

# Impact of Covid-19 Pandemic on Emotional well being of people

Deepali Joshi\*

\*(Department of Computer Engineering, Thakur College of Engineering & Technology, Mumbai University, Mumbai-68

Email: deepalijoshi1003@gmail.com)

## ABSTRACT

Globally there are numerous people who have gone through or experienced catastrophic events such as calamities, natural disasters, political unrest, terrorism or pandemics. COVID-19 is one of a kind pandemic that has happened in recent years. This pandemic has raised emotional and psychological problems in people of different age groups. The pandemic has affected various sectors across the globe and due to each and every individual is affected in some way or the other. In this paper the effect of corona on the emotions and personality of a person is analysed. A survey is conducted and based on the data that is gathered from different people, the analysis is conducted with the help of machine learning algorithms.

**Keywords-** Emotions, Machine Learning, Pandemic, Trauma

Date of Submission: 24-07-2022

Date of Acceptance: 06-08-2022

## I. INTRODUCTION

The COVID-19 is considered to be the first influenza pandemic which has affected and continuing to affect the entire world. The virus is mutating and comes up with different variants from different countries. When it seems like situation is turning back to normal a new variant starts spreading. Due to this the people across the globe are affected. When the term people is used it covers all age groups, right from children to senior citizen everyone is becoming the victim of the virus. In the initial one and half year all the sectors have suffered globally. Work from home has started for adults, online teaching learning process is being carried out for students and it is difficult for the senior citizens to stay at home. Overall it is observed that each and every person is affected due to the pandemic and lot of emotional turbulence is being caused. The overall personality of a person is affected and that is to be analysed. Before the pandemic the personality of a person was different and after the pandemic various emotional factors are affected. There obviously are lot of changes that are caused due to pandemic and they can be physical, emotional. In order to do the analysis machine learning algorithms will be used and their results are compared in order to check which is more efficient. Different parameters will be considered.

## II. LITERATURE SURVEY

From the onset of Pandemic every sector across the globe have witnessed drastic change. The offline method have shifted to online methods. Now slowly everything is turning back to normal as people have started adapting and accepting that they have to live with pandemic situation until all this comes to an end. Papers from various authors were referred and the literature survey was formed. It is being seen that every individual is affected due to the pandemic in some way or other. Right from the children to senior citizens everyone is affected emotionally, physically from the onset to till date of the pandemic. It is seen that the education sector is the worst hit of all as there are drastic change from offline teaching method to online teaching method. Various tools and techniques are used for online teaching methods[2]. Due to ongoing online teaching learning methods that are adopted, they are not feasible for all. If the student is from remote village area or if the student does not have required resources then learning is difficult and will affect their future[9]. They make not be able to identify what stream they need to select for their future[10]. A need may arise where they have to give the aptitude test in order to identify which stream is suitable to them for their future education[11]. e frontline workers are most hit by the situation as it is very hectic and difficult situation for them. They directly come in contact with patients and

have to be in ppe kits for long hours are have high levels of stress[3]. Their lunch hours are not fixed, water intake is very poor and the working condition is very bad. Similar to frontline workers the same stressful situation is faced by all working professionals who fall under essential services. For example bank employees, post employees, police department. The employees who have work from home are affected as well because there is no fixed working hours now. They have to be available 24/7. They are not able to focus on personal life and do not get free time.

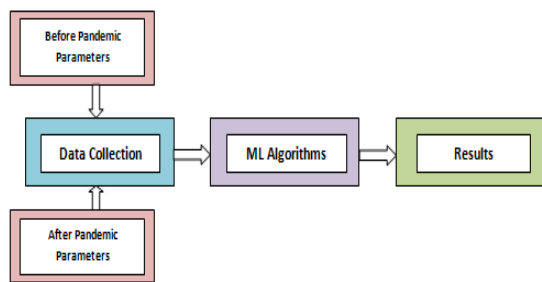


Fig. 1: Working Model

### III. METHODOLOGY

A machine learning method will be used in order to identify the emotional well being of a person. The person can be in any age group right from child to a senior citizen as people from all age groups are affected due to the ongoing pandemic. Different parameters will be considered for emotion analysis and data will gathered accordingly. Once the data set is ready a set of algorithms from machine learning will be identified and will be applied on the data set. There will be several parameters that will be considered and one of them will be efficiency. From the algorithms it will be checked which algorithms provides highest efficiency and the result will be provided accordingly.

