USE OF MACHINE LEARNING TECHNIQUES TO PREDICT NUMEROUS DISEASES

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Abstract. Many of the machine learning models for health care analysis now in use focus on just one disease at a time. Like one analysis for diabetes, one for cancer, one for heart illness, one for breast cancer, and one for liver disease, etc. A single analysis cannot forecast more than one disease using a same system. In this study, a system that makes use of Naive Bayes Classifier , Random Forest and convolution neural network to predict numerous diseases is proposed. Algorithms for machine learning were employed to implement the study of multiple diseases. Consider seven diseases are Diabetes, Breast cancer, heart disease, kidney, Liver and also included Pneumonia and Malaria. The project objective is to analyses diseases from all angles, taking into report all the factors that contribute to their development, in order to identify the diseases full range of effects, warn patients, and encourage them to seek treatment to sening report results to message through telegram.

Keywords: Naïve Bayes classifier, Random Forest and pneumonia.

1.Introduction

Different Plasmodium parasite species can result in human malaria. More than 95% of cases of malaria are caused by P. falciparum and P. vivax, although other important parasites include P. malaria, P. Knowles, P. ovale Curtis, and P. ovale wallikeri. Microscopists most frequently employ the microscope to find living person red blood cells contain infectious organisms. To detect malaria by interpreting the data provided by the microscope, a microscopist must have the necessary competence, experience, and knowledge; otherwise, the results will not be accurate. It is unusual for the microscope to be able to tell whether a patient's RBCs are malaria-infected or not.
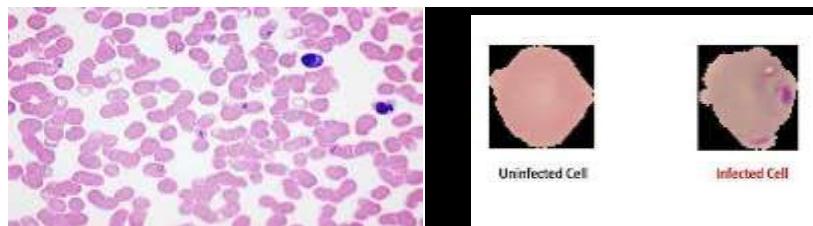

Fig 1 sample Images of Malaria

In addition to detecting lung nodules, chest screening subroutines can also detect pneumonia, effusions, cardiomegaly, and other diseases. Among these, pneumonia is a contagious and fatal illness that affects millions of people, primarily those over the age of 65 and those with chronic illnesses like diabetes or asthma.

2.Literature Review

In [1] Rudra A.Godse, Smita S. Gunja, Karan A. Jagtap**,** Neha S. Mahamuni, Prof. Suchita Wankhade, Vol. 9, Issue 4,April 2020.This paper's objective was to provide information on medical diagnosis based on symptoms to laypeople, new medical professionals, medical students, and anyone else interested in learning more about a particular set of symptoms and diseases. In this paper, looked at the accuracy of this approach for five different diseases, and found that it can be as accurate as 87 % of the time.

In [2] Mitushi Soni, Dr.Seniti Varma, Vol. 9 Issue 09, September-2020 [2]. Diabetes Disease Prediction System, which uses a database of diabetes patients to analyse the disease. They suggest using algorithms like KNN (K-Nearest Neighbor) and Bayesian in this system to apply to a database of diabetes patients and evaluate by explaining to them the different aspects of diabetes ,diabetes disease prediction High glucose levels in the body of a person can result in diabetes.

22 April 2020 [3]: Anji Reddy Vakaa, Badal Sonia, and Sudheer Reddy K. By using machine learning techniques, the strategy for detecting breast cancer presented in this research is innovative. To assess the performance, the authors performed an experimental analysis on a dataset. Results from the suggested strategy are extremely precise and effective.

Muhammad Sadiq, Faraz Akram, and Arslan Javaid 2020 [4]. The categorization and segmentation of skin lesions as benign or malignant using image processing and machine learning is proposed in this work. It is suggested to use a novel strategy based on pixel mean values and standard deviation to expand the contrast of dermoscopic images.

Udara Ekanayake, Damayanthi Herath vol 4 2020 [5]. CKD, or chronic renal disease, is another name for chronic kidney disease, has become a severe problem with an increasing prevalence. A person can only survive for about a week without their kidneys.18 days is a long time, hence a kidney transplant is in high demand. Dialysis is another option.

Archana Singh, Rakesh Kumar, [6]. One of the largest and most important organs in the body is the liver, the heart requires constant care. Most illnesses have a heart component, hence the likelihood of developing heart disease is a comparison research is required for this aim and is most patients in this field currently pass away as a result of their illnesses are identified in the final step due to the lack of precision of instrument, so it's important to understand the more effective.

