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Pandemic Times-A Helping Hand Against COVID

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Abstract: ***The novel coronavirus (COVID-19) that was first reported at the end of 2019 has impacted almost every aspect of life as we know it. This paper focuses on the incidence of the disease in India and Maharashtra—two of the most affected Landmasses. Using one simple machine learning algorithms, we model the daily and cumulative incidence of COVID-19 in India and Maharashtra during the early stage of the outbreak, and compute estimates for basic measures of the infectiousness of the disease including the basic reproduction number, growth rate, and doubling time. Estimates of the basic reproduction number were found to be larger than 1 in both cases, with values taking a huge leap every months as they double their mutation rate. Estimates were also computed for the more dynamic effective reproduction number, which showed that since the first cases were confirmed in the respective countries the severity has generally been decreasing. The predictive ability of the machine learning algorithms was found to give a better fit and simple estimates of the daily incidence for the affected places. The following website gives us a particular idea about the entire covid situation in Maharashtra.***

I. INTRODUCTION

Our Project is a health oriented surrounding informative website. The user needs to login into the website by entering a valid Email, Phone number, and password. If the user is new to our website he has to go through a given registration process which includes the following information First Name, Last name, Phone number, Age, City, State, Gender. Once the user has logged in, they get an access to an interactive yet knowledgeable covid pandemic analytical website. Our website uses interesting machine learning algorithms and compares it with the given data in order to get an intricate idea about the entire scenario. Also on a global scale weibull distribution has been used. An extra feature of presenting the nearest hospitals in the vicinity of the user has been introduced in our project, wherein the user has to just enter the name of the city and the list of all the hospitals nearby will pop-out redirecting the user to a new google link of that hospital.

II. LITERATURE SURVEY

The following section focuses accurately on the literature survey performed before working on the actual project to provide a good and user friendly website.

1) *Reasoning[1]:* Reasoning is the process of deriving logical conclusions from given facts. Durkin defines reasoning as 'the process of working with facts, knowledge and problem solving strategies to draw conclusions'. You will notice how representing knowledge in a particular way is useful for a particular kind of reasoning
2) *Machine Learning[4]:* Machine learning (ML) is the study of computer algorithms that can improve automatically through experience and by the use of data. It is seen as a part of artificial intelligence. Machine learning algorithms build a model based on sample data, known as "training data", in order to make predictions or decisions without being explicitly programmed to do so. Machine learning algorithms are used in a wide variety of applications, such as in medicine, email filtering, speech recognition, and computer vision, where it is difficult or unfeasible to develop conventional algorithms to perform the needed tasks. Machine learning programs can perform tasks without being explicitly programmed to do so. It involves computers learning from data provided so that they carry out certain tasks.
3) *Weibull Distribution.[2]:* The **Weibull Distribution** is a continuous probability distribution used to analyze life data, model failure times and access product reliability. It can also fit a huge range of data from many other fields like economics, hydrology, biology, engineering sciences. It is an extreme value of probability distribution which is frequently used to model the reliability, survival, wind speeds and other data. The only reason to use Weibull distribution is because of its flexibility. Because it can simulate various distributions like normal and exponential distributions. Waybills' distribution reliability is measured with the help of parameters.
4) *Theory proving.[3]:* A detailed description of theorem provers and different logics is given in the background chapter that follows. For the purpose of this chapter a theorem proving is a computer program that is given a mathematical or logical statement (a conjecture) and seeks to find a proof that the statement is always true (a theorem) or is not. The logical language is assumed to be first order logic and the proof search is taken to be automatic. Theorem provers working in higher order logic requiring a high degree of user intervention will be referred to as proof assistants.

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III. PROPOSED SYSTEM

The proposed system gives users an informative yet interesting outlook about the covid situation going on in the world country wise as well as including some states in India. It not only gives us boring numbers but displays them on a chart or in a graphical form which makes it very easy for the user to obtain some new insights about the pandemic. In the given system the user is privileged to some benefits which have not been implemented in the current machine learning aspects.

