



A Review Paper on Analysis COVID-19 Outbreak India Conditions in Decision Making

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ABSTRACT

The catastrophic outbreak of Severe Acute Respiratory Syndrome – Corona virus (SARS-CoV-2) also known as COVID-2019 has brought the worldwide threat to the living society. The whole world is putting incredible efforts to fight against the spread of this deadly disease in terms of infrastructure, finance, data sources, protective gears, life-risk treatments and several other resources. India is also facing this very tough task for controlling the virus outbreak and has managed its growth rate through some strict measures. In these we can say that proper decision taken for controlling pandemic through analysis the various conditions through data provided by Ministry of Health and Family Welfare, Government of India. The dataset contains information related to COVID-19 cases at daily level, Population at state level, Number of COVID-19 tests at daily level, Number of hospital beds in each state and data is openly available on kaggle or github for various researchers to analyse these data and gives the current conditions related to pandemic.

Keywords:- COVID-19, pandemic, Analysis, Forecasting, Data Mining, Data analysis, Prediction.

INTRODUCTION

Corona viruses are a large family of viruses that can cause severe illness to the human being.

The first known severe epidemic is Severe Acute Respiratory Syndrome (SARS) occurred in 2003, whereas the second outbreak of severe illness began in 2012 in Saudi Arabia with the Middle East Respiratory Syndrome (MERS). The current outbreak of illness due to corona virus is reported in late December 2019. This new virus is very contagious and has quickly spread globally. On January 30, 2020, the World Health Organization (WHO) declared this outbreak a Public Health Emergency of International Concern (PHEIC) as it had spread to 18 countries. On Feb 11, 2020, WHO named this “COVID-19”. On March 11, as the number of COVID-19 cases has increased thirteen times apart from China with more than 118,000 cases in 114 countries and over 4,000 deaths, WHO declared this a pandemic Corona viruses are a large family of viruses that can cause severe illness to the human being. The first known severe epidemic is Severe Acute Respiratory Syndrome (SARS) occurred in 2003, whereas the second outbreak of severe illness began in 2012 in Saudi Arabia with the Middle East Respiratory Syndrome (MERS). The current outbreak of illness due to corona virus is reported in late December 2019. This new virus is very contagious and has quickly spread globally. On January 30, 2020, the World Health Organization (WHO) declared this outbreak a Public Health Emergency of International Concern (PHEIC) as it had spread



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COVID-19, or more popularly known as Novel Corona Virus, is associated with the respiratory disorder in humans which has been declared as a global epidemic and pandemic in the first quarter of the year 2020 by the World Health Organization [1]. As per the latest data (6th April 2020) by John Hopkins University [2] and other tracking websites, there are currently more than 1.3 million people infected by the Novel Corona Virus all around the world and close to 75 thousand deaths reported from different parts of the world. The top 10 countries with maximum number of infected cases are the United States of America, Spain, Italy, Germany, France, China, Iran, United Kingdom, Turkey and Switzerland. The top countries with maximum number of reported deaths are Italy, Spain, United States of America, France and United Kingdom. With respect to the recovered patients list, China is at the top of the list followed by Spain, Germany, Italy, Iran and the United States of America. India was placed comfortably out the list of infected nations by huge margins, but recent events led to its rise to 27th position which is a point of concern. The mortality rate is controlled at less than 3% right now, which is better than the ~5.5% mortality rate of world, but the model of spread is slowly moving towards an exponential trend which can lead to massive loss of lives and infrastructure. India is being looked upon by various nations now as a World Leader and even WHO acknowledged that world is looking towards Indian strategies to contain the outbreak of this epidemic [3]. India accounts for almost one-fifth of the world’s population and is second leading country in terms of population in the world. India contributes heavily to the world’s GDP and is amongst the most prominent developing country in the world with fairly strong economic growth percentages [4]. India’s good camaraderie with majority of the nations in the

world and its helpful nature makes it a perfect ally for other countries. Therefore, the analysis of COVID-19 outbreak in Indian region is closely watched and monitored by the World and there is a need of comprehensive analytical studies based on different strategies taken by Indian administrators from time to time. India has been following a nationwide lockdown since 22-March-2020, which was a one-day lockdown, followed by a 21-day lockdown after two days. Every activity in India since then has been happening with permission from various administration units and almost all the domestic and international travels have been either banned or monitored closely. India is yet to get into the third phase of COVID-19 outbreak i.e. the community outbreak as seen by various countries around the world, but the cases have been rising continuously. India’s lockdown period has been impacted by two major events in the recent days which were related to the mass exodus of laborers and workers from one state to other states (especially from Delhi to neighboring states) and conduction of a religious event in Delhi which led to spike in the number of cases in various states of India. During this time, the Indian Prime Minister has been trying to connect with Indian citizens through innovative strategies and coming up with various engagement activities which are impacting the whole nation. With so much happening in India right now, it becomes imperative that we study the current situation and impact of various such events in India through data analysis methods and come up with different plans for future which can be helpful for the Indian administrators and medical professionals.

