

# Sentimental Analysis for Assessing Depression of Post Covid Patients on Social Media in Indian Scenario

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## **Abstract**

The unprecedented growth of social media information and contents attracts scientists and psychologists to understand and analyze human mental health. People express their sentiments and viewpoints in social media on different topics which helps researchers to analyze people's viewpoints. Sentiment analysis involves the use of Natural Language Processing (NLP) methods to systematically study affective states and emotion understanding of individuals or social groups. One of the machine learning methodology known as Deep Learning is prominently used for NSP tasks.

**Keywords :** Sentiment analysis, Social media information, Sentiments and viewpoints, Natural Language Processing (NLP), Machine learning methodology, Deep Learning

## **Introduction**

### **COVID-19**

During the rise of the COVID-19 cases, as well as the tight closure, people were expressing mixed feelings on social media platforms such as Twitter. The communication platform played a major role during the COVID-19 period which led researchers to analyze NSP and machine learning methods. A study using emotional analysis for in-depth reading reported that tweets from the World Health Organization (WHO) were unsuccessful in providing public guidance. There has been a study on mood analysis to study the impact of national closure due to the COVID-19 outbreak in India where it was found that people are taking a positive view against the COVID-19 war.

Covid-19 was officially reported for the first time by Chinese authorities as a virus originated in the city of Wuhan, Hubei province in China, on 31 December 2019.

According to official announcements from the World Health Organization (2020), while reviewing this manuscript the disease is contagious. has infected more than 106 million people worldwide, killing more than 2.3 million. Issues related to the development of the global epidemic are complex and complex, as they carry far-reaching effects not only on medicine, but also on the social, economic, political, and moral spheres. Although the recent release of various vaccines suggests that we may be facing the final stages of this health crisis, the effects of this long-term epidemic around the world will be seen beyond the actual end of the medical emergency and various aspects of our lives.

The online discussion on Twitter, in this regard, has recently attracted a large number of donations, as the tweets found in this forum are considered to be a good representation of the public opinion and the epidemic related to the current crisis. It follows that understanding and interpreting

such a statement, its occurrence over time, and its dependence on real-world events can help us to understand how people think and respond to a global catastrophe.

In particular, understanding how the topics discussed on Twitter in relation to the epidemic change over time can be important in order to understand which aspects of disaster are considered the most important and important to human being. In a recent study Wicke and Bolognesi (2020) analyzed discussion topics in a 2-month tweets conference (20th March-20th May 2020). In discussing their findings, the authors suggest that topics may change over time. Therefore, the temporary dynamic addition to the topic model analysis can provide a clear idea of how the epidemic is being processed in the minds of the speakers and discussed on Twitter.

Digging the emotional polarity of tweets by analyzing the terms used there can provide valuable information on how communication methods such as travel restrictions, social distance, etc. have been taken up by people during the first wave. By seeing potential changes in emotional polarity over time, and interpreting them in relation to major events and government decisions issued during the first wave, it is possible to predict how similar measures will affect us now as we face a new wave. .

If tweets contain language that is heart-warming, they may convey ideas rather than facts, then they are more likely to be thoughtful than objective. Excavation of the amount of emotional information (good or bad) associated with the language used in tweets can illuminate the temporary dynamics of the general subjectivity of tweets. In other words, it will be possible to see the distribution of tweets based on fact compared to ideas over time. This type of analysis can provide an interesting indication of our eagerness to report, trust, and discuss facts and information that may be objective, as opposed to opinions.

### **Depression of Post Covid Patients on Social Media**

While lockdown can be a significant and effective strategy of social distancing to tackle the increasing spread of the highly infectious COVID-19 virus, at the same time, it can have some degree of psychological impact on the public. It is well known that quarantine/isolation for any cause and in the context of a pandemic (severe acute respiratory distress syndrome/SARS, 2003) had been reported to be associated with significant mental health problems ranging from anxiety, fear, depressive symptoms, sense of loneliness, sleep disturbances, anger, etc., in the immediate few days of isolation and later had symptoms of posttraumatic stress disorder and depression even after 3–4 weeks of discharge. Lockdown can have different psychological impact in different age groups as well: children may feel restless as they may run out of the options to keep themselves engaged; elderly may feel that their movement has been restricted; and adults may feel burdened with household chores in the absence of housemaids/servants.

