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PANDEMIC DISEASE PREDICTION SYSTEM USING PYTHON WITH DJANGO AND MACHINE LEARNING

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I. ABSTRACT

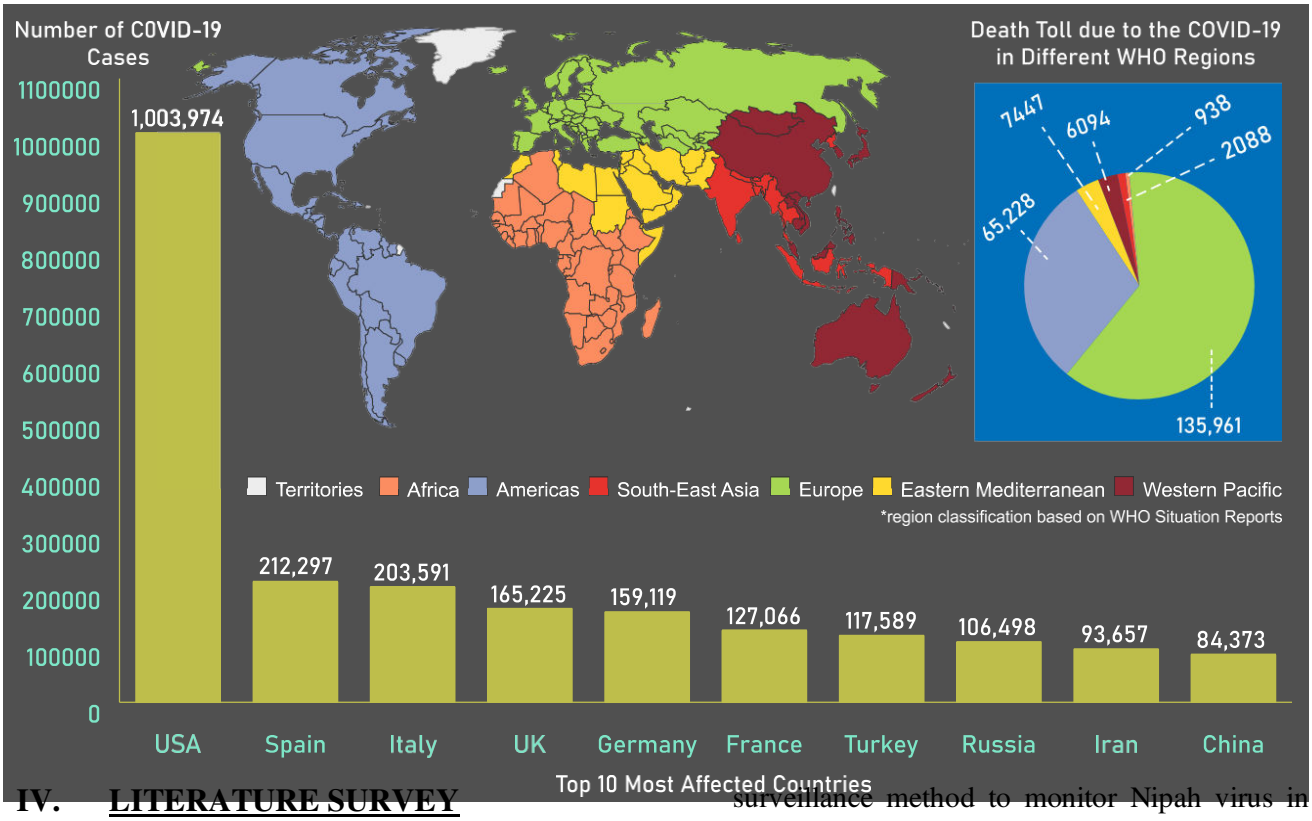
The unprecedented outbreak of the 2019 novel coronavirus, termed as COVID-19 by the World Health Organization (WHO), has placed numerous governments around the world in a precarious position. The impact of the COVID-19 outbreak, earlier witnessed by the citizens of China alone, has now become a matter of grave concern for virtually every country in the world. The scarcity of resources to endure the COVID-19 outbreak combined with the fear of overburdened healthcare systems has forced a majority of these countries into a state of partial or complete lockdown. The number of laboratory-confirmed coronavirus cases has been increasing at an alarming rate throughout the world, with reportedly more than 3 million confirmed cases as of 30 April 2020. Adding to these woes, numerous false reports, misinformation, and unsolicited fears in regards to coronavirus, is being circulated regularly since the outbreak of the COVID19. In response to such acts, we draw on various reliable sources to present a detailed review of all the major aspects associated with the COVID-19 pandemic. In addition to the direct health implications associated with the outbreak of COVID-19, this study highlights its impact on the global economy. In drawing things to a close, we explore the use of technologies such as the Internet of Things (IoT), block chain, Artificial Intelligence (AI),to help mitigate the impact of COVID-19 outbreak.

