LET IT FREE MOBILE APPLICATION

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Abstract- let it free is an mobile application which helps the user individuals in order to make sure that they are quite free from the COVID and it would be quite essence full for them and access for those who work quiet home quarantine and they couldn't get any kind of resources with the help of the CT scan they could have make utilised it by taking a picture in the mobile phone they could determine whether they were quite infected from any kind of infection virus where CT scan of any infected viruses might majorly check in through the parameters of the lungs so mainly this paper elaborates about how the parameters would probably work and how the model has been trained and the technology which has been utilised in order to develop these kind of artifacts.

I. Introduction

As upon world has beyond upward more flexible and more utilised options so that during the COVID era where people were quite oppose in order to wait for a long time in order to get the accurate results of whether they have been infected or not and even though the tool kids were quite available to them in order to check the accuracy of whether they have been infected or not but in order to make sure 100% they are quite infected or not they should have an clear cut picture about lungs has been infected or not so making sure upon this after having a CT scan the people should wait for a long period of time in order to have the accurate results whether they have been infected or not with the virus so that virus can be identified by image processing in the CT scans so that X ray can be used and while scanning that X ray we could probably utilise it in order to have the accurate results and make some precautionary cautions just like staying away from the belongings or off-springs which will be quite easy to accessible and which can be handled upon our hands.

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The most complete version of this application would likely improve any user interface regarding the issue , whether they have been dealing with COVID or the symptoms may or may not be necessary for the CO VID. Therefore, having the city report an X-ray scan of any medical diagnosis and cross-checking it with this application would give accurate information regarding whether an individual has bee n affected by COVID or not so that their mental facu lties are not compromised.By using a chest X-ray, the main goal of this standalone executable is to identify whether a person is seriously injured (CXR). ResNet50, InceptionV3, and VGG16, CNN are potent networks that have been trained on an upgraded dataset that was created by combining COVID-19 and standard chest X-ray pictures from several public sources.

II. A REVIEW OF THE RELEVANT WORK

The primary goal of this machine-learning-based automated system is to examine illness feature s and provide useful predictions. In order to identify and classify diseases, it is necess ary to first pre-process images, then segment relevant regions, then compute efficient algorithms, and last construct tool machine learning models. For instance, the 96.4% ac curacy achieved by the KNN model in classifying C OVID-19 vs non-COVID-19 instances is inconsistent. In this context, numerou s DL models have just been published for classifyin g and detecting COVID-19 instances. Predictions of covids from chest X-rays are made possible with the use of deep learning in the suggested technique. This system classifies pi ctures as either contaminated with COVID-19 or not.

Imaging techniques such as chest x-ray (also known as radiography) as well as chest CT are superior at detecting lung-related issues. Although chest CT is the gold standard, even a large chest x-ray is a more cost-effective option. Opacity-related discoveries on COVID-19 X-ray pictures have been discovered. Several individuals in one research had ground-glass opacity on both eyes.
In 50-60% percent COVID-19 cases in children, consolidated and ground-glass aperture settings were seen. This critical feature might be used to train a machine learning algorithm that screens vast amounts of radiograph pictures for possible instances of COVID-19.
When applied to a big dataset, such as a collection of chest x-rays, deep learning has the potential to significantly improve Covid-19 monitoring.

III. ESSENTIAL FUNCTIONS:

- The final user may snap an X-ray image on their smartphone.
- Users can view weekly and daily reports that track their progress over time.
- The user can also file a complaint if they find any inaccuracies in the report
- There is no need to rely on third-party services in order to guarantee compatibility between user data and medical health records.
- A registration/login screen and an image uploading mechanism will be part of the app.

IV. NEEDED TECHNOLOGY:

- The Android Studio development environment was used to create a mobile app that could run on any device running the Android operating system.
- And tech stack used in the application were :

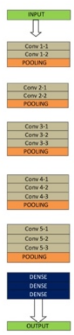
  1.Java
  2. Dialog Flow
  3. TensorFlow
  4.Developer API from Google

V. Construction of models

VGG16:-

Very Deep Convolutional Networks for Large-Scale Image Recognition, written by Karen Simonyan and Andrew Zisserman, is credited as the first publication of VGG models. In comparison to VGG99's 19 weighted layers, VGG16 only contains 16.

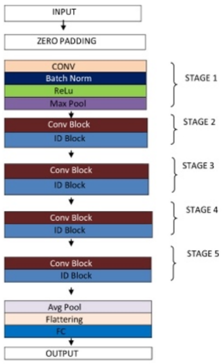
To a large extent, the VGG design mimics the original convolutional networks' simplicity. The primary motivation behind VGG was to add more convolutional layers to the network for improved performance. Convolutional windows were set at a small size (just 3x3 pixels) to achieve this.
In order to train the classifier, we use ImageNet's1000 annotations. Our goal is to classify X-ray pictures, both Covid and Normal, thus we can only utilize two classes. If you just need VGG16's multilayer functionality, you can easily import that by setting the are including top command to False.



VGG-16

ResNet50:-

ResNet-50 is a complicated convolutional neural network with 50 hidden layers. Loading a network that has already been trained on more than a million images from the ImageNet dataset is a time-saving option. The network is capable of categorizing images into a thousand distinct groups, s



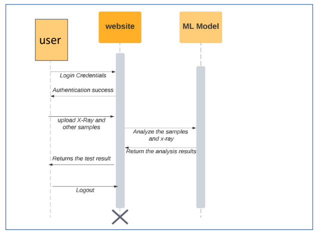
ResNet50 Model Architecture

uch as "computer screens," "insects," "highlighters," " and "wild creatures."

Inception-
V3 is a deep convolutional neural network with 48 layers. A variation of the architecture that has already been trained on more than a million images is available for loading from the Available dataset.
The network has the capacity of categorizing images into a thousand distinct groups, such as "keyboards," "mice," "pencils," and "animals."
This has trained the infrastructure to recognize a wide range of picture kinds, each with its own unique set of features.

VI. Graphical User Interface:

VGG models were shown to provide the greatest results across a variety of metrics, including accuracy, precision, and recall, when tested to RestNet as well as Inception models.The radiographic pictures are used a input, and a UI powered by a VGG model generates a prediction.Using the input picture, the simulation will return a binary classification of COVID detection or normal.



VII. Ramifications:

A deep learning-based method and an end-to-end framework were presented in this study to automatically discover and categorize COVID-19 occurrences in X-ray pictures, respectively. The intended methodology has a 97% chance of success. The lack of radiology in rural areas in nations with COVID-19 can sometimes be addressed with this method. To further verify our model, we want to incorporate additional photos in the near future. In order to provide an improved considerably and assist in the psychiatric treatment of afflicted individuals, this created model might be saved on the cloud. The amount of work required from the doctor should be greatly reduced

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VIII. Challenges:

A large quantity of data is required for a deep l earning approach to produce accurate results; y et, it is feasible that not enough data exists for every problem. Particularly when dealing with medical difficulties, data collection may be a c ostly and time-consuming process. We hope that by utilizing more similar photos in the approach, we can m ake our model even more robust and precise**.**

IX. Concluding Thoughts:

Using publicly accessible commercial software , we showed that AI can be used to successfull y diagnose COVID-19 from X-ray scans. We have focused on the potential inf luence of this method on future global health c rises like COVID-19, although it has many applications in radiol ogy. There are applications for medical assess ment and evaluation, primary prevention, follo wing the course of disease, and identifying peo ple with a higher likelihood of morbidity and d eath as a result of these results. Our findings of fer a window into the potential ways in which AI can one day revolutionize the field of medic ine.

X. References:

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