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Online Medical App Using ML

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Abstract: Disease Prediction Using Machine Learning is the system that is used to predict diseases based on the symptoms that are given by patients or any other user. Disease prediction in humans also means predicting the probability of a patient's disease after examining the combinations of the patient's symptoms. This analysis in the medical industry would lead to a streamlined and expedited treatment of patients. The previous researchers have primarily emphasized machine learning models, mainly Support Vector Machine (SVM), K-nearest neighbors (KNN), for the detection of diseases with symptoms as parameters. However, the data used by the prior researchers for training the model is not transformed, and the model is completely dependent on the symptoms, while their accuracy is poor. Nevertheless, there is a need to design a modified model for better accuracy and early prediction of human disease. The proposed model has improved the efficacy and accuracy of the model by resolving the issue of the earlier researcher's models. The proposed model uses the medical dataset from Kaggle and transforms the data by assigning weights based on their rarity. This dataset is then trained using a combination of machine learning algorithms, including SVM. Neural Network Parallel to this, the history of the patient can be analyzed using the LSTM Algorithm. SVM is then used to conclude the possible disease. The proposed model has achieved better accuracy and reliability as compared to state-of-the-art methods. The proposed model is useful to contribute towards development in the automation of the healthcare industries. It will be connected to Hospital websites, and only an authenticated user (a doctor) will be connected to the main predicting Web-Application for a possible prediction.

I. INTRODUCTION

In the era of the Internet and technologies, people are not concerned about their health and lives. As everyone is interested in surfing and social media activities, they ignore visiting hospitals for their health checkup. By taking this activity as an advantage, a machine learning model that takes the symptoms given as input and predicts the possibility and risk of the disease affected or the development of such diseases in an individual should be developed [13, 14]. The more common chronic diseases are diabetes, cardiovascular diseases, cancer, strokes, hepatitis C, and arthritis.

As these diseases persist for a long time and have a high mortality rate, the diagnosis of such diseases is highly important in the healthcare domain. Foreseeing the disease can help take preventive actions and avoid getting affected by it, and early detection of it can help provide better treatment [15]. There are various techniques in machine learning such as supervised, semisupervised, unsupervised, reinforcement, evolutionary, and deep learning.

The problem is associated with the processing of extracted features from real data and structured as vectors [16]. The processing quality is based on the proper combination of those vectors. But, most of the times, the high dimensionality of the vectors or the discrepancies in the data makes a big issue. Hence, it is important to reduce the dimensionality of the data set even if it leads to a little loss of details to make the data set a highly compatible dimension. This reduction in the dimensionality of the data set improves the model performance [17].

The system of chronic diseases management is essential for those affected by such diseases and in need of proper medical assessment and treatment information [18]. Also, this system can be useful for individuals who are in need of self-care to improve their health condition, since it is proved that self-management is the primary care of those with chronic diseases, and it is considered as the unavoidable part of treatment. With the use of mobile applications, the health information of patients can be recorded, and they serve as a better tool to enable self-management [19].

To effectively predict a disease, information such as narration about the symptoms felt by the patients, details of consultation with medical practitioners, lab examination results, and computed tomography and X-ray images [20].

Little research is performed in identifying the accuracy and predictive power for developing a machine learning model with only information from lab examination results for the diagnosis of diseases.

And, for performance enhancement, ensemble machine learning and deep learning model can be used [21, 22]. In the healthcare domain, artificial intelligence (AI) plays a major role in automating the roles involved in disease diagnosis and treatment suggestions and also schedules perfect timing by the medical practitioners to perform various obligations that cannot be automated [23].

The major objective of the proposed system is to identify and predict chronic disease in an individual using a machine learning approach [24, 25]. The data set comprises both the structured data that includes the patient's age, gender, height, weight, and so on, excluding the patient's personal information such as name and ID, and the unstructured data that includes the patient's symptoms, information related to consultation about the disease with the doctors, and the living habits of that individual [26]. These data are preprocessed for finding the missing values. They are then reconstructed to increase the quality of the model, thereby increasing the prediction accuracy. For prediction, the machine learning algorithms such as CNN and KNN are used [27, 28].