II. INDEX TERMS

Coronavirus, COVID-19, pandemic, transmission stages, global economic impact, Block chain, applications

III. INTRODUCTION

The recent worldwide outbreak of the novel coronavirus (COVID-19) has opened up new challenges to the research community. Artificial intelligence (AI) driven methods can be useful to predict the parameters, risks, and effects of such an epidemic. Such predictions can be helpful to control and prevent the spread of such diseases. The main challenges of applying AI are the small volume of data and the uncertain nature. Here, we propose a shallow long short-term memory (LSTM) based neural network to predict the risk category of a country. We have used a Bayesian optimization framework to optimize and automatically design country-specific networks. The results show that the proposed pipeline outperforms state-of-the-art methods for data of 180 countries and can be a useful tool for such risk categorization. We have also experimented with the trend data and weather data combined for the prediction. The outcome shows that the weather does not have a significant role. The tool can be used to predict long-duration outbreak of such an epidemic such that we can take preventive steps earlier.



IV. LITERATURE SURVEY

We note three communities of the related work: (A) AI in epidemic research, (B) research works on COVID-19, and (C) multivariate regression in AI. These are discussed below:

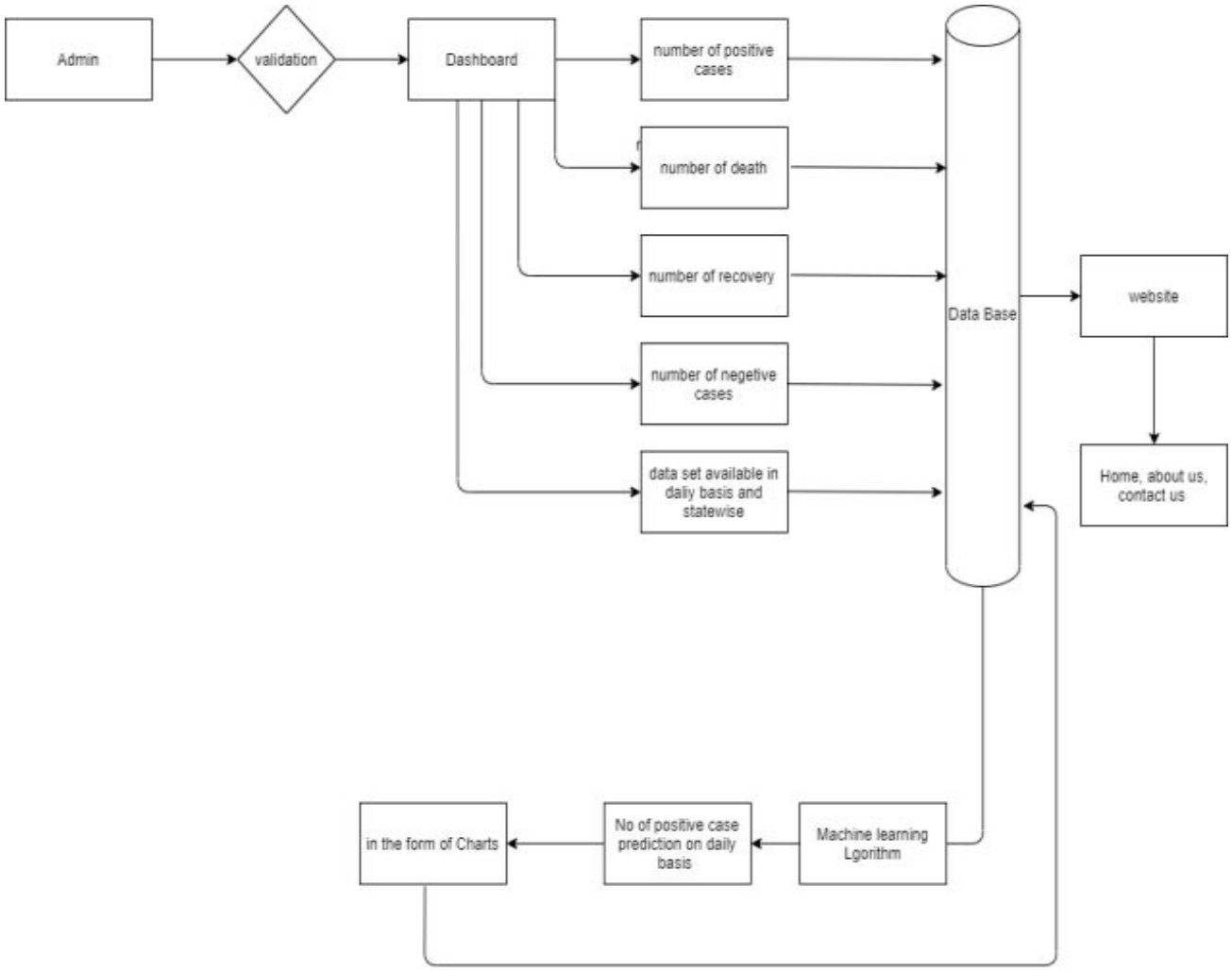
(A) AI based epidemic researches: Real-time epidemic-forecasting attracts several researchers due to the emerging applicability of the method. Jia et al. proposed a neural network for predicting the outbreak of hand-foot-mouth diseases. Hammer et al. used ML algorithms to predict spatio-temporal epidemic spread of pathological diseases. AI tools for predicting outbreak in cardiovascular diseases, influenza and epidemic diarrhoea is also proposed. A review of the application of AI for such a prediction is reported in a collective learning based approach is proposed to identify individual risk. In the last few years, machine learning analysis was used to predict epidemiological characteristics of the Ebola virus (EBOV) outbreak in West Africa and the risk of Nipah virus. Plow right et al. proposed a surveillance method to monitor Nipah virus in India. Recently, Seetah et al. proposed a method for predicting future Rift Valley fever virus outbreaks. The majority of the algorithms use a combined decision-making application using statistical and machine learning methods to predict future growth based on past incident data.

