating and the system configuration of RAM is 4.00 GB local disk(c) 3.70.

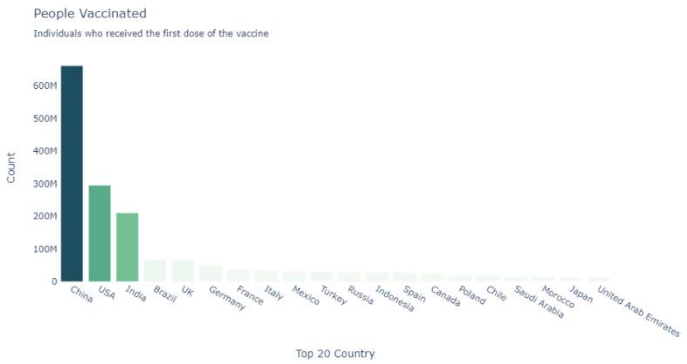

Fig: 1. People vaccinated

Fig: 1. In chart X- axis represented by Millions and Y- axis represented by total Countries, specifies that is where data for full vaccinations is available, it shows how many people have been fully vaccinated (which many require more than 1 dose).

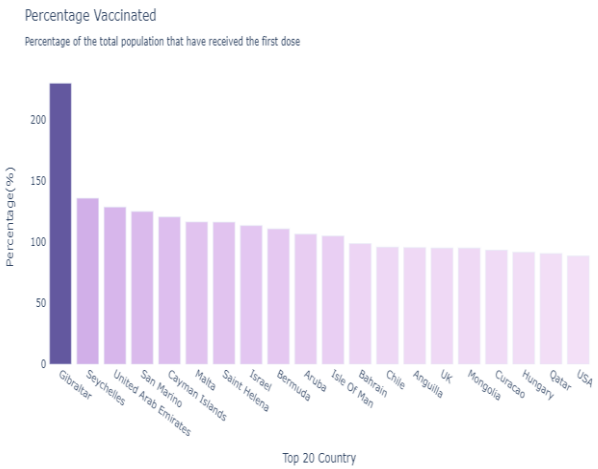

Fig: 2. Percentage Vaccinated

Fig: 2. In chart X- axis represented by Percentage of the total population and Y-axis represented by Countries. Full vaccination means infected with virus and 1 dose of the protocal.

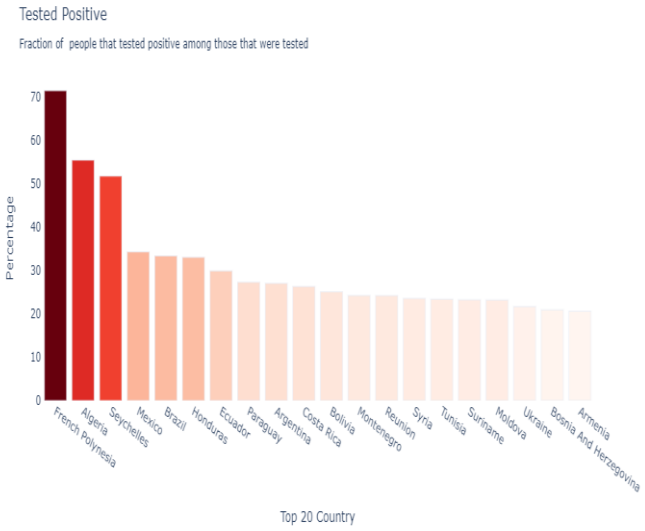

Fig:3. Tested Positive

Fig:3 In chart X- axis represented by Percentage and Y- axis represented by Countries. Fraction of people that tested positive among those that were tested

The Analysis is very useful to the common person to understand the use of covid vaccine at the same time it helps the public to create awareness on covid precautions.

5 CONCLUSION

Due to COVID-19 pandemic, public health emergency was created throughout the world. The covid-19 vaccination analysis of research serious of the critical cases and visualizing active cases, cured and deaths cases.

The proposed Block chain management system deal with vaccine supply, vaccine expiry data, and fraud recording using smart contracts. IOT and block chain techniques provides smart system for different domains in health care.

To improve vaccine coverage, the COVID vaccine is to teck patient location, humidity and temperature. The Gcoin Block chain is proposed for drug data flow. The COVID-19 vaccine distribution chain helps in track the vaccine which are not wasted.

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