Creating a medical app that utilizes machine learning to predict seasonal diseases based on user symptoms and provides appropriate recommendations is a valuable initiative to assist users in managing their health effectively.

- Symptom Input: Users can input their symptoms into the app via a user-friendly interface. The symptoms can range from common cold symptoms like sneezing and coughing to more severe symptoms associated with diseases like malaria or cholera.
- Machine Learning Prediction: The app utilizes a trained machine learning model to analyze the input symptoms and predict the most likely seasonal disease. The model is trained on a dataset of symptoms and corresponding diseases, covering a wide range of seasonal illnesses.
- Disease Severity Classification: Based on the predicted disease, the app classifies the severity into categories such as mild, moderate, or severe. Diseases like common cold may be categorized as mild, while diseases like malaria or cholera are classified as severe.
- Recommendations and Advice:
- Mild Disease (e.g., Common Cold): If the predicted disease is mild, the app provides recommendations for over-the-counter medicines or home remedies to alleviate symptoms. It may suggest rest, hydration, and specific medications such as antihistamines or decongestants.
- Severe Disease (e.g., Malaria, Cholera): For severe diseases, the app advises users to seek immediate medical attention from a nearby doctor or healthcare facility. It provides information on the urgency of medical intervention and emphasizes the importance of timely treatment.
- Emergency Contacts: The app includes a feature to quickly access emergency contact numbers for local healthcare services, hospitals, or clinics. Users can easily find and contact healthcare providers in case of emergencies or severe symptoms.
- User Profile and History: Users can create profiles within the app to track their symptoms, receive personalized recommendations, and maintain a history of their health conditions and treatments. This feature enables users to monitor their health over time and share relevant information with healthcare providers if necessary.
- Privacy and Security: The app prioritizes user privacy and ensures the secure handling of sensitive health data. It complies with relevant regulations such as HIPAA (Health Insurance Portability and Accountability Act) to safeguard user information and maintain confidentiality.

The app can be deployed on mobile platforms such as iOS and Android, making it accessible to a wide range of users. It can be distributed through app stores or as a web-based application for seamless access across different devices.

HealthGuard provides users with a convenient and reliable tool for predicting seasonal diseases based on symptoms and receiving appropriate recommendations. By leveraging machine learning and personalized health advice, the app empowers users to take proactive steps in managing their health and seeking timely medical assistance when needed.

II. LITEARTURE SURVEY

[1] M. Jiang et al., 2011

This study introduces a **machine-learning-based system** to extract clinical entities and their assertions—such as diagnoses, tests, and treatments—from hospital discharge summaries. The authors implemented a hybrid method combining **heuristic rules with Conditional Random Fields (CRFs)** for entity recognition, achieving an F-score of **0.8391 for concept extraction** and **0.9313 for assertion classification**. The system was evaluated on annotated datasets from a VA NLP challenge and showed that incorporating semantic features and selecting effective ML models significantly enhanced clinical text analysis performance [1].

[2] M. Chen et al., 2017

The authors propose a **CNN-based multimodal disease risk prediction model** that leverages both structured and unstructured hospital data. Focusing on cerebral infarction in a Chinese dataset (2013–2015), they tackled incomplete data using a **latent factor model** and achieved a **prediction accuracy of 94.8%**. Their model outperformed traditional unimodal CNNs in terms of convergence and accuracy, showcasing the effectiveness of combining multiple data sources in medical big data analytics [2].

[3] S. Ambekar and R. Phalnikar, 2018

This paper focuses on **heart disease prediction** using CNNs. The authors first preprocess incomplete data via cleaning and imputation, then apply **Naïve Bayes, KNN**, and a **CNN-based Unimodal Disease Risk Prediction (CNN-UDRP)** algorithm. Their CNN model achieved an accuracy of **over 65%**, highlighting its potential for structured data analysis in early diagnosis, although there's room for improvement compared to more complex models [3].

