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Role of Aarogya Setu Application to Machine Learning Approach on Covid-19

Prabhat Kumar[1]*, Dr. Syed Mohammad Asif Ali[2]

[1] Research Scholar, (Computer Science & IT), Magadh University, Bodh Gaya

Email- kumarprabhat330@gmail.com

[2] Prof. & Head, Dept. of Physics, Mirza Ghalib College, Gaya

Email- asif_ali_gaya@yahoo.com

Abstract -The paper deals with "Role of Aarogya Setu Application to Machine Learning Approach on Covid-19." A random sample 250 male groups of the age range 25-40 and 41-65 years age has been selected from Ministry of India & Arogya Setu application. The different age groups 25-40 and 41-65 years old do not differ in terms of Aarogya Setu application. shows that 25-40 and 41-65 years age groups do not differ in terms of Aarogya Setu application. The age groups of 25-40 has been found 95.20% awareness and 41-65 years age groups was found 75.20 on Aarogya Setu application and creating awareness of various causes impacts on Covid-19.

Keywords - Machine Learning Approach, Aarogya Setu, Ensemble learning, and Covid-19.

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INTRODUCTION

The Indian government has launched several apps among which is the health. Aarogya Setu app in April 2020 which can be used for COVID-19 contact tracking. In Sanskrit, Aarogya Setu means the bridge to Aarogya Setu app is an Indian open-source cross-platform COVID-19 contact tracing, syndromic mapping, and self-assessment like digital service, primarily a mobile app. This tracking app which is used in smart phone with the help of Bluetooth and location-generated social graph to track the COVID-19 infection. This app provides information about the app users till 10 km of distance which in terms helps the user to stay aware of the infected individuals. Government of India has made e-pass mandatory for government and private sector employee to travel all over India. Aarogya Setu app can be easily downloaded and installed by anyone, moreover it is easy to handle. A number of digital collection tools have been launched for COVID-19. Among the electronic health, mobile health is an essential element as it makes healthcare practices accessible to public through mobile communication technologies in many ways like collecting data, observing patients, etc.

The current focus on the study of environmental data in order to forecast future trends has elevated it to a top research priority worldwide. The current state of the data, as well as its future condition, can be forecasted or predicted, depending on the type of data prediction and analytical tools used. For the examination of data from the past or present in order to forecast future patterns, several approaches relating to modelling, statistics, data mining, artificial intelligence (AI), and machine learning are utilized. Defining the job, gathering associated data from various sources, assessing the data, statistical analysis, data modeling, deployment of the acquired data using diverse methodologies, and lastly, model monitoring are all processes involved in such analysis and forecasts. This type of predictive analysis is commonly used in a variety of scenarios, including market sales forecasting, consumer demand forecasting, healthcare status forecasting, collection analysis, fraud detection, and so on. Among them, the analysis and prediction of healthcare data is seen as a critical area of application, particularly for forecasting the future condition of highly contagious disease propagation. In this scenario, analyzing Covid-19 to related data to predict its spread and containment patterns is critical for halting the global epidemic. Because of its extremely contagious nature and high fatality rates, every second counts, since infection and mortality rates continue to rise day after day.

Staying indoors, social isolation, hand washing, travel restrictions, lockdowns, and other measures have been used in countries around the world to halt the spread of the disease. Some of these measures, such as lockdowns, are fairly severe and have far-reaching consequences for normal human activities as well as serious economic consequences. For example, the latest wave of global lockdowns has had a significant impact on global GDP, emphasizing

the importance of accurate forecasting of Covid-19-related metrics. Numerous types of analyses and predictions using information acquired from various sources such as daily updated WebPages, Kaggle, Orange, and Weka can be observed in order to achieve this criteria. As a result, several strategies and methodologies developed by different researchers for projecting the future effects of the Covid-19 epidemic are considered as competing, each with its own set of strengths and flaws. Advanced AI approaches such as machine learning and deep learning have also been employed to carry out such forecasting, each with its own approach. Different methodologies and techniques, such as the regression model, the autoregressive model, the classification model, and so on, are employed in machine learning.