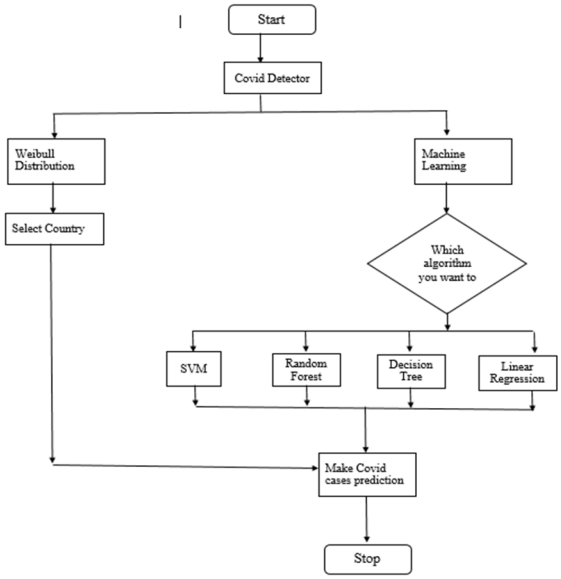

Fig.1 Architecture

Fig.no.1 is the Design and from it, he/she will be taken to homepage which contains a YouTube link containing the importance of masks and sanitizer also, how should one behave in public in order to stop the spreading of virus. The user is further prone to make a decision between weibull distribution, and machine learning algorithms. If they choose weibull distribution they get a chart wise distribution along with a graphical representation of the covid 19 patients in the world or the country individually. Now, just in case if the user selects machine learning option they are given 4 options to choose from namely, SVM, RANDOM FOREST, DECISION TREE, LINEAR REGRESSION.

A. Random Forest

As the name suggests, "Random Forest is a classifier that contains a number of decision trees on various subsets of the given dataset and takes the average to improve the predictive accuracy of that dataset." Instead of relying on one decision tree, the random forest takes the prediction from each tree and based on the majority votes of predictions, and it predicts the final output. The greater number of trees in the forest leads to higher accuracy and prevents the problem of over fitting. Random Forest works in two-phase first is to create the random forest by combining N decision tree, and second is to make predictions for each tree created in the first phase. The Working process can be explained in the below steps,

1) *Step-1:* Select random K data points from the training set.
2) *Step-2:* Build the decision trees associated with the selected data points (Subsets).
3) *Step-3:* Choose the number N for decision trees that you want to build.
4) *Step-4:* Repeat Step 1 & 2.
5) *Step-5:* For new data points, find the predictions of each decision tree, and assign the new data points to the category that wins the majority votes.

Once the user selects the algorithm in which they wish to see their data, information I the form of tables and harts is presented with the number of confirmed patients also the prediction is provided so that a good comparison can be done among the algorithms and accurate result can be achieved

Architectural design of Pandemic times has been represented in order to get a vague idea about the workflow of the entire project. Apart from the entire workflow, on very interesting feature has been introduced to the system. Hospital tracker, this features provides user with the information about hospitals nearby their residence or the spot of action.

IV. PROPOSED FEATURES

1) *Covid Detector Window:* After browsing the homepage the user is sent to a window where they have to choose between Machine learning comparison and Weibull distribution
2) *Weibull Distribution:* After selecting one option from the above window the user has to choose a country in order to get the data.
3) *The Weibull Chart:* After choosing the weibull path, the user is presented with a worldwide chart with information about confirmed covid cases.
4) *Hospital Tracker:* Here, the user is allowed to track their nearest hospital n order to get fast treatments.
5) *All Hospitals List:* In the All Hospitals list, number of hospitals with their name appearing in the vicinity of the user are displayed

V. SOFTWARE REQUIREMENTS

A. *Software Interface Requirements*

1) *Windows/Linux/Mac or any other OS* - These are the operating system required to provide instruction to the system. Basically, they convert human language into machine language.
2) *Mozilla Firefox/ Google Chrome browser* - These are the web browsers that enable us to access the Pandemic Times website online.

B. *Development Tools*

1) *Python* - Python is a high-level, general-purpose programming language. Its design philosophy emphasizes code readability with the use of significant indentation. Its language constructs and object-oriented approach aim to help programmers write clear, logical code for small- and large-scale projects.
2) *Machine Learning* - A Machine Learning system learns from historical data, builds the prediction models, and whenever it receives new data, predicts the output for it. The accuracy of predicted output depends upon the amount of data, as the huge amount of data helps to build a better model which predicts the output more accurately.
3) *Web3js* - In order to interact with local and remote Ethereum nodes using HTTP, IPS, or WebSocket we used the Web3.js which is a collection of libraries.
4) *Nodejs* - It is a JavaScript runtime that is built on Chrome. It is used in the backend to provide the connection with the front-end.
5) *Bootstrap* - It is a CSS framework that is used to design and develop responsive websites.