[4] N. Chetty et al., 2015

The researchers introduce two novel methods for disease prediction using **fuzzy c-means clustering** followed by **KNN** and **fuzzy KNN** classifiers. Applied to **PIMA and Liver Disorder datasets**, these models outperform traditional KNN in terms of classification accuracy. Using ten-fold cross-validation, their **fuzzy KNN-based model** showed improved prediction results, validating the importance of hybrid fuzzy logic and ML approaches in handling medical data [4].

[5] D. Dahiwade et al., 2019

This work presents a **general disease prediction system** using **CNN** and **KNN** algorithms based on symptoms and lifestyle data. Their CNN-based approach achieved **84.5% accuracy**, outperforming KNN both in precision and memory efficiency. The system is aimed at early disease risk detection and classification, offering personalized health insights based on user input, contributing to proactive healthcare management [5].

[6] L. Jena and R. Swain, 2017

Focusing on **chronic kidney disease (CKD)**, this paper evaluates classification models for predicting disease risk from medical datasets. The authors compared multiple distributed classifiers to determine optimal models based on precision, recall, and F-measure. The study underscores the value of machine learning in **predicting chronic diseases** through effective data classification techniques applied to large medical datasets [6].

[7] Kanchan Dhomse and Kishor Mahale, 2016

This paper explores **heart disease prediction** using **Principal Component Analysis (PCA)** to reduce feature dimensionality and improve classification accuracy. It also discusses diabetes prediction using various machine learning algorithms applied to a dataset with over 1800 patient records. The study highlights how PCA enhances the precision of supervised algorithms like SVM, KNN, and decision trees by eliminating redundant data,

making it crucial for large-scale bioinformatics applications [7].

III. PROPOSED METHOD

It is not easy to develop software. Designing software is complicated and time-consuming. process. During the program design life-cycle, programmers customize software for clients. There are situations where programmers often change their designs according to customers' requirements and some other limitations. The design process is unstable and complex, while the requirements of customers are always idealistic. It is imperative to make the right decision when choosing what software to use. Development methodology is used. It is essential to know that building software is not simply about writing some code and then being done.

To begin with, software developers talk to their clients about what they want the software to be and what its major functions are. Then a development methodology is needed. Most companies use the methodologies, which are public; some companies use their own methodologies. Award divides those methodologies into two categories: heavyweight and lightweight. In Awad's words, heavyweight methodology refers to traditional methodologies; the most classical traditional methodology is waterfall, which I will only discuss and compare with agile methodology.

Implementing this Disease Prediction System Using Machine Learning: A Combination of Both Software Development Principles (for the website to be implemented, which will help educate communities with respect to each pathology) and Machine Model (which will involve obtaining the dataset from Kaggle, pre-processing the data, splitting the data into both Testing and training data, and passing this spitted data into a machine learning algorithm) (SVM, LGR, or Deep Neural Network, as the Case may be), then obtaining new data, saving it as a trained vector machine classifier, and hence passing it into an if and else condition that will return either 0 or 1, that is, Patient is having... or Patient is not having..., as the case may be, with respect to the 4 Various Sicknesses.

We have utilized Symptoms and Diseases dataset to train different machine learning algorithms like SVM, Random Forest and KNN. Each algorithm performance is evaluated in terms of accuracy, precision, recall and FSCORE. After training user can input symptoms and then ML algorithm will predict Disease and recommended medicines related to predicted disease.

To implement this project we have designed two modules

1) Admin: admin can login to system using username and password as 'admin' and then can add 'Hospitals, Pharmacy, Diagnostic centres'. Each location will be define with latitude and longitude so user can view hospital or pharmacy details on maps also. In web application there is no location available like MOBILE GPS so admin will add latitude and longitude then user can see all hospitals with addresses and can see location in map also. Admin will add disease and suitable medicines so user can get those medicines as prescription upon disease predicted.
2) User Signup: user can sign up with the application
3) User Login: user can login to system and can view hospital, pharmacy, diagnostic details and can predict disease based on symptoms.

