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Android Application for Disease Prediction and Medical Prescription

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Abstract

Android Application for Disease Prediction and Medical Prescription contains different health diseases based on their appropriate symptoms and related prescriptions (Medicines) to be taken in order to prevent those diseases. This Application is helpful in urgent / emergency cases if the hospitals are far from their residence and if doctors are not available in right time and area. The patient scan easily identifies the disease by just providing their issues/symptoms and the Application generates what disease he/she may be infected from. It also guides them to be safe and what are the steps to be followed to be away from those diseases. This is most useful to the middle and lower class people in terms of the doctor's fee, here they can know about the diseases and related medicines to be taken. Due to large amount of data grow thin biomedical and healthcare field providing accurate analysis of medical data that has benefits from early detection, patient care, and community services. Users can post their queries in order to seek information regarding diseases so that user get the proper answer to any kind of question and solving any problem related to the disease. This project allows not only disease prediction but also searching nearby hospitals, ordering medicines, nearest medical shops, vitamins/supplements and feedback of ordered medicines from v the customers.

Keywords: *Exploratory Data Analysis, Disease Prediction, Flutter Development, Medical Services.*

I. INTRODUCTION

The medical care zone produces enormous amounts of measurements every day that can be utilized to extricate experiences for foreseeing ailment. These secret bits of knowledge in the medical services information could be utilized for powerful dynamics for an individual's wellbeing. Likewise, those districts need improvement with the guide of the utilization of enlightening records in medical services. Clinical offices should be prevalent so better choices for patient examination and treatment choices might be made. Machine Learning in medical services assists individuals with creating enormous and complex logical datasets then look at them into clinical bits of knowledge. This could likewise be employed by means of doctors in bestowing valuable clinical assets. Thus, Machine Learning when executed in medical care can cause an expansion in an individual's
pleasure
.

This application is very much useful for medical fraternity where it saves the time consumption and avoids the paperwork trouble. By utilizing this application; the patient's record scan best ored and maintained easily instead of understanding the manually documented prescription which is written by the doctor. With a single touch the doctors can prescribe the medicines electronically, by entering the accurate course instructions.

2. Literature Review

Dr. Mahboob Khan published a paper "Smart Health Prediction using Data Mining" states that, Data mining requires appropriate technology and analytical techniques as well as systems for reporting and tracking which can enable measuring of results. Data mining once started, represents continuous cycle of

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knowledge discovery. For organizations it presents one of the key things that helps to create a good business strategy. Primary potential of this technique lies in the possibility for research of hidden patterns in data sets in healthcare domain. Healthcare institutions that use data mining applications have the possibility to predict the future requests, needs, desires and conditions of the patients and to make adequate and optimal decisions about their treatments.

Daniel Lowd and Pedro Domingos published a paper "Naive Bayes Model For Probability Distribution" states that, Naive Bayes models has been widely used for clustering and classification. Naive Bayes models learned using EM have accuracy and learning time comparable to Bayesian networks with context-specific Independence. Experiments on a large number of datasets shows that they are similarly accurate, but naive Bayes inference is orders of magnitude faster. Direction for future work includes refining our NBE algorithm, extending it to relational domains and applying it to new real-world problems.

Sujatha, Sumathy and Anitha Nithya published a paper "A Survey of Health Care Prediction Using Data Mining" states that Data mining is one of the most motivating areas of research that is become increasingly popular in health organization it is a new powerful technology which is of high interest in computer world. It makes use of artificial intelligence machine learning and database management.The different parameters included in data mining include clustering, forecasting, path analyse data mining requires appropriate technology and analytical techniques as well as systems of reporting and tracking which can enable measuring of result data mining once started represents continuous cycle of knowledge discovery.

Pei-Fang Tasi, I-Sheng chen and Pothoven K published a paper "Development of handheld healthcare information system in an outpatient physical therapy clinic" states that, The purpose of this handheld health care information system is to record medical processes and patient appointment. With the tablet and smart phone development, the development of mobile applications has become more desirable and diversified in users perspective. During the App development the medical systems environment characteristics were observed and a scenario stimulation method was used in the comparison of efficiency between traditional paper-based approach and App system.

