International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 08 Issue: 05 | May 2021 www.irjet.net p-ISSN: 2395-0072

Covid 19 Tracker And Detection Using Android and Machine Learning

Masooda Modak[1], Swapnali Gawand[2], Ashwini Patil[3] , Roma Rai[4]

[1]*Prof. Masooda Modak, Professor, Dept. of Computer Engineering, SIES Graduate School Of Technology, Maharashtra, India*
[2]*Swapnali Sunil Gawand, Student, Dept. of Computer Engineering SIES Graduate School Of Technology, Maharashtra, India*
[3]*Ashwini Ananda Patil, Student, Dept. of Computer Engineering, SIES Graduate School Of Technology, Maharashtra, India*
[4]*Roma Amarendra Rai, Student, Dept. of Computer Engineering, SIES Graduate School Of Technology , Maharashtra, India*

Abstract - *Coronavirus disease 2019 (COVID-19) known to originate from Wuhan city in China in November 2019 and was declared a pandemic by the in January 2020 World Health Organization (WHO). COVID-19 is known to be a highly infectious virus. Infected individuals do not initially exhibit symptoms, while some remain asymptomatic. In response to find the solution on this situation our governments have shown great interest in smartphone contact tracing apps. Objective of this project Tracking the numbers of cases in each and every country using API and detecting the covid19 symptoms.*

Key Words: SVM, Decision Tree.

1. INTRODUCTION

The World Health Organization has declared the outbreak of the novel coronavirus, Covid-19 as pandemic across the world. it is very difficult to prevent the community transmission even during lockdown without social awareness and precautionary measures taken by the people. This Android application updates the locations of the areas in a Google map which are identified to be the containment zones. The application also notifies the users if they have entered a containment zone. Processing of healthcare and travel data using machine learning algorithms in place of the traditional healthcare system to identify COVID infected person. This work compared multiple algorithms that are available for processing patient data and identified the Boosted Random Forest as the best method for processing data. Further, it executed a grid search to fine-tune the hyper parameters of the Boosted Random Forest algorithm to improve performance.

Our work obliterates the need to re-compare existing algorithms for processing COVID-19 patient data. This work will enable researchers to further work on developing a solution that combines the processing of patient demographics, travel, and subjective health data with image data (scans) for better prediction of COVID-19 patient health outcomes.

2. EXISTING SYSTEM

At present, there is no specific treatment or vaccine available for COVID-19. Many countries are trying to develop contact-tracing techniques through which they can trace the person suspected of the infection. Many countries are introducing their applications which will track the corona cases with numbers. These applications will trace any positive cases around them via Bluetoooth and GPS Tracker when other application is also nearby. If person came into contact of already infected person then need to follow the suggested rules and regulations. A similar kind of mobile tracing application has been developed in India, namely, Aarogya Setu. The App is designed in such a way that it informs the user whenever they come in contact with an infected person through Bluetooth and GPS location services.

The data acquired from the application is not disclosed publicly and is only used by the government for tracing, tracking, and management of COVID-19. There are necessary steps that need to be followed by the users to use the Aarogya Setu application by logging into he App using a one-time password and filling out basic demographic details of the users to suggest whether the user is in safe vicinity or not. The current covid19 prediction is done based on the X-ray images of the patients. But it is difficult to analyze whether the person is really infected by coronavirus or it is some other symptoms just by looking at images of x-ray with bare eyes. Due to which the accuracy is not upto mark and prediction is not successful always.

3. PROPOSED SYSTEM

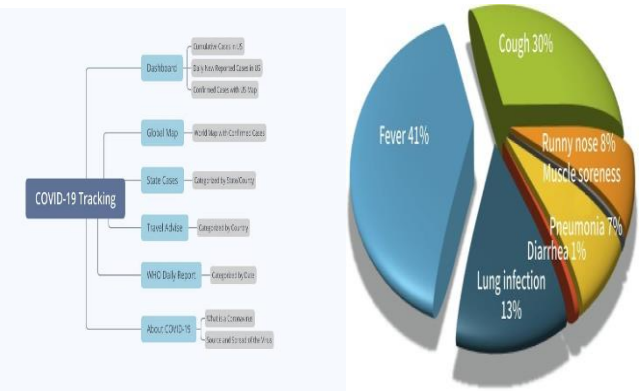

FIGURE.1

Covid19 tracker dashboard using Android studio will give data about the all country. Dashboard will navigation tab which show Number of infected people, Number of recovery and Number of deaths in India as well as foreign. The dashboard will also have a page which shows corona symptoms and some awareness tips required to avoid corona.

4. MODELLING

This section details and outlines the theory and logical explanation behind various Supervised algorithms that are compared from the list of recommended models that has been studied exten-sively in the literature review. With the class labels being identified as 0 and 1 for infected and non infected respectively we use various classifier algorithms for the prediction.