VI. EXPERIMENTAL DETAILS

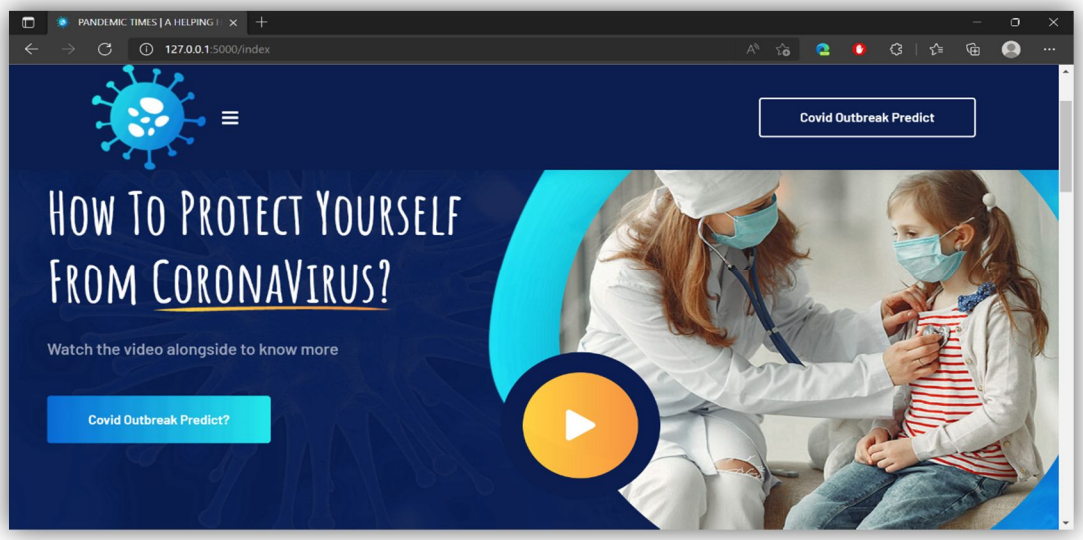

Fig.1 Homepage

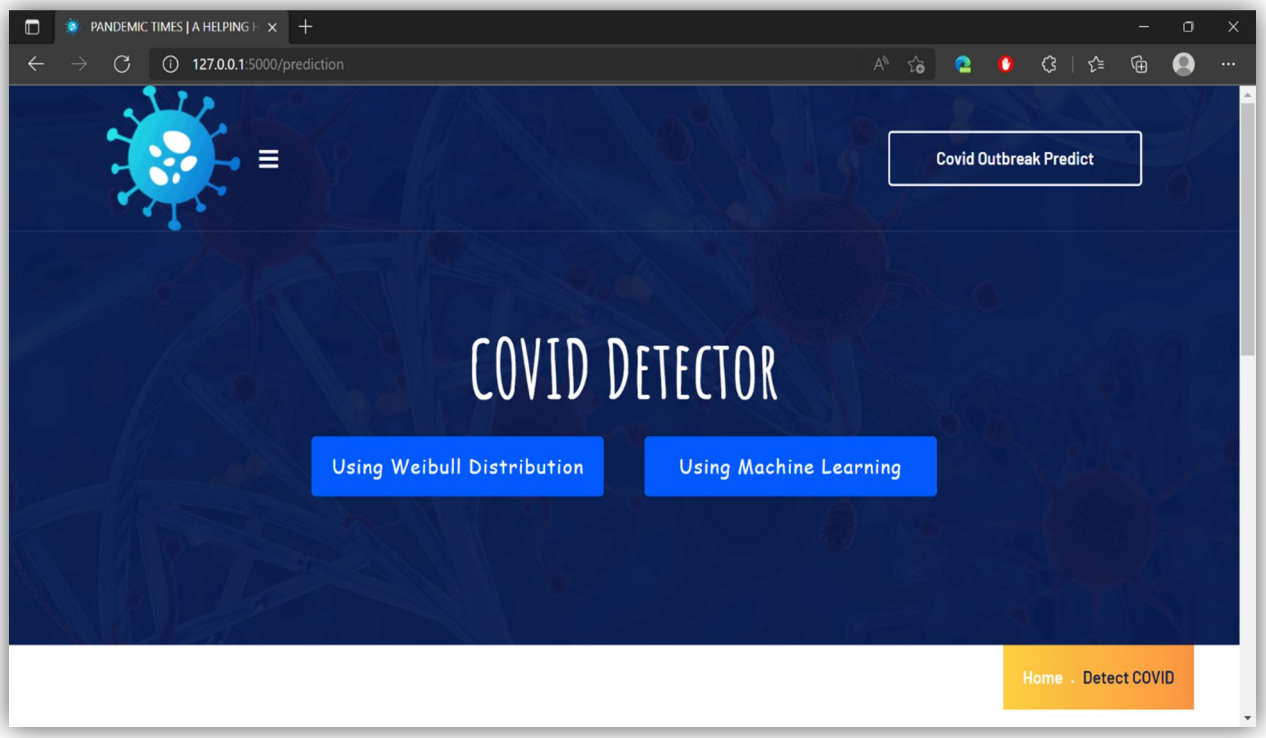

Fig.2 Covid Detector Window

1) *Covid Detector Window* – After browsing the homepage the user is sent to a window where they have to choose between Machine learning comparison