To train ML algorithm we are using below dataset

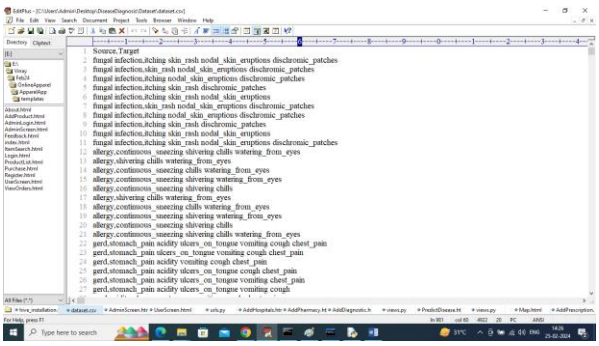

Fig.3.1 dataset

In above dataset screen source column contains Disease Name and Target column contains symptoms and then will train ML algorithm on above dataset and evaluate performance.

To run project install MYSQL and then copy content from DB.txt file and then paste in MYSQL console to create database. Install Python3.7.0 and then install packages given in requirements.txt file.

IV. RESULTS

Double click on run.bat file to start python web server and get below page

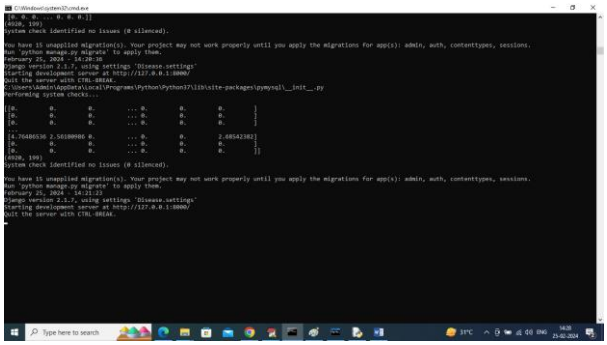

Fig.4.1 python web server

In above screen python web server started and now open browser and enter URL as http://127.0.0.1:8000/index.html and press enter key to get below page

Fig.4.2 Admin Login

In above screen click on 'Admin Login' link to get below login page

Fig.4.3 admin is login

In above screen admin is login and after login will get below page

Fig.4.4 Train ML Model'

In above screen admin can click on 'Train ML Model' link to train ML algorithm and get below output

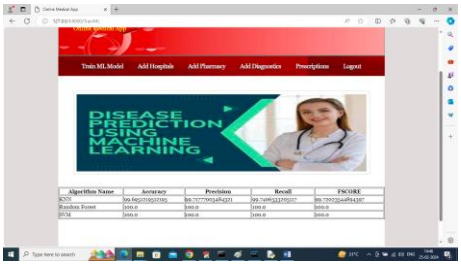

Fig.4.5 performance of each ML algorithm

In above screen can see performance of each ML algorithm and in all algorithm SVM and Random Forest performing best with 100% accuracy and now click on 'Add Hospital' link to add hospital details and get below output

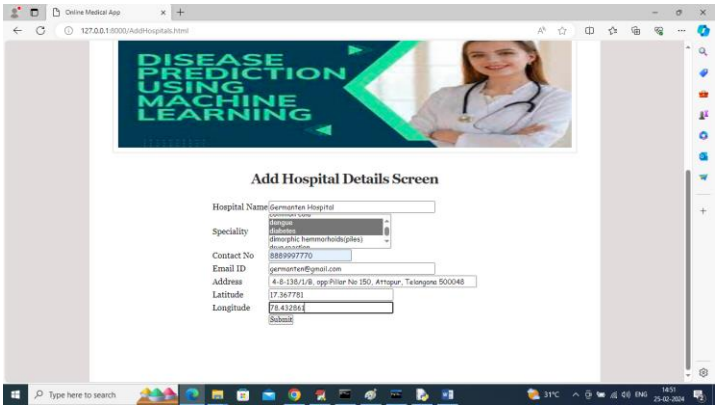

Fig.4.6 admin will add hospital details

In above screen admin will add hospital details and in speciality we can select all disease names by holding CTRL key which hospital is treating and then rom Google can collect latitude and longitude and then press button to get below output

Fig.4.7 Add Pharmacy

In above screen hospital details added and now click on 'Add Pharmacy' link to add pharmacy details