(B) Researches on COVID-19: The recent COVID-19 outbreak has motivated many researchers to help and find a way to recover from the pandemic. Rao et al. proposed methods to detect COVID-19 patients using a mobile phone. Yan et al. built a predictive model to identify early detection of high-risk patients before their health status is transformed from mild to critically ill. In recent times, numerous research articles have been published on epidemic prediction of the coronavirus pandemic. Researchers designed new paradigms of AI-driven tools that combine ML algorithms and different modalities of data. An improved adaptive neuro-fuzzy inference system (ANFIS) methodology is proposed in The algorithm is based on an enhanced flower pollination

algorithm (FPA) by using the salp swarm algorithm (SSA) to estimate confirmed cases in the next 10 days. Li et al. developed a regression model to calculate the exponential growth of COVID-19 infection based on the total number of daily diagnoses cases outside China. Analysts in obtained projections from 10 familiar machine learning and statistical ecological niche models against the large-scale climatology variation

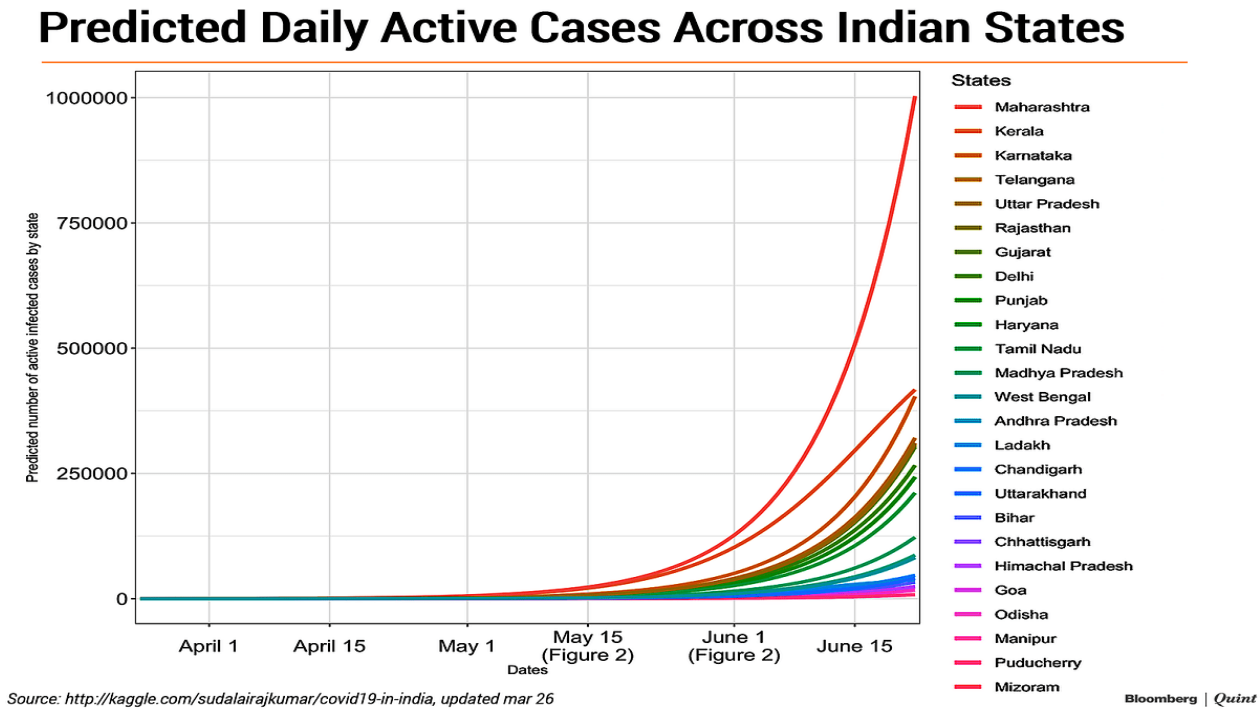
(C) Multivariate Regression in AI: The key point in time series study is forecasting. Time series analysis for business prediction helps to forecast the probable future values of a practical field in the industry. The method is also applicable in the health domain to predict the health condition of a person on the last diagnosis data. The method uses a feature attention mechanism to predict future health risks. Oh et al. use a combination of convolutional neural network (CNN) and LSTM for automated diagnosis of arrhythmia. The input electrocardiogram signal is processed using CNN and processed using LSTM to handle variable length signal. A multiple regression predictive model was used to predict patient volume in the hospital emergency departments. The authors used Google trend for forecasting. Other health areas such as antibiotic resistance outbreaks and influenza outbreaks utilized multivariate regression models. Different algorithms such as deep neural network, long short-term memory model (LSTM) and gated recurrent unit (GRU)-based model have been successfully applied in various forecasts. The methods rely on specific-less estimation error and running time on data sets with characteristics of multivariate, sequential and time-series data.