3. Methodology

Registration

Here the user or patient is going to register in the registration form by filling all the necessary details which is provided in the form like Name, Age, and Gender etc. Patients would require registering themselves for the first time with their username and password to use the system.

Admin Login

Admin will login into database using his login Id and password. Admin can add new diseases and their symptoms to the database. He can also view the details of the patient who had accessed the system.

Patient Login

After completion of successful registration then the patient or user have to login by providing their user name and password. Login is an android application which provides interface to the user. For the patient login there would be two parts, one is for the new registration and one for the already registered user. Here users have to give email and password to login to the system. We had used SQLite database which is used to save patient details.

Selection of Symptoms

User can select the symptoms which they are having to predict their disease. Patient will specify the symptoms caused due to his illness.

Finding of Disease

According to those symptoms which are selected by the user, System will ask certain question regarding his illness and system predicts the disease based on the symptoms specified by the patient and by using efficient data which performs prediction on the basis of probability on a large datasets.

Medical Prescription

Electronic prescription is a framework that allows physicians and other medical practitioners to write and send prescriptions to a participating pharmacy electronically instead of using handwritten prescriptions. The prescriptions that which are prescribed by the doctor can be retrieved from the database. Usage of manual prescription may lead to privacy issues. So, this application will provide the security for the data as

well as medication process of the patients. Finally, medicine names are to be displayed based on the predicted disease.

Model Fitting

After the training is finished, the test data is utilized to fit the model.

Model Evaluation

The test model, which currently contains the predicted values, is contrasted with the actual values and surveyed utilizing a few performance matrices. The accuracy score and confusion matrix are utilized to survey execution. On the off chance that the outcomes are agreeable, the undertaking will be finished; on the off chance that they are not, the interaction will return to the hyper parameter tuning stage, where new parameters will be given into the model, and the cycle will be rehashed until good outcomes are obtained.

Model Deployment

When the desired accuracies are met with the model then the model is passed through pickling and then it is deployed with the help of a web app and an android application.

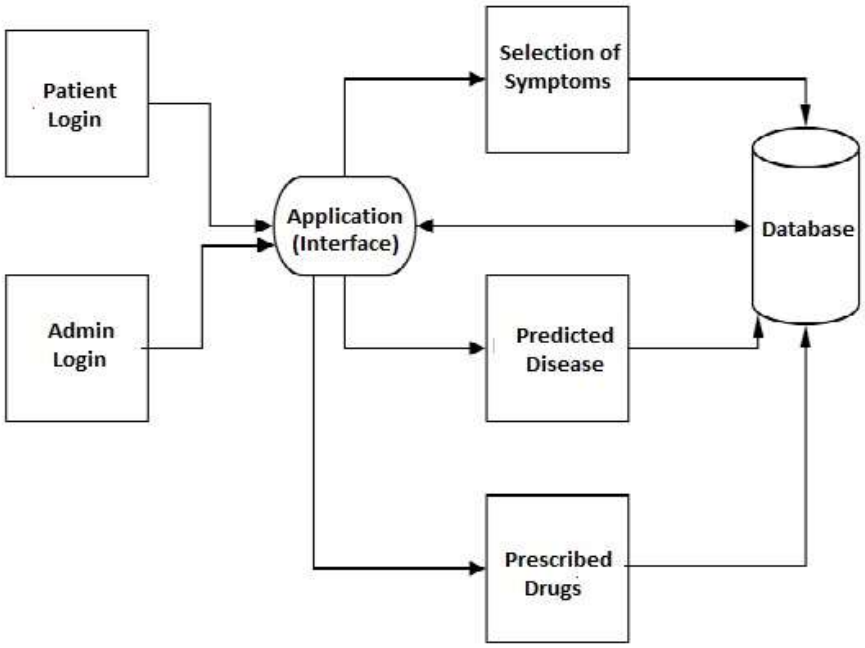


Fig : Data Flow Architecture of the System

4. Implementation

Implementing Flask API

We are using Flask to deploy our machine learning models, so that we can call our machine learning models by creating HTTP requests from anywhere. Pickling is used to dump our trained machine learning models so that its instance can be stored in byte stream and while using these models we do not need to rerun the whole process, simply we use the predict method to make our prediction. These pickled models are going to be in flask application. We can predict disease on the basis of symptoms which can be given by the HTTP POST request. We can extract the symptoms from the request and give it to the predicted method of the trained models. Predicted Disease is returned by the models and then we send this predicted disease as a response.