COVID-19 pandemic provides a unique opportunity to study the psychological impact of a condition, which, on the one hand, poses serious threat of a contagious illness, threat to physical and psychological integrity of a person, and in the long run a huge socioeconomic impact. It also provides an opportunity to assess the psychological impact of an administrative decision as rare as “lockdown” on general population. This study is the first of its kind to look into the psychological impact of COVID-19 pandemic on general population after 2 weeks the disease has made an impact in the Indian subcontinent and is still at its peak.

Finally, understanding how certain concepts used in the Covid discussion on Twitter may change over time can provide a different kind of indirect measure of people's attitudes about the epidemic. In particular, previous research has shown that

a variety of sensitive topics such as cancer, drugs, crime, and epidemics are often organisations to carry out targeted Campaigns, created using the full metaphorical cross-sales recommendations, online advertising framework of WAR. In some cases, and more. however, the use of war-related terms to address sensitive issues has been shown to types of analysis on collected data have negative effects on people who are directly affected by the issue being discussed. For example, the use of war-related terms to refer to cancer affects patients' general attitude toward their health status. In contrast, the use of other, more effective frames, such as JOURNEY or DANCE, can positively affect patients' mood and general well-being. As previous work has shown that, as we speak, the MPI Framework is very common in the discussion of Covid-19, so in this research work, we are exploring how the distribution of dictionary units within this figurative framework changes over time, so as to possibly cover it and highlight topics related to the new epidemic phases, in an interim manner.

#### **Types of Analysis :**

The world of data is changing rapidly. Analytics has been identified as one of the recent mega-trends (Social, Mobility and cloud technology are others) and is at the heart of this data-centric world. Now organisations of all scales are collecting vast amount of data with their own systems.

Including data from these areas

- Operations
- Production and manufacturing sales
- Supply Chain Management
- Marketing Campaign Performance

Companies also use external sources such as the social networking sites Facebook, Twitter, and Linked In to analyse customer sentiment about their products and services. Data can be generated from connected mobile devices, government and research bodies for use in analysing market trends and opportunities, industry news and business forecasts.

Analytics essentially enables organisations to carry out targeted Campaigns, created using the full metaphorical cross-sales recommendations, online advertising framework of WAR. In some cases, and more.

Companies perform three basic types of analysis on collected data

- **Diagnostic or descriptive analysis :**  
Organisations seek to understand what happened over a certain period of time and determine what caused it to happen. They might try to gain into historical data with reporting, key performance Indicators (KPI) and scorecards. For example, this type of analysis can use clustering or classification techniques for customers and offer them products based on their needs and requirements.
- **Predictive analysis :**  
Predictive analysis helps on organisation understand what can happen in the future based on identified patterns in the data using statistical and machine learning techniques. Predictive analysis is also referred to as data mining or machine learning. This type of analysis uses time series, neural networks and regression algorithms to predict the future.
- **Prescriptive analysis**  
Organisations can predict the likely outcome of various corrective measures using optimizations and simulation techniques. For example, prescriptive analysis can use linear programming, Monte Carlo Simulation, or game theory for channel management or portfolio optimization.

#### **Research Methodology:**

1. Topics are being discussed on Twitter about Covid and how are they changing over time, with the growth of the epidemic

Methods: Building on the emergent stream of studies examining COVID-19-related tweets in English, we performed a temporal assessment covering the time period from January 1 to May 9, 2020, and examined variations in tweet topics and sentiment scores to uncover key trends. Combining data from two publicly

available COVID-19 tweet data sets with those obtained in our own search, we compiled a data set of 13.9 million English-language COVID-19-related tweets posted by individuals. We use guided Latent Dirichlet Allocation (LDA) to infer themes and topics underlying the tweets, and we used VADER (Valence Aware Dictionary and sEntiment Reasoner) sentiment analysis to compute sentiment scores and examine weekly trends for 17 weeks.

2. The valence (sentiment polarity) that comes out of tweets about Covid and it changes over time Many of these linguistic studies based on social media discourse have the aim to mine the sentiments of the population that is experiencing a pandemic, by understanding people's feelings toward the topics related to the disease. For example, Mollema and colleagues found that during the measles outbreak in the Netherlands in 2013 many Twitter users were extremely frustrated because of the increasing number of citizens that refused to vaccinate for, among others, religious reasons. The measles outbreak in the Netherlands began among Orthodox Protestants who often refuse vaccination for religious reasons.