and Weibull distribution. As it is shown in fig 2.

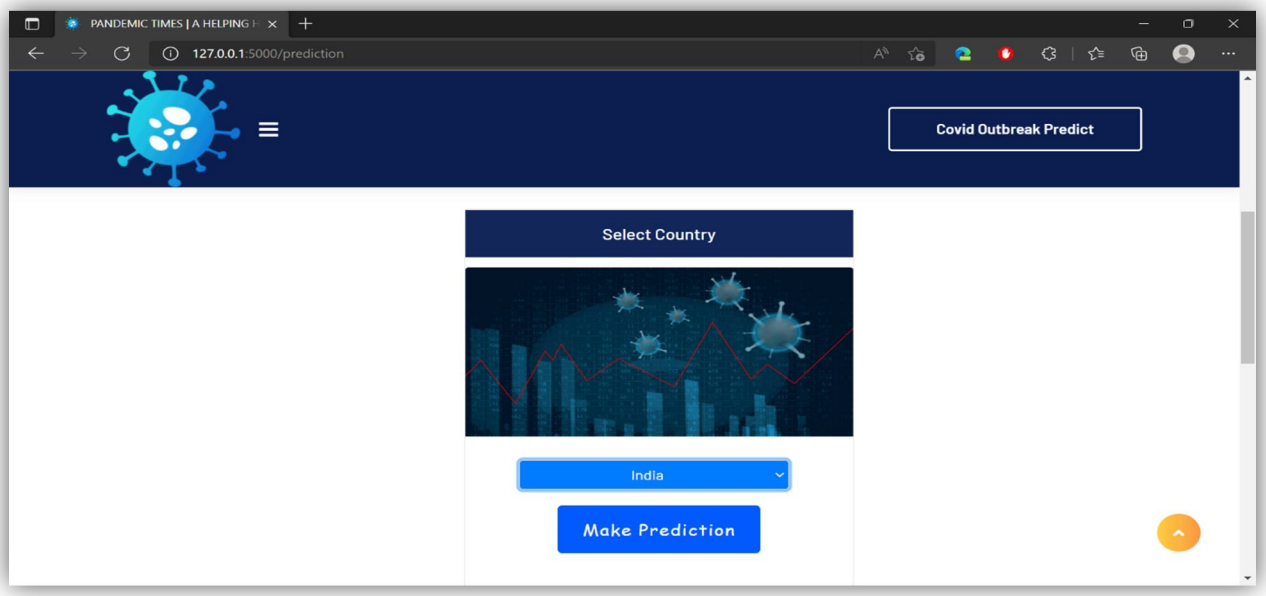

Fig.3 Weibull Distribution Chart

2) *Weibull Distribution Chart* - After selecting one option from the above window the user has to choose a country in order to get the data. As it is shown in fig 3.