II LITERATURE REVIEW

According to [1], The corona virus disease 2019 (COVID-19) breaking out in late December 2019 is gradually being controlled in China, but it is still spreading rapidly in many other countries and regions worldwide. It is urgent to conduct prediction research on the development and spread of the epidemic. In this article, a hybrid artificial-intelligence (AI) model is proposed for COVID-19 prediction. First, as traditional epidemic models treat all individuals with corona virus as having the



same infection rate, an improved susceptible–infected (SI) model is proposed to estimate the variety of the infection rates for analyzing the transmission laws and development trend. Second, considering the effects of prevention and control measures and the increase of the public’s prevention awareness, the natural language processing (NLP) module and the long short-term memory (LSTM) network are embedded into the SI model to build the hybrid AI model for COVID-19 prediction. The experimental results on the epidemic data of several typical provinces and cities in China show that individuals with coronavirus have a higher infection rate within the third to eighth days after they were infected, which is more in line with the actual transmission laws of the epidemic. Moreover, compared with the traditional epidemic models, the proposed hybrid AI model can significantly reduce the errors of the prediction results and obtain the mean absolute percentage errors (MAPEs) with 0.52%, 0.38%, 0.05%, and 0.86% for the next six days in Wuhan, Beijing, Shanghai, and countrywide, respectively. In [2], During the ongoing outbreak of corona virus disease (COVID-19), people use social media to acquire and exchange various types of information at a historic and unprecedented scale. Only the situational information are valuable for the public and authorities to response to the epidemic. Therefore, it is important to identify such situational information and to understand how it is being propagated on social media, so that appropriate information publishing strategies can be informed for the COVID-19 epidemic. This article sought to fill this gap by harnessing Weibo data and natural language processing techniques to classify the COVID-19-related information into seven types of situational information. We found specific features in predicting the reposted amount of each type of information. The results provide data-driven insights into the information need and public attention. In [3], COVID-19 has affected everyone’s daily lives. At least 316 million people in 42 states have been asked to stay at home to slow down the pandemic. In this aspect, businesses have been susceptible to make substantial transformations. Workplace operations of many

businesses went virtual. The effect of the digital transformation on productivity and corporate culture has been studied extensively. Meanwhile, how COVID-19 has influenced consumers, and the consumption culture has received relatively limited attention. Managers often take a wait-and-see approach on the impact of COVID-19 on sales. It is often uncertain whether and how many customers will return after the pandemic passes. Consumers live through the pandemic, and some changes might be long-lasting even after the situation eases. We examine the pandemic as an accelerator of the structural change in consumption and the digital transformation in the marketplace. Managers might adapt to the digital transformation in the market to recover or even grow further the sales after COVID-19. According to [4] Corona virus disease 2019 (COVID-19) caused by the severe acute respiratory syndrome corona virus 2 (SARS-CoV-2) is spreading rapidly around the world, resulting in a massive death toll. Lung infection or pneumonia is the common complication of COVID-19, and imaging techniques, especially computed tomography (CT), have played an important role in diagnoses and treatment assessment of the disease. Herein, we review the use of imaging characteristics and computing models that have been applied for the management of COVID-19. CT, positron emission tomography - CT (PET/CT), lung ultrasound, and magnetic resonance imaging (MRI) have been used for detection, treatment, and follow-up. The quantitative analysis of imaging data using artificial intelligence (AI) is also explored. Our findings indicate that typical imaging characteristics and their changes can play an important role in the detection and management of COVID-19. In addition, AI or other quantitative image analysis methods are urgently needed to maximize the value of imaging in the management of COVID-19.

III PROBLEM DEFINITION

We believe that overcoming COVID-19 is the world’s toughest problem at the moment, and to help make important decisions, it is important to understand the underlying data. So we’ve taken



steps to enable anyone- from first-time data explorers to data professionals and researchers to participate in the effort.

We are issuing a call to action to the world's artificial intelligence experts to develop text and data mining tools that can help the medical community develop answers to high priority scientific questions. The dataset represents the collection available for data mining to date. This allows the AI research the opportunity to apply text and data mining approaches to find answers to questions within, and connect insights across, this content in support of the ongoing COVID-19 response efforts worldwide. There is a growing urgency for these approaches because of the rapid increase in coronavirus literature, making it difficult for the medical community to keep up.

IV CONCLUSION

The global pandemic of the severe acute respiratory syndrome Coronavirus 2 (SARS-CoV-2) has become the primary national security issue of many nations. Advancement of accurate prediction models for the outbreak is essential to provide insights into the spread and consequences of this infectious disease. The artificial intelligence researchers are focusing their expertise knowledge to develop mathematical models for analyzing this epidemic situation using nationwide shared data.

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