MULTI DISEASE DETECTOR APP USING CHEST X-RAY

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ABSTRACT

Nowadays, Covid-19 is the most important disease that affects daily life globally. Therefore, many methods are offered to fight against Covid-19. In this paper, a convolutional neural network algorithm approach was introduced for Covid-19 detection which is an image classification algorithm. Since Covid-19 disease is similar to pneumonia, three classes of data sets such as Covid-19, pneumonia, and normal chest x-ray images were employed in this study. The android app system acts as a disease detector; for every input x-ray image given to the system, the output is generated as information regarding the disease. This android app provides information about covid19, pneumonia, normal, and classifies between two diseases. This System gives information about a particular disease that has been detected through a chest x-ray digital image and shows it within seconds by using our trained model. We merge the android app with deep learning. This app doesn't require the internet for the feature of image classification and personal information is not compulsory. This app is cost-effective. The COVID-19 coronavirus has spread rapidly around the world and has caused global panic. Chest x-ray images can play a major role in confirming positive COVID-19 patients and this can be a faster alternative before getting tested with an RTPCR test within a short duration.

1. INTRODUCTION

The android application is a promising system that gives information regarding the covid-19 or non-covid-19 with a single click of the picture. This method is an application that acts as a guide giving out outputs to the user for each input given to the system. It helps the user with giving the live reports. The User has choices to give their personal information. Users can use the specific feature without compromising their data.

1.1 Image classification

The application smartly analyses the user's x-ray image gives him/her information regarding the disease. This system helps the user to find more about the disease. Image classification is the main feature of this application. It uses a convolutional neural network algorithm. It classifies between covid-19 and pneumonia. It gives clarity about the disease for non-symptomatic patients at early stages. It can be an alternative RTPCR test.

1.2 Alert message

The application also provides an effective solution for users. This Application can give an alert message when a person goes to the place where covid-19 patients are more. It uses government live information fetches data by using API and the number of users came covid-19 positive. It can compute numbers by knowing the place and numbers of positive in that area and finally can conclude sending a message or not.

2. LITERATURE SURVEY

COVID-19 is a virus that transmits from person to person and affects the whole world. This virus, which causes deaths, originally arose in Wuhan The virus most often settled in the lungs and multiplies there. Severe respiratory distress indicates because of this virus. To achieve the solution, the machine learning concept has been ` used, where the model is trained to recognize the place and give out the respective information from the database. With a single click of an image, all the information regarding the image is given as an output to the user. Classification and deep learning concepts of machine learning and artificial intelligence are used efficiently to build a machine that processes the image and gives output as information.

The author of [1] focuses on providing a summarization of major advanced classification methods and techniques have been used for improving classification accuracy, and on discussing important issues affecting the success of image classifications.

The author of [2] reviewed some current advances in deep learning-based image classification. The deep learning technique is an approach to improve the training accuracy yet the cost gets multiplied by utilizing all the more training parameters.

3. EXISTING SYSTEM

In the existing system, all work is done manually and takes 2 or 3 days to get results by using the RTPCR test for normal people. The existing system must use to finalize the result but it takes more time to know the result. Users can use our app to know results in a shorter duration. If the result showing if you are infected then you can get isolated by yourself until the user will get the final result through the existing system. It can help to reduce the spreading of disease.

In our project, we are providing a backbone to all the other existing systems. In our system, we are implementing some additional features like alert messages with the help of Information of location by taking user permission.

3.1 Need for the new system

Currently, many people require our new system because in a situation like this where the pandemic coronavirus affected the world many hospitals refused to take patients which brought great trouble to people. Many people are suffering in these times so an app like ours could help these people to know that they are ok or not. Moreover, nowadays people prefer to make less interaction outside because they fear the current virus and opt for apps like ours to detect their problems. Users can use our app to know results in a shorter duration. If the result shows if you are infected then you can get isolated by yourself until the user will get the final result through the existing system. It can help to reduce the spreading of disease.

The growing deficit between the demand for physicians and the supply has been a growing concern for many countries around the world. The World Health Organization (WHO) estimates that there is a global shortage of 4.3 million physicians, nurses, and other health professionals. Our app can provide support to the existing system.

4. DESIGN AND IMPLEMENTATION

4.1 Proposed system

The proposed system is a simpler and merged version of all different most accessed modules associated with the x-ray image and location of the user. The system retrieves information about the clicked picture through image processing and gives results within seconds. These are getting information about the X-ray analysis and then tell the user what is the result of user input. It can be either normal, pneumonia, or covid-19.

4.2 MODULES

•   **User Registration:** Users can first create an account in the system by registering themselves and then can log in to the system for accessing the services. They can skip the registration process if they don't want to share personal data and still can use the main feature of image classification.

- **Login:** The registered user can now log in and can get access to the full feature of our app.

- **Alert Message:** The user can enable this feature by giving their personal information.

- **Retrieve Information:** The System retrieves information about the clicked picture through image processing.

- **Image classification:** *Users can use this feature without compromising their data.*

- **Live location:** *Users can permit to live location and enable the feature of alert message*

5. CONCLUSIONS

Our project adds emphasis to the immense potential to be harnessed from the intersection of Deep Learning and Medical Diagnostics. The outcomes achieved within a short period were commendable. We also appreciated the technicalities of medical imaging, and more importantly, the challenges with automated diagnosis leveraging analysis of x-ray images by deep neural networks. Ultimately, we hope to build on this project for other diagnoses outside our current target of other lung conditions.

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