V. BLOCK DIAGRAM



VI. ANALYSIS

The first case of COVID-19 was reported on 30th January, 2020. During the month of February, the number of cases eported was three and remained constant during the entire month. The major rise in the spread of the disease started in the month of March 2020.



VII. PROBLEM DEFINITION

COVID-19 is a pandemic that has affected over 170 countries around the world. The number of infected and deceased patients has been increasing at an alarming rate in almost all the affected nations. Forecasting techniques can be inculcated thereby assisting in designing better strategies and in taking productive decisions. These techniques assess the situations of the past thereby enabling better predictions about the situation to occur in the future. These predictions might help to prepare against possible threats and consequences.

Forecasting techniques play a very important role in yielding accurate predictions. This study categorizes forecasting techniques into two types, namely, stochastic theory mathematical models and data science/machine learning techniques. Data collected from various platforms also play a vital role in forecasting. In this study, two categories of datasets have been discussed accessed from World Health Organization/National databases and data from a social media communication. Forecasting of a pandemic can be done based on various parameters such as the impact of environmental factors, incubation period, the impact of quarantine, age, gender and many more.

VIII. WORK PLAN

Sr. N	Nature of work	No. of days required

O		for completion
1.	Python (learning)	30
2.	HTML and CSS(learning)	4
3.	HTML Template design(completed)	2
4.	Django (learning)	25
5.	SQL(connecting with front end)	3
6.	Database(connecting with front end)	10
7	Machine learning algorithm	10
8.	Completion of project	
9.	Testing of project	3
	Error handing	1
11.	Testing of project(if required)	3
12.	Error handing(if required)	1

IX. RESULT

By using this project we all will have an average number of positive cases, death number, and recover cases for upcoming month by using this data we can predict that how much cure and prevention we have to take.

X. ACKNOWLEDGEMENT

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XI. REFRENCE

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