Rajesh , T Maneesha , Shaik Hafeez, et al., [7]. Given the complexity of the early symptoms, liver infection is a difficult condition to examine. Problems with liver diseases are frequently discovered after the fact of no return because the liver continues to function in any case, whether uncompleted damage
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Shanay Shah, Heeket Mehta, Pankaj Sonawane [8]. Due to their limitations, various Machine Learning models are unable to detect certain diseases, which motivates us to use more sophisticated and precise Deep Learning techniques. Learning Models, especially one with many connections Feature extraction using Convolutional Neural Networks (CNN) extraction method. The models can be improved through pre-training the effectiveness and precision.

Mehtaj Banu H, August 2019, Volume 8, Issue 6 [9]. This paper provides an overview of recent machine learning calculations available for the detection and diagnosis of liver disease.

Iradukunda, Haiying Che Josiane Uwineza , Jean Yves Bayingana1 , Muhammad S Bin-Imam1 Ibrahim Niyonzima1,2019[10]. For the majority of doctors, detecting malaria is a challenging task that calls for experience and knowledge. The solution to this problem is machine learning (ML). This study looks for a model that can accurately and efficiently identify malaria.

 Kartik Thakral, Rahul Nijhawan, Lucky Agarwal, Dimpy Varshni, and 2019 [11]. Humans who have pneumonia, a potentially fatal bacterial disease that affects one or both lungs, are typically infected with the Streptococcus   pneumonia bacteria. According to the World Health Organization, pneumonia is to blame for one in three deaths in India (WHO). Radiotherapists with advanced training are required to evaluate chest X-rays used to diagnose pneumonia. The utilization of ge-scale datasets in image classification applications is significant.

Priyanka Sonar, Prof. K. JayaMalini, [12]. Diabetes is a condition that results in deficit because there is less insulin in the blood. Frequent urination, increased thirst, and hunger are warning signs of elevated will cause a lot of problems.

Archana Singh, Rakesh Kumar, [13]. One of the largest and most important organs in the body is the liver, the heart requires constant care. Most illnesses have a heart component, hence the likelihood of developing heart disease is a comparison research is required for this aim and is most patients in this field currently pass away as a result of their illnesses are identified in the final step due to the lack of precision of instrument, so it's important to understand the more effective.

In[15] M. Banu Priya, P.R. Tamilselvi and P. Laura Juliet 2018.The training dataset, which is made up of 345 instances with 7 different features, was created by gathering data from the UCI repository. This paper discusses findings in the area of data classification With the help of Naive Bayes algorithms. A blood disease called malaria has become a major issue on a global scale. It produces a variety of symptoms, including headaches, nausea, exhaustion, and fever. It can result in yellow skin, diarrhea, excessive sweating, pain in the muscles and joints, convulsions, coma, and death if it is not promptly and effectively treated.

K. Gomathi, D. Shanmuga Priya, (2017)[14]. The effectiveness of two different data mining classification algorithms was assessed in this study in order to choose the most effective classifier for the prediction of various diseases. The development of accurate and computationally effective classifiers for medical applications is a significant challenge in the fields of data mining and machine learning.

3.Proposing System

The suggested system will have a time-saving user interface that is both simple and elegant. Aim for a more focused questionnaire that the system will use in order to make the process quicker. The systems purpose is to serve as a conduit between patients and clinicians. Machine learning will be a crucial element, using methods like Naive Bayes Algorithm, K-Nearest Algorithm, Decision Tree Algorithm, Random Forest Algorithm, and Support Vector Machine. This, when compared, will show which algorithm produces results more quickly and effectively and assist us in making correct forecasts. The suggested system will also include a doctor consultation option. The proposed method will also advise the user to contact a doctor for advice on this report over Telegram after providing the results.

3.1. Advantages Of Proposed System

The same platform for the prediction of 7 main diseases namely Diabetic, breast cancer, heart disease, liver disease, malaria, pneumonia.

- User friendly.

- Simple to use.

- Provides accurate results
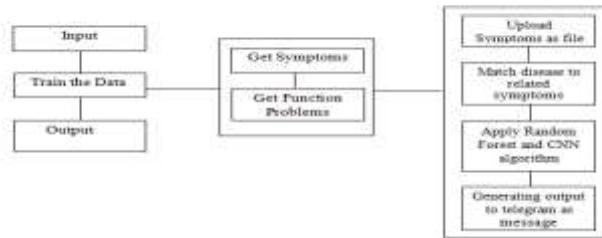
Fig. 2. Overview of the process

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