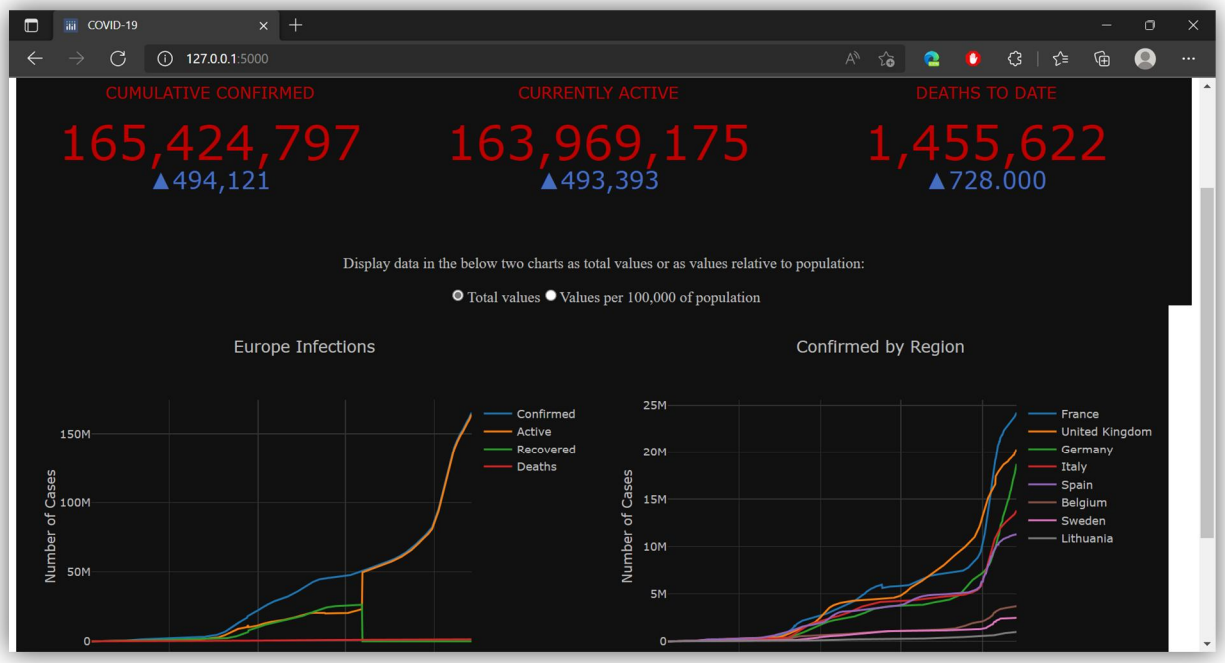

Fig.4 The Weibull Chart

3) *The Weibull Chart* – After choosing the weibull path, the user is presented with a worldwide chart with information about confirmed covid cases. As shown in fig.4.

