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Diseases Prediction Application for Mobile Devices Using ML, CNN, Flutter Technology

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ABSTRACT: Now-a-days, people face various diseases due to environmental conditions and their living habits. So the prediction of diseases at an earlier stage becomes an important task. The accurate decision to finalize the illness on the basis of symptoms becomes too difficult for doctors. The correct prediction and understanding of disease is the most challenging task. Developing a medical system based on machine learning (ML) algorithms for prediction of any disease can help in more accurate results than the conventional method. Medical science has a tremendous amount of data growth per year and thats difficult to manage too. Due to an increased amount of data growth in the medical and healthcare field the accurate analysis on medical data cannot be guaranteed. We proposed general disease prediction based on the x-ray images and symptoms of the patient. We have designed a disease prediction system using Machine Learning algorithms and Neural Network Model. For disease prediction, we have used Logistic Regression and Convolutional neural network (CNN) machine learning algorithms for accurate prediction of disease. For disease prediction required disease symptoms dataset. In this general disease prediction, checkup information and x-ray image of patients considered for the accurate prediction. After general disease prediction, patients can follow the doctors treatments for particular diseases.

KEYWORDS: Machine Learning; Convolutional Neural Network (CNN), Flutter.

I. INTRODUCTION

The process of developing software for mobile and other digital devices, with Android and iOS being the most popular platforms, is known as mobile application development. Many applications can be preinstalled on mobile devices and other digital assistants, downloaded from a mobile app store, or accessible via a mobile web browser. Java, Swift, C#, and HTML are examples of programming and markup languages used in the software development process.

Disease detection is one of the latest trends which have become a critical part of several disease detection applications. Several approaches and techniques have been employed to make the overall disease detection stage much more close to perfection. The studies of diseases can be determined by observable patterns of x-rays and it is critical to monitor health and detect disease within an x-ray. Symptoms of human disease are a visible effect of disease on the human body. The system works in phases, the first one being the training data set. This includes training both healthy as well as diseased data sets. The 2nd phase deals with monitoring the x-rays and identifying the disease using CNN Algorithm.

One of the most common problems faced by today's doctors is spending a lot of time deciding the diseases of different patients. At this stage, doctors and hospital management need the assistant for their personal help, so that this assistant will help the doctors for predicting diseases of the patients. Now disease prediction comes into action. It is a service in which the application will predict if the patient has particular diseases or not. Examples of disease that can be predicted include Heart Disease , Pneumonia,, or COVID-19. The main purpose is to detect the disease present in the x-ray. Using convolutional neural networks (CNN) are implemented in order to detect the infected x-rays. In our proposed solution we identify the disease. Our system will detect the various diseases by processing on the x-rays images datasets. This will help the doctors to provide accurate results while deciding the diseases which the patient is suffering from. Our approach provides the result in a minimum time span with maximum precision and accuracy in comparison to other existing approaches.

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II. LITERATURE SURVEY

Several researchers have carried out their study in the field of Image Processing and Medical Science together and have made many notable discoveries and inventions. Plant Disease Detection Using Image Processing 2015 International Conference on Computing Communication Control and Automation. This system was recommended by Sachin D. Khirade, A. B. Patil. Health monitoring and disease detection on plants is very critical for sustainable agriculture as these may affect farmers to lose their income as they rely on plants for their living. Disease detection prediction process includes and involves the steps like image acquisition, image pre-processing, image segmentation, feature extraction and classification. This system discussed the methods used for the detection of plant diseases using their leaves images. We have referred the above mentioned project as a reference for making a Doctor Assistant system.

III. PROPOSED SYSTEM

The proposed system aims to retrieve an x-ray image or an input of report values to detect disease. As this app is meant for only registered medical professionals there is a user authentication system upfront. While using this application first, they need to login into the system by entering the user ID and password. Then the user can move to a disease dashboard where multiple disease predictors are available. A particular disease predictor can be chosen for confirming the disease that they need to finalize at a moment. They need to upload a picture of a x -ray from the system or input the text fields. Then the uploaded image will be passed for further analysis and feature extraction. Then the steps of image processing to extract the important features of the diseased x-ray will be performed. If the noise is present in the image then it will reduce the noise with the help of an image filtering algorithm. After the noise removal the process of image detection and recognition will be performed. If the disease symptoms are predicted by the algorithm it will display the required results. After checking the diseases they can exit from the application by using the exit button.

IV. FLOWCHART

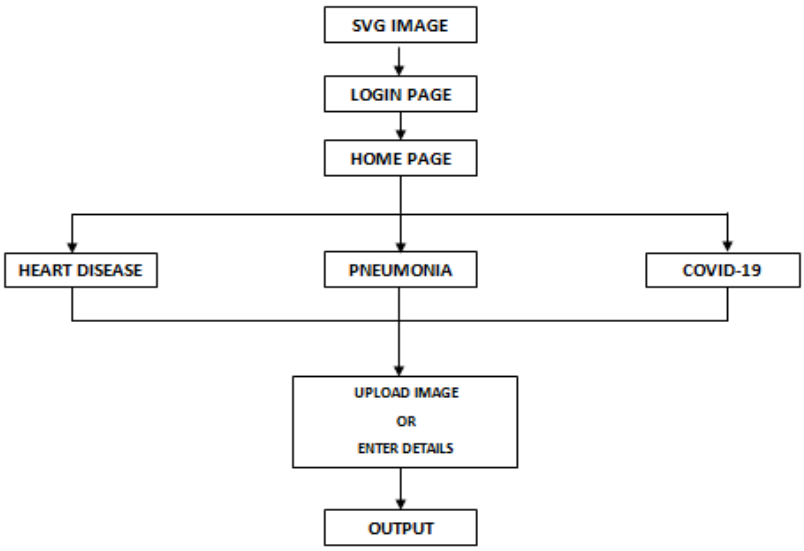

Fig1. Flowchart

V. ADVANTAGES

- Provides high accuracy for various disease predictions.
- Doctors and hospital management can use this application for patients' disease prediction.

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- Flutter technology used in this system provides good performance as compared to other traditional applications.
- Patients can also predict the diseases without consulting the doctors.
- One of the biggest advantages is that it can predict the results by accepting the text input as well as image input.
- Multiple Disease Predictors in a Single Application.
- Ease of Use as the Interface is User Friendly.

VI. CONCLUSION AND FUTURE WORK

The Doctor Assistant System Application is a complete package specially designed for Medical Professionals. In the initial phase of medical practice, it is not expected from them to be perfect in their profession. As there is a lack of experience, predicting a disease of the patient assigned to them is a huge task. The disease being mentioned is not acute diseases but the chronic ones. So coming to a conclusion and moving forward with the desired medication is possible with this prediction system. The so- called “Medical Negligence” that doctors do face sometimes in their professional life can be highly avoided by using this application.scaling down this project further it is sure that with the help of expert technical professionals this application can become a global marketing business product in the future. It will mark a new phase of technical invention where Engineering fast developing technologies will meet hands with Saviours of human life to maintain a sustainable and healthy human population ahead.

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