Application Development using Android

We are going to use Flutter for our Application Development. Flutter is a cross platform software development kit which is developed by Google. Android uses Dart as its primary language which has syntax like C++,JAVA. Flutter apps majorly deals with widgets, it has a wide range of pre-built widgets which can make it easier to develop applications.

We are creating our app in such a way users can login and select the symptoms that his/her body shows. Then these symptoms are going to the flask web app by making HTTP post requests. Then Our flask app extracts the disease from the request and gives to the pickled machine models in the form of input to the predict method of the individual trained algorithm. Then this predict method returns the predicted disease. Flask App makes a dictionary of these predicted diseases which comes from the different machine learning models and returns an HTTP response to the Flutter application. Then this application shows the predicted disease and recommends some precautions and exercise/yoga asanas based on predicted disease.

5. Results and Discussion

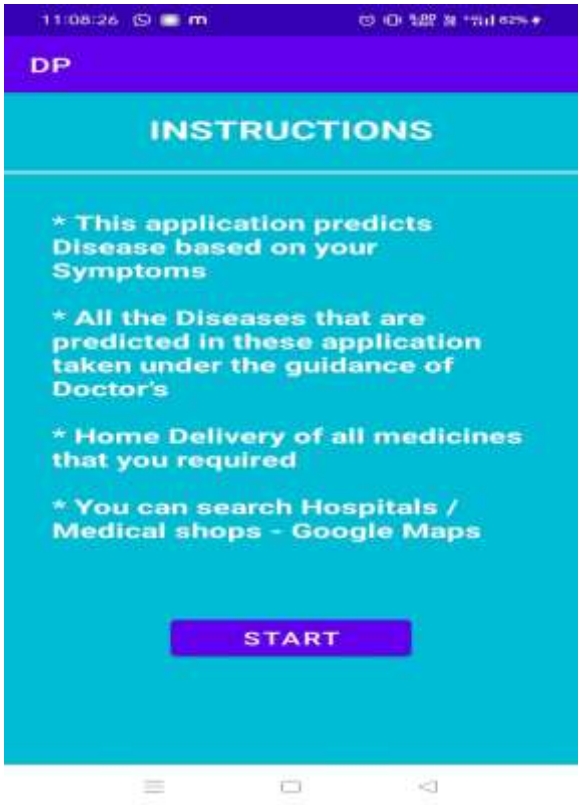


Fig 1: Instructions to user

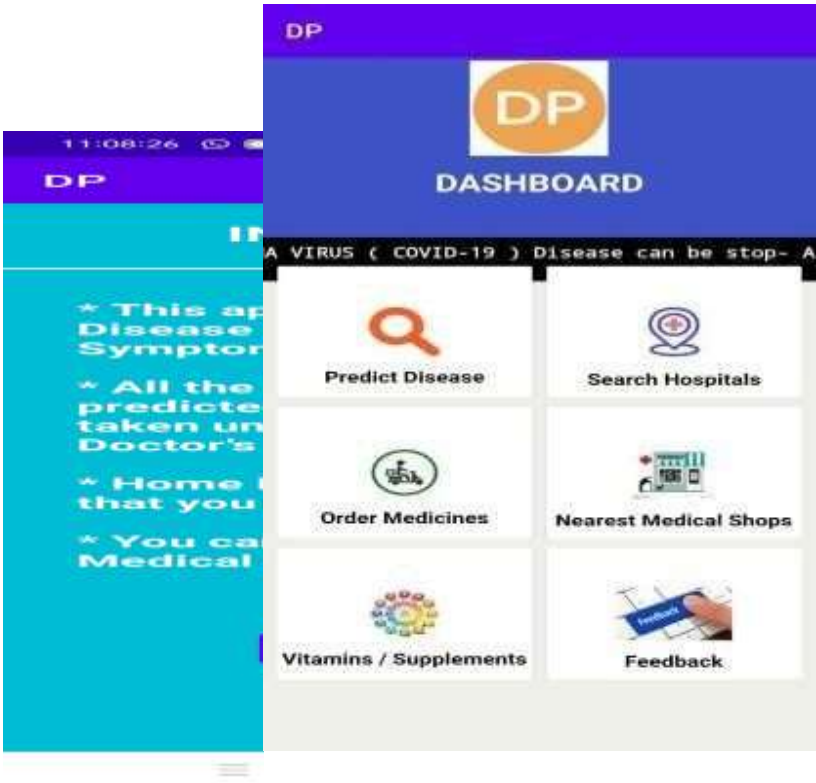


Fig2: Dashboard

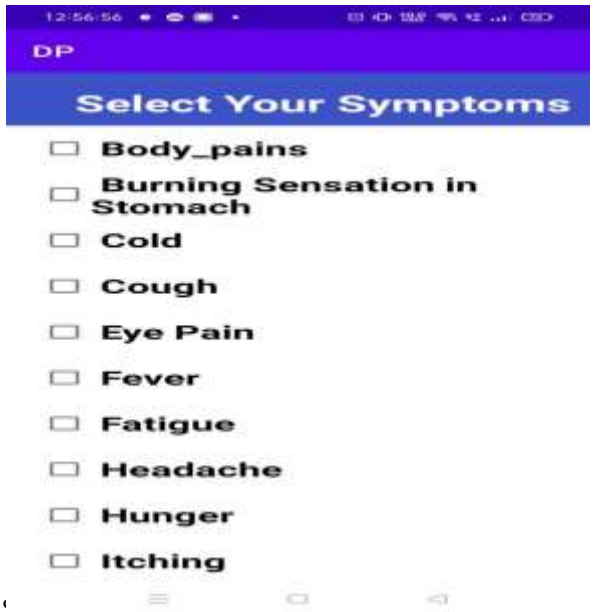


Fig3: List of Symptoms

Fig4:Prediction of Disease

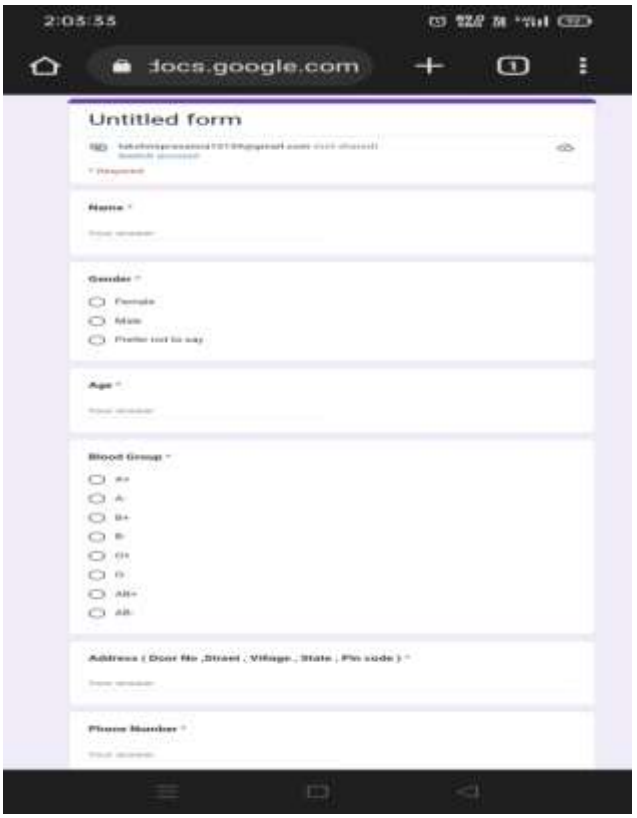
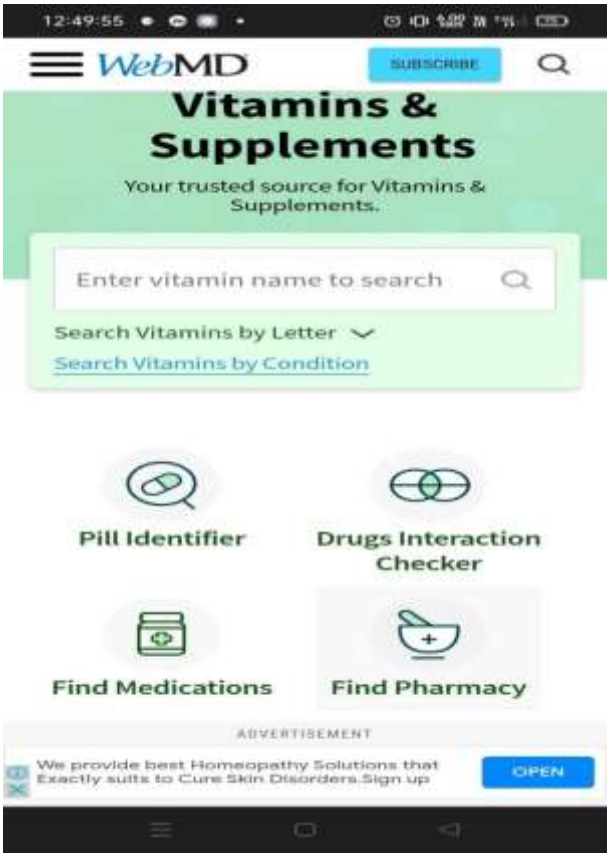