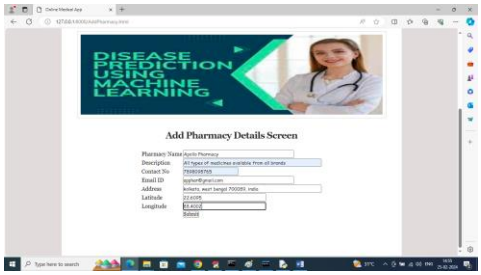

Fig.4.8 adding pharmacy details

In above screen adding pharmacy details and then press button to get below page

Fig.4.9 Add Diagnostic

In above screen pharmacy details added and now click on 'Add Diagnostic' link to add diagnostic centres details

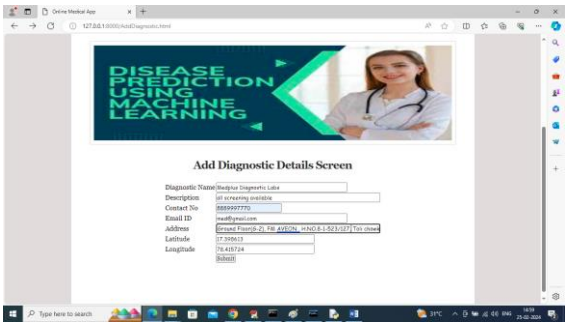

Fig.4.10 adding diagnostic centres details

In above screen adding diagnostic centres details and then press button to get below page

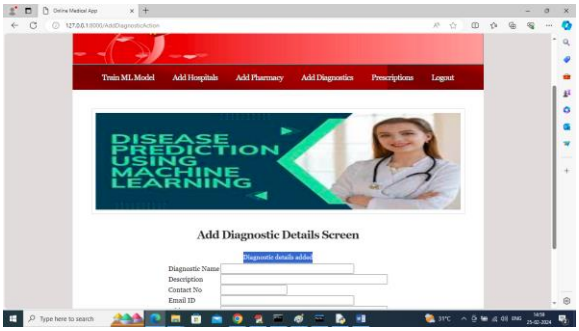

Fig.4.11 diagnostic centres details

In above screen diagnostic centres details added and now click on 'Prescription' link to add disease and medicines details

Fig.4.12 admin will add 'Disease name'

In above screen admin will add 'Disease name' and its medicines so application can suggest medicine upon disease predicted and now click on button to get below page

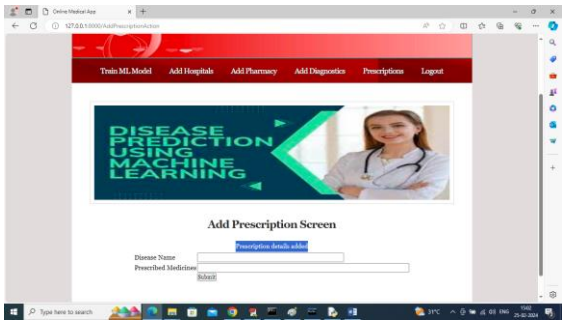

Fig.4.13 medicine details added

In above screen medicine details added and now logout and signup new user

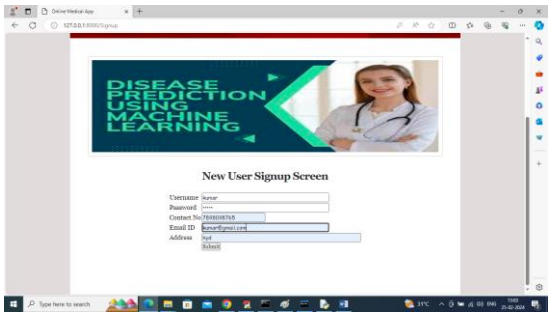

Fig.4.14 user will enter sign up details

In above screen user will enter sign up details and then press button to register user

Fig.4.15 user sign up completed

In above screen user sign up completed and now click on 'User Login' link to get below page

Fig.4.16 user is login

In above screen user is login and after login will get below page

Fig.4.17 Hospitals' link

In above screen user can click on 'Hospitals' link to get list of hospitals with addresses so he can understand his location and hospital address