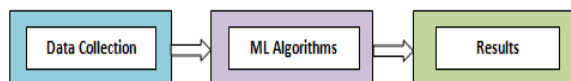


Fig 2: Process of Operation

The Fig 2 is a basic block diagram which defines the working of the model. The fig indicates the different steps that will be covered for generation of results. The first step indicates the collection of data, second step indicates application of machine learning algorithms and the third and final step indicates results.

## IV. ALGORITHMS

### 4.1. KNN:

KNN is K-Nearest Neighbour algorithm. It is one of the most simplest type of Machine Learning algorithm and it is based on the Supervised Learning technique. The K-NN algorithm identifies the similarity between the new data and the data that is available and puts the new data into the category that is most similar to the available categories. K-NN stores all the available data and will classify new data based on the similarity feature. The K-NN algorithm can be used for Regression and Classification both but generally it is used for the Classification problems. The KNN algorithm is also known as lazy learner algorithm since it does not learn from the training set instead it will store the dataset and during the time of classification, the action will be performed on the dataset.

#### Algorithm:

- Step-1:** Select the number of neighbors K
- Step-2:** Calculate the Euclidean distance of K number of neighbors
- Step-3:** Take the K nearest neighbors as per the calculated Euclidean distance.
- Step-4:** Among these k neighbors, count the number of the data points in each category.
- Step-5:** Assign the new data points to that category for which the number of the neighbor is maximum.
- Step-6:** The model is ready

#### Implementation:

In order to implement KNN algorithm the following steps are to be followed:

- Data Pre-processing step
- Fitting the K-NN algorithm to the Training set
- Predicting the test result
- Test accuracy of the result(Creation of Confusion matrix)
- Visualizing the test set result.

### 4.2. Decision Tree Classification Algorithm

The Decision Tree algorithm is a Supervised learning technique that can be utilised for classification as well as Regression problems. It is mostly used for solving Classification problems. The structure is in the form of a tree that consists of root, branches, leaf nodes. The internal nodes represents the features of a dataset, branches represent the rules for decision and leaf node represents the output.

The tests will be performed on the basis of features of the given dataset. It provides graphical representation of all solutions for the given conditions. A decision tree algorithm will ask a question and depending on the answer that is Yes/No or True/False the tree is further split into subtrees.

#### 4.3. Naïve Bayes Classifier

The Naïve Bayes algorithm is a supervised learning algorithm that is based on Bayes theorem and is used to solve classification problems. It is used in text classification which includes a training dataset. Naïve Bayes algorithm is the most simple and effective Classification algorithms which helps in building the machine learning models that can generate predictions quickly. The predictions will be done on the basis of the probability of an object.

#### Bayes' Theorem:

It is also known as Bayes' Rule or Bayes' law, that is used to determine the probability of a hypothesis depending on some prior knowledge. The dependency will be based on conditional probability.

The formula for Bayes' theorem is given as:

$$P(A|B) = \frac{P(B|A)P(A)}{P(B)}$$

Where,

$P(A|B)$  is Posterior probability: Probability of hypothesis A on the observed event B.

$P(B|A)$  is Likelihood probability: Probability of the evidence given that the probability of a hypothesis is true.

#### 4.4. Random Forest

The Random Forest is a supervised learning algorithm. It is used for Classification as well as Regression problems in Machine Learning. It is based on **ensemble learning**. **Ensemble learning** indicates a process of combination of multiple classifiers in order to solve a complex problem and will improve the performance of the model.

The Random Forest is a classifier which contains a number of decision trees on different subsets of the dataset and it takes the average in order to improve the predictive accuracy.

#### The main features are:

1. Less amount of training time is required as compared to other algorithms.
2. The accuracy of output is very high even in case of large dataset.
3. The accuracy is also maintained when a large proportion of data is missing.

#### Algorithm:

**Step-1:** Select random K data points from training set.

**Step-2:** Build the decision trees associated with data points.

**Step-3:** Select number N for decision trees that are to be build.

**Step-4:** Repeat Step 1 & 2

## V. CONCLUSION

The covid-19 pandemic has affected each and every individual in some way or the other. There is a vast difference in a person pre and post the pandemic as people who caught the infection are in trauma as well the people who are safe from the infection live in fear of catching one. Due to this it is very essential to identify the emotional well being of a person. Some people are able to discuss their problems or sufferings very easily but it is not the same for others. It is very essential to find out how the personality or emotional well being of a person pre and post pandemic then it will be identified how the person has changed right from the beginning of the pandemic to till date situations. Accordingly it will be predicted if the person has some emotional or traumatic issues and accordingly some actions can be taken.

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