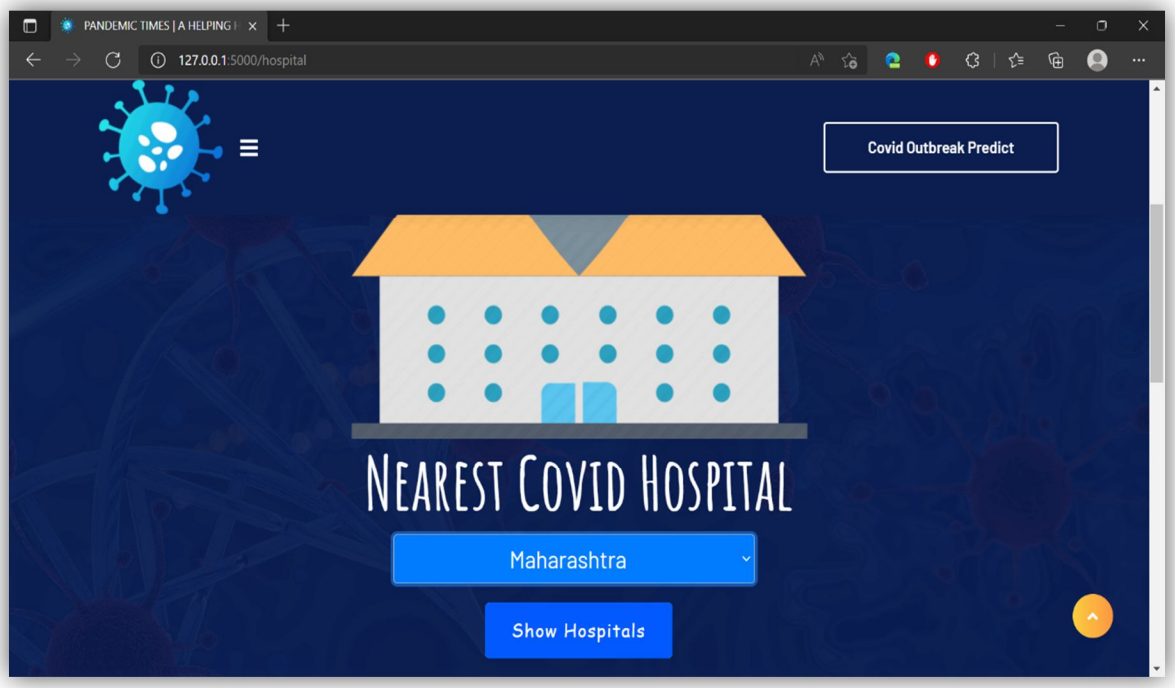

Fig.5 Hospital Tracker

4) *Hospital Tracker*- Here, the user is allowed to track their nearest hospital n order to get fast treatments. As shown in fig.5.

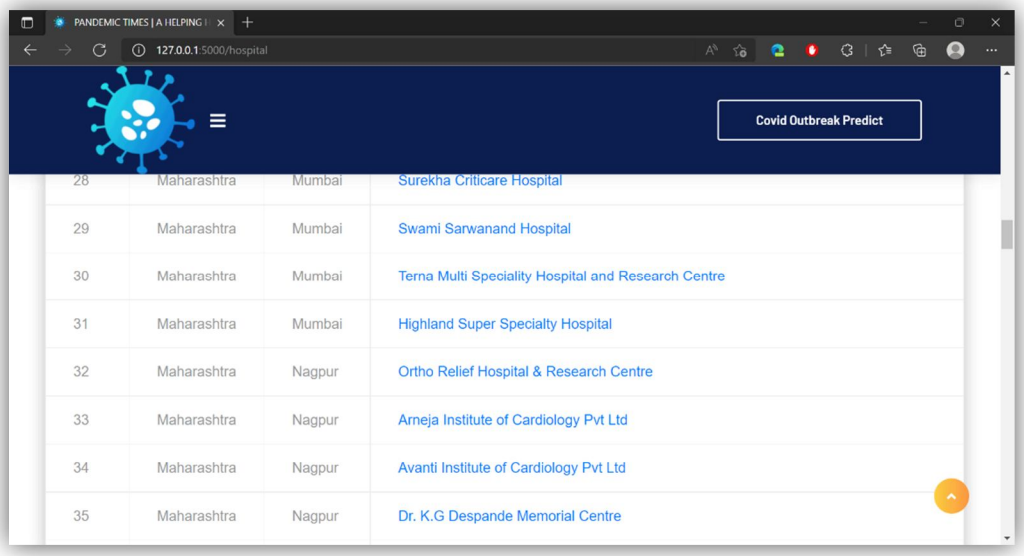

Fig. 6 All Hospitals List

5) All Hospitals list - In the All Hospitals list, number of hospitals with their name appearing in the vicinity of the user are displayed As shown in fig.6.

VII. CONCLUSIONS

In this paper, we conducted a study of current Covid Condition in the world and also in some states of Maharashtra. India is now 6th largest confirmed cases of COVID-19 in the world. India has not reached the peak yet so as of now we cannot predict the approximate number of confirmed cases in India. Recovery rate of India is also showing exponential behaviour same as confirmed cases. But if cases increase beyond certain point then thing can go out of control which will affect the recovery rate. Gender information of most of the patients is nor released by the government but whatever data is available shows number of infected males is more than that of females. This is may be due to more exposure/contact of males with outdoor world. Same as gender, age information is unavailable for most of the patients, but whatever data is available shows age and cases are normally distributed and 21-40 is the age bin which has been infected more. This analysis showed that pandemic like this affects economy the most. Whichever the country's GDP source is, it gets targeted the most. Slowing down the economy then unemployment, job losses and then this chain reaction continues.