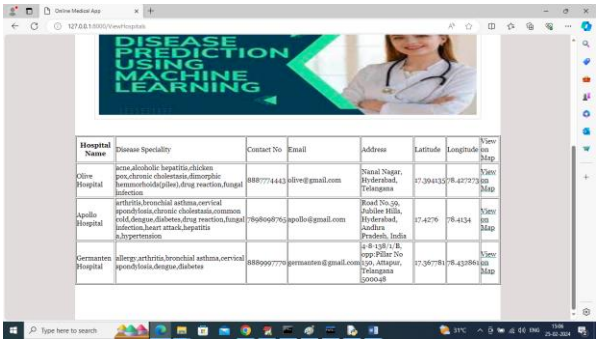

Fig.4.18 list of available hospitals

In above screen user will see list of available hospitals and can click on 'View on Map' link to view hospital on map and get below page

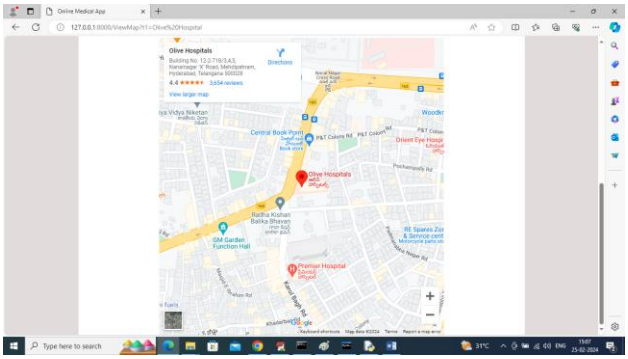

Fig.4.19 hospital details on maps

In above screen user will see hospital details on maps and similarly user can see all pharmacy and diagnostic details

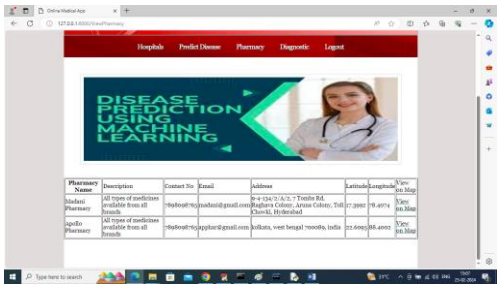

Fig.4.20 list of available pharmacy details

In above screen user can see list of available pharmacy details

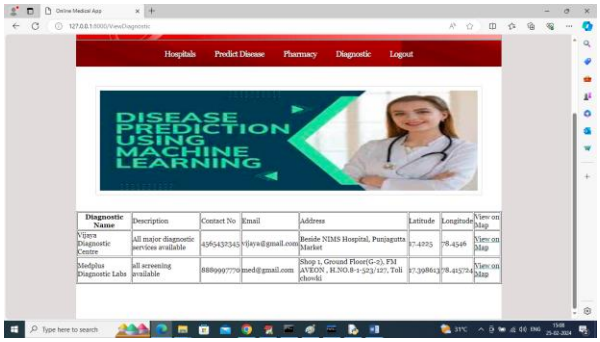

Fig.4.21 list of available diagnostic details

In above screen user can see list of available diagnostic details and now click on 'Predict Disease' link to get below page

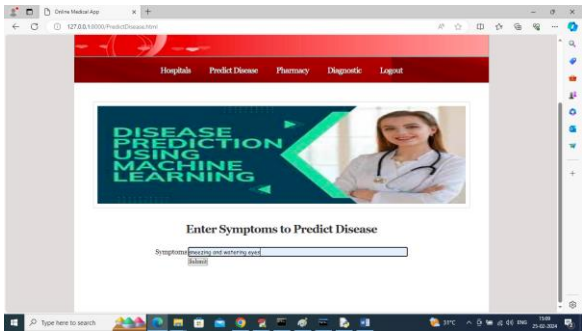

Fig.4.22 entered symptoms as 'sneezing and watering eyes

In above screen I entered symptoms as 'sneezing and watering eyes' and then click button to get below page

Fig.4.23 Disease along with recommended medicines

In above screen in blue colour text can see predicted Disease along with recommended medicines and based on that user can view list of hospitals. Similarly you can enter some symptoms and get result