3. The subjectivity of tweets (i.e., perspective-based focus, vs. fact-based focus) change over time

Massive social media data present businesses with an immense opportunity to extract useful insights. However, social media messages typically consist of both facts and opinions, posing a challenge to analytics applications that focus more on either facts and opinions. Distinguishing facts and opinions may significantly improve subsequent analytics tasks. In this study, we propose a deep learning-based algorithm that automatically separates facts from opinions in Twitter messages. The algorithm outperformed multiple popular baselines in an experiment we conducted. We further applied the proposed algorithm to track customer complaints and found that

it indeed benefits subsequent analytics applications.

4. The use of the full framework of MPI change over time

A systemic account of intertemporal changes in multidimensional poverty using the Alkire–Foster Adjusted Headcount Ratio and its consistent sub-indices uses three techniques to assess the pro-pooriness of multidimensional poverty reduction. The analysis of changes in multidimensional poverty draws on the global Multidimensional Poverty Index (MPI) and related destitution measure in 34 countries and 338 sub-national regions, covering 2.5 billion people, for which there is a recent MPI estimation and comparable Demographic and Health Survey (DHS) dataset across time. First, it assesses overall changes in poverty and its incidence and intensity, and compares this with changes in \$1.90 poverty. Next, utilizing the property of subgroup decomposability, it examines changes in the MPI and its consistent sub-indices over time across urban–rural regions, sub-national regions and ethnic groups. The decomposition analysis identifies relevant national patterns, including those in which the pace of poverty reduction is higher for the poorest subgroups. Finally, the paper analyzes the dynamics of a strict subset of the poor, who are identified as “destitute” using a more extreme deprivation cutoff vector, and studies relative rates of reduction of destitution and poverty by country and region. This extensive empirical analysis illustrates how to assess the extent and patterns of reduction of multidimensional poverty, as well as whether it is inclusive or whether some people or groups are left behind. Naturally, some further research questions emerge.

Following the research questions mentioned above, we have developed the following ideas.

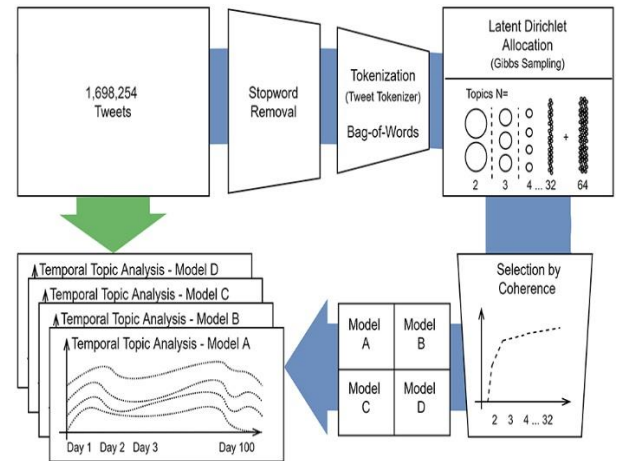
**1. Topics:** The epidemic is ever growing and changing. Discussion topics on Twitter

are likely to change accordingly, in line with the latest Covid-19-related incidents. We therefore predict that different topic models, based on different levels of granularity, will capture different media coverage events, related to Covid-19.

**2. Emotional Polarity:** The corporate tweets in which the current analysis is based mainly consists of data produced by American. American users, collected between 20 March (the first official day of lockdown closure in most countries) and 1st July 2020. At this time the number these active cases have increased steadily in the USA, according to the World Health Organization (2020). So we expect to find an increase in negative emotions associated with tweets, over time.

**3. Events:** Due to the growing epidemic, and the increase in daily events, as well as (possible) negative emotions from tweets, we expect tweets to contain a growing number of words full of touching content. It follows that we expect tweets to be more based on ideas (full of emotions), rather than based on fact (neutral), with the continuation of this epidemic.

**4. Framework:** We do not have a specific hypothesis in mind regarding this research question, but we do expect to see possible changes in the way the WAR framework is used to address the virus. In particular, although terms such as “war” and “war” may continue to be used frequently, we may see new words within this framework become commonplace in Covid's speech. This could suggest that the dictionary tools used to create the Covid speech framework were expanded and developed, to ensure the importance and spread of the symbolic WAR framework.



**Figure 1.** Processing the built-in corpus pipe.

**Conclusion :**

Finally, this work will summarize all the results and provide the final general discussion of our findings. The following figure 1, shows that the sample structuring of model of temporal analysis and different steps involved in the sentimental analysis.

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