VIII. ACKNOWLEDGEMENT

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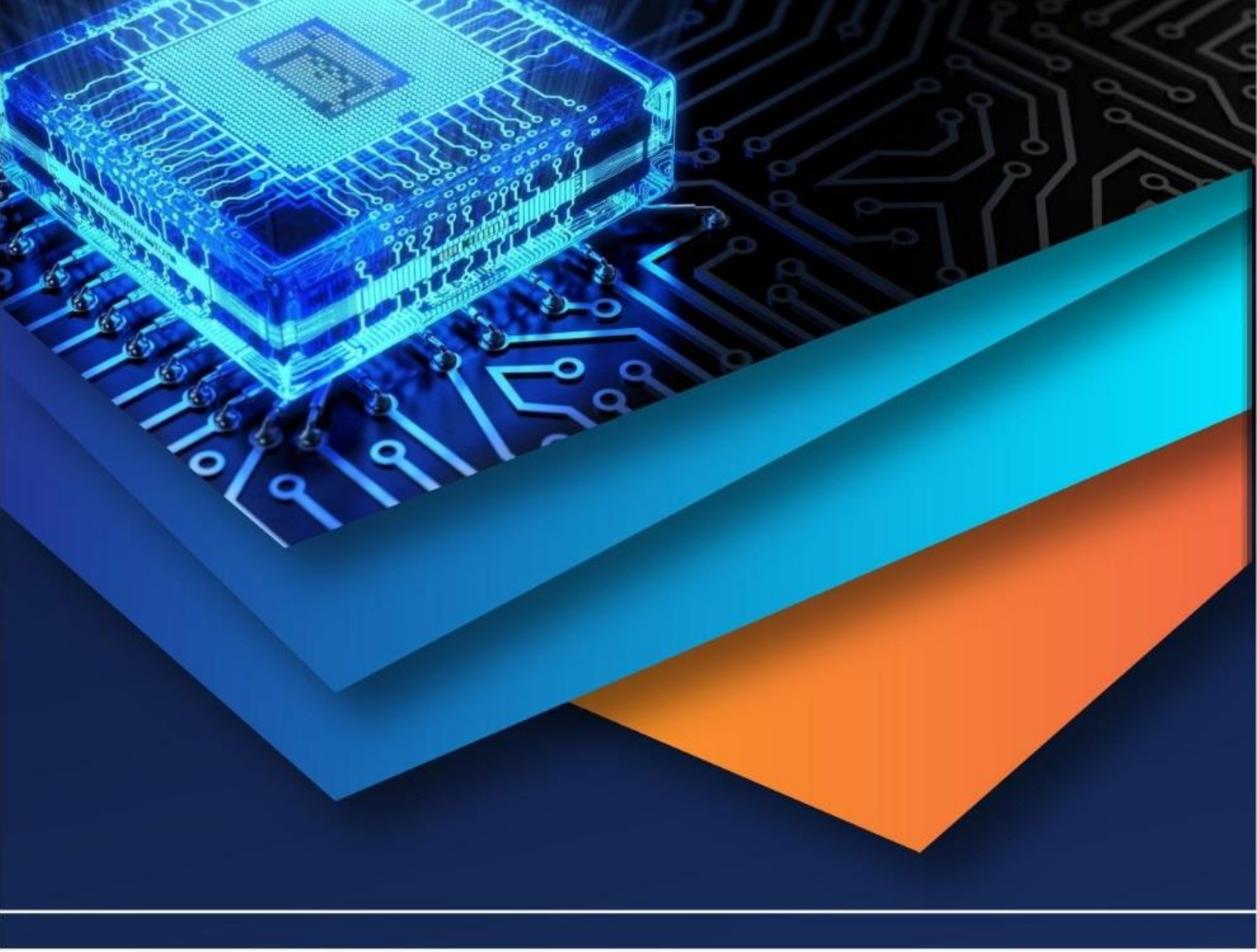

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