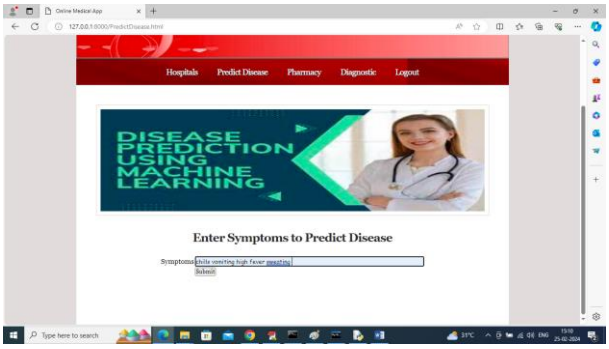

Fig.4.24 entered some other symptoms

In above screen entered some other symptoms and then press button to get below page

Fig.4.25 predicted disease is "malaria"

In above screen predicted disease is "malaria" and below is another example

Fig.4.26 entered some other medicines

In above screen entered some other medicines and then press button to get below output

Fig.4.27 predicted disease is 'Pneumonia'

In above screen predicted disease is 'Pneumonia'.

Similarly by following above screens you can run entire application

Note: you ask to show nearby hospitals but for that we need to take user location from GPS and then compare distance to get nearby hospitals but web application will not have GPS so we are manually entering latitude and longitude so user can see hospital in maps.

V. CONCLUSION

This project aims to predict disease based on symptoms. The project is set up in such a way that the device takes the approver's symptoms (a medical doctor's) as input and generates an output, which is disease prediction. A prediction accuracy probability of 95% is obtained on average. The GRAILS system was used to successfully incorporate the disease predictor. In order not only to predict sickness but also to eradicate or reduce its propagation, a front-end website was also implemented where any user would be able to be informed concerning various diseases, especially the most prevalent ones, and how they are transmitted. In case the user has more questions, on the Contact Us page, there is a form that the user will have to fill out and will be contacted a few days later by a Nurse, doctor, or any other healthcare professional depending on the nature of his or her Questions. The application can therefore be mounted or added to any Hospital website where needed.

REFERENCES

[1] M. Jiang, Y. Chen, M. Liu, S. T. Rosenbloom, S. Mani, J. C. Denny, and H. Xu, "A study of machine-learning-based approaches to extract clinical entities and their assertions from discharge summaries," J. Am Med Inform Assoc, vol. 18, no. 5, pp. 601–606, 2011.

[2] M. Chen, Y. Hao, K. Hwang, L. Wang, and L. Wang,"Disease prediction by machine learning over big data from healthcare communities" IEEE Access, vol. 5, no.1, pp.8869–8879, 2017.

[3] Sayali Ambekar, Rashmi Phalnikar, "Disease RiskPrediction by Using Convolutional Neural Network" IEEE, 978-1-5386-5257-2/18, 2018.

[4] Naganna Chetty, Kunwar Singh Vaisla and Nagamma Patil, "An Improved Method for Disease Predictionusing Fuzzy Approach" IEEE, DOI 10.1109/ICACCE.2015.67, pp. 569-572, 2015.

[5] Dhiraj Dahiwade, Gajanan Patle and Ektaa Meshram, "Designing Disease Prediction Model Using Machine Learning Approach" IEEE Xplore Part Number: CFP19K25-ART; ISBN: 978-1-5386-7808-4, pp. 1211-1215, 2019.

[6] Lambodar Jena and Ramakrushna Swain, "ChronicDisease Risk Prediction using Distributed Machine Learning Classifiers" IEEE, 978- 1-5386-2924-6/17, pp. 170-173, 2017.

[7] Dhomse Kanchan B. and Mahale Kishor M., "Study of Machine Learning Algorithms for Special Disease Prediction using Principal of Component Analysis" IEEE, 978-1-5090-0467-6/16, pp. 5-10, 2016.

[8] Ankita Dewan and Meghna Sharma, "Prediction of Heart Disease Using a Hybrid Technique in Data Mining Classification" IEEE, 978-9- 3805-4416-8/15, pp. 704-706, 2015.