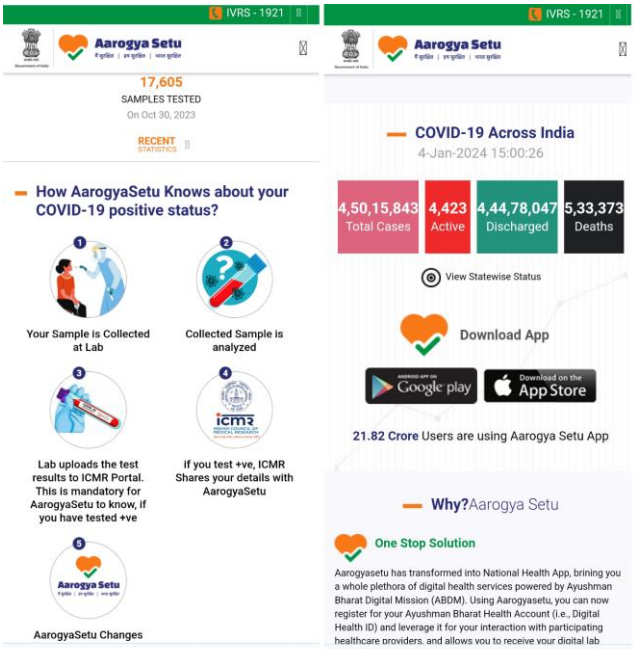
The methodology described and outlined in this paper is unique in that it will consider a method that combines nonlinear transmission with social-spatial and temporal transmission, as well as month-by-month data prediction. The majority of previous data-driven approaches will be linear, and do not take into account temporal or time-based transmission mechanisms.

Arogya Setu

Data received from ministry of health & family welfare will be verified with Arogya Setu data to weekly & monthly basis. The datasets described above are updated on a regular basis. As a result, the data's nature is highly dynamic. To plot all of the graphs and construct various types of tables, we will use the most recent data available at the time. Data up to a few months will be used to plot the graphs. Furthermore, we will use our proposed hybrid model using multiple machine learning approaches for time-series forecasting to predict the Covid-19 cases for the next three to four months. Data Retention Time:

The data classification has been divided into three groups: Cases that have been confirmed, Cases that have been recovered and Deaths reports of individual's.

In our datasets, we will include the three categories of data listed above. We will sum up the entire "Recovered Cases" and "Deaths" and deducted the result from "Confirmed Cases" to get the "Active Cases." We will also include two new columns to our India dataset, namely "Death rate per 100" and "Cure rate per 100."



Supervised machine learning methods

To forecast and interpret future data, various supervised machine learning models will be deployed to get assurance about which models will be better for our study. We will target mainly Ensemble learning, autoregressive models, and moving average regressive models are among the models which will get employed in this work.

Learning in a group: Ensemble learning is the creation of a set of multiple models, such as experts or classifiers, to tackle a certain intelligence problem. Ensemble learning is primarily used to improve prediction, classification, and the construction of improved approximations of functions that must be learned. The prediction performance will improve using this strategy, and negative conditions resulting from the usage of weak predictions are avoided. For decision-making, incremental learning, and error correction, this learning model will be utilized. In this learning approach, "boosting" will be used to raise the weightage for misclassified training data, allowing the poor classifier to be reinforced. When this boosting approach will be used, accuracy will improve.

Autoregressive model: An autoregressive model predicts data based on time and observations from prior activities. Previous actions and the statistical association between previous observations are utilized to forecast data (in this case, Covid-19 data) in the future.

The moving average model: The moving average model is a typical model for predicting data that is based on the linear relationship between current and previous values.

Steps to create a hybrid model for supervised learning:

The numerous procedures and phases for Covid-19 prediction will be represented using hybrid model Algorithm which will be used in this research. The numerous input dataset sources will initially be included in the model's training and testing. The projected work's second stage includes increasing numerous criteria such as location and other aspects.

Step 1: As training data, the acquired Covid-19 sample data will be collected to use.

Step 2: Using supervised learning model and current sample and training data, determine the best sample.

Step 3: Train the model using the series of data generated and produce boosted classifiers with the help of D1 and D2 recursively.

Step 4: Final predictions are generated using a moving average model. Continuous prediction and testing are performed in different iterations.

METHODS

A random sample 250 male groups of the age range 25-40 and 41-65 years age has been selected from Ministry of India & Arogya Setu application. This was a community based online cross-section survey. The snowball sampling technique was used for data collection. The questionnaire was developed to understand the knowledge and practices pertaining to COVID-19 but for publication purpose, items related to Aarogya Setu application have been analysed. The data was collected in the 1st week of July 2020. Frequency tables for socio-demographic details of the participants were formed. Chi-square test of significance was used to analyse the awareness and utility of the app against sociodemographic characteristics.

HYPOTHESIS

Whether the 25-40 and 41-65 years age groups do not differ in terms of Aarogya Setu application.