ALGORITHMS

1. Logistic Regression:

Cox, David R. proposed that Logistic Regression is a customary classification algorithm involving linear discriminants . It is a branch of regression used for predicting binary variables or categorically dependent variables based on probability which creates a linear boundary for separation. To avoid over-fitting, is it used with L1-norm or L2 norm. The model from the Sklearn module has been used for the training and testing of the dataset. The Logistic Regression in the Sklearn package implements regularized logistic regression.

2. Decision Tree:

As proposed by Morgan and Sonquist, Decision trees are nothing but a form of classification or regression models which builds a tree-like structure for prediction .It is usually not stable with high variance in the specified data points and large effects can be observed on the tree like structure even if there are small-variations in the input data . CART Decision tree has been implemented because it constructs the tree based on a criterion that applies numerical splitting which is then recursively applied to the data. Scikit uses an optimized version of the CART Decision tree and produces optimal results for any dataset.

3. Navie Bayes:

Naïve Bayes algorithm uses Bayes algorithm for probabilistic approach. It performs with a base assumption that all variables are independent of each other conditionally. Naïve Bayes classifiers first learn on the basis of joint probability distribution of their inputs by utilizing the assumption. Then for a given input, by means of Bayes Theorem the methods produce an output by calculating the maximum posterior probability. In this study we have implemented Gaussian Naïve Bayes classifier in the scikit module for optimized performance.

4. SVM:

Support vector machine incorporates the principles of statistical learning theory. It can solve linear as well as non-linear binary classification problems. The theory behind SVM is that for achieving class separation it constructs a hyper-plane or set of many hyper-planes in a higher dimensional space which are divided into two classes wherein, this hyper-plane maximizes the said geometric distance to the nearest data points. These are called as support vectors. For this reason, it is called maximum margin classifier. This study is implemented using SVM from the Sklearn module with RBF as the kernel. Since this dataset yields a non-linear boundary, RBF creates non-linear combinations of all the features to uplift the said data points onto a higher dimensional space where a decision boundary that is linear is used to separate the classes.

5. CONCLUSION

The application, overall, helps the government in keeping track of people who have been tested positive for the virus. It is also an excellent way to alert people about the number of Infected cases in their area that have been identified as coronavirus-positive or if they accidentally came in contact with a person suffering from COVID-19. The application requires being in running mode at all times to continue tracing individuals actively. The API of the application can be used in such a way that it enables your smartphone to exchange the tracing keys periodically. Covid19 Detection using machine learning on the symptoms of dataset predicted the flow of infection. After applying various algorithms on dataset. finally boosted random forest algorithm was used to predict the covid19 cases according to the given symptoms.

6. REFERENCES

[1] L. Matrajt and T. Leung, "Evaluating the Effectiveness of Social Distancing Interventions to Delay or Flatten the Epidemic Curve of Coronavirus Disease", Emerg. Infect. Dis., vol. 26, no. 8, pp. 1740-1748, Aug. 2020.

[2] C. T. Nguyen et al., "A Comprehensive Survey of Enabling and Emerging Technologies for Social Distancing—Part I: Fundamentals and Enabling Technologies", IEEE Access, vol.8,pp.153479-153507,2020.

[3] J. Li and X. Guo, ‘‘COVID-19 contact-tracing apps: A survey on the global deployment and challenges,’’ 2020, arXiv:2005.03599. [Online]. Available: https://arxiv.org/abs/2005.03599]

[4]] P. H. O’Neill, T. Ryan-Mosley, and B. Johnson. (2020). A Flood of Coronavirus Apps are Tracking Us. Now it’s Time to Keep Track of Them. [Online]. Available:

https://www.technologyreview.com/2020/05/07/1000961/launching-mittr-cov%id-tracing-tracker/

[5]F. Rustam et al., "COVID-19 Future Forecasting Using Supervised Machine Learning Models", IEEE Access, vol. 8, pp. 101489-101499, 2020.

[6]S. Sanche, Y.T. Lin, C. Xu, E. Romero-Severson, N.W. Hengartner and R. Ke, "The novel Coronavirus 2019-nCoV is highly contagious and more infectious than initially estimated", arXiv

[7] C. Huang, Y. Wang, X. Li et al., "Clinical features of patients infected with 2019 novel coronavirus in Wuhan China", The Lancet, vol. 395, pp. 10223, 2020.

[8] M.T. Hassan, "Decoding Aarogya Setu: Data Protection and the Right to Privacy", The Law Review Anthology, 2020.

[9] T. Dhar, "Aarogya Setu-Carrying Your Privacy in Your Hands?", Available at SSRN 3614506,2020