RESULTS

In order to test the hypothesis that 25-40 and 41-65 years age groups do not differ in terms of Aarogya Setu application. Both groups response to hybrid model to forecast the trends in the Covid-19 data 2020 and were computed table-1 below:

Age Groups	N	Response	
25-40 years	125	119	95.20
41-65 years	125	94	75.20

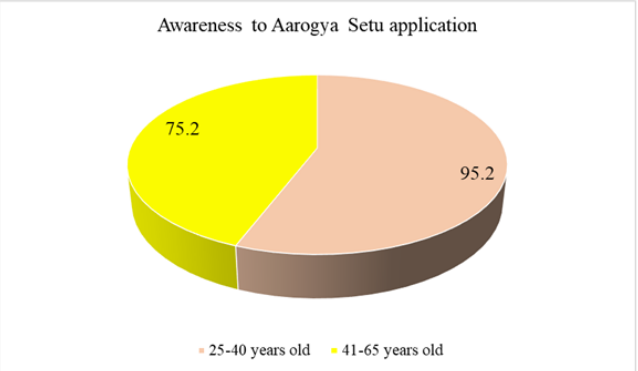


Table-1 shows that 25-40 and 41-65 years age groups do not differ in terms of Aarogya Setu application. The age groups of 25-40 has been found 95.20% awareness and 41-65 years age groups was found 75.20 on Aarogya Setu application. The majority of the participants were aware about the app, using it and found it useful. The awareness and use of the Aarogya Setu application was found to be significantly associated with different age groups was found to be significantly associated with Covid-19. Aarogya Setu application 25-40 years was more awareness then 41-65 years age groups. The results conforms hypothesis.

CONCLUSIONS

The study “Role of Aarogya Setu Application to Machine Learning Approach on Covid-19” findings can be taken by policy makers while considering promotion of the Aarogya Setu application. Future steps should involve developing relevant training and communication material to enhance the use of the Aarogya Setu application. The Aarogya Setu app indeed is a sophisticated surveillance system and was found to be useful and majority of the different age groups.

REFERENCE

1. Masum, A. K. M., Khushbu, S. A., Keya, M., Abujar, S., & Hossain, S. A. (2020). COVID-19 in Bangladesh: a deeper outlook into the forecast with prediction of upcoming per day cases using time series. Procedia Computer Science, 178, 291-300.

2. Alamo, T., Reina, D. G., Mammarella, M., & Abella, A. (2020). Covid-19: Open-data resources for monitoring, modeling, and forecasting the epidemic. Electronics, 9(5), 827.

3. Alimadadi, A., Aryal, S., Manandhar, I., Munroe, P. B., Joe, B., & Cheng, X. (2020). Artificial intelligence and machine learning to fight COVID-19. Physiological genomics, 52(4), 200-202.

4. Al-Qaness, M. A., Ewees, A. A., Fan, H., & Abd El Aziz, M. (2020). Optimization method for forecasting confirmed cases of COVID-

19 in China. Journal of Clinical Medicine, 9(3), 674.

5. Ardabili, S. F., Mosavi, A., Ghamisi, P., Ferdinand, F., Varkonyi-Koczy, A. R., Reuter, U., & Atkinson, P. M. (2020). Covid-19 outbreak prediction with machine learning. Algorithms, 13(10), 249.

6. Azarafza, M., Azarafza, M., & Tanha, J. (2020). COVID-19 infection forecasting based on deep learning in Iran, medRxiv.

7. Baldé, M. A. (2020). Fitting SIR model to COVID-19 pandemic data and comparative forecasting with machine learning. medRxiv.

8. Car, Z., Baressi Šegota, S., Andelić, N., Lorencin, I., & Mrzljak, V. (2020). Modeling the spread of COVID-19 infection using a multilayer perceptron. Computational and mathematical methods in medicine, 2020.

9. Dandekar, R., & Barbastathis, G. (2020). Quantifying the effect of quarantine control in Covid19 infectious spread using machine learning, medRxiv.

10. Iwendi, C., Bashir, A. K., Peshkar, A., Sujatha, R., Chatterjee, J. M., Pasupuleti, S., ... & Jo, O. (2020). COVID-19 patient health prediction using boosted random forest algorithm. Frontiers in public health, 8, 357.

11. Khan, S., Bashir, A. K., Iwendi, C., Gadekallu, T. R., & Deepa, N. (2020). A feature extraction based approach to detect Covid-19 related fake news. Appl Soft Comput.

12. Huang, C. J., Chen, Y. H., Ma, Y., & Kuo, P. H. (2020). Multiple-input deep convolutional neural network model for covid-19 forecasting in china. MedRxiv.

Corresponding Author

Prabhat Kumar*

Research Scholar, (Computer Science & IT), Magadh University, Bodh Gaya