Fig5: Nearest Hospital

Fig6: Order Medicines



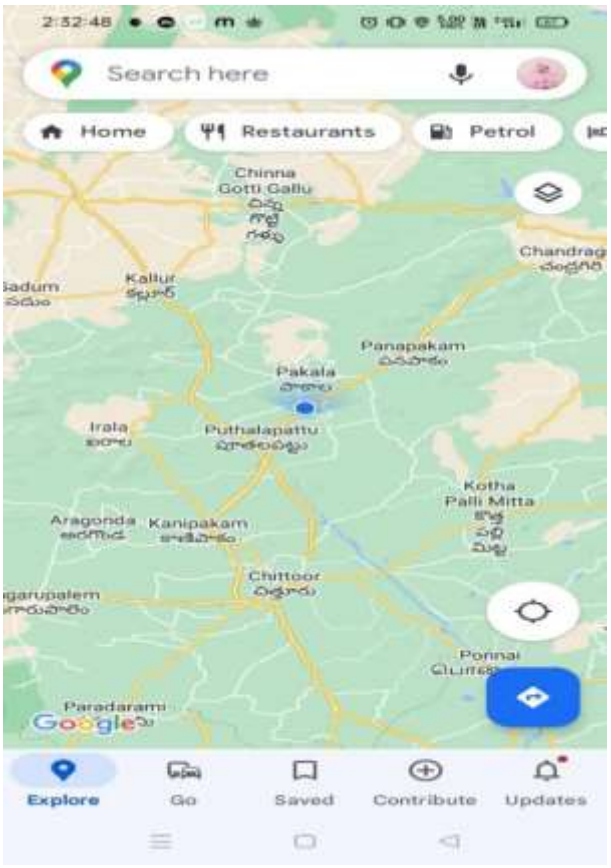


Fig7: Nearest Pharmacy
Fig8: Vitamins and Supplements

6. Conclusion and Future Scope

The manual prescription can be enhanced to the electronic prescription as described. This helps to reduce the burden of manual documented prescription which are prescribed by the doctors. Moreover, the patient's record can be maintained efficiently. It will also provide an intuitive form to the patients of understanding the prescription and also enhance the knowledge of the medicine. This application reduces the chances of misinterpretation of prescription which contains the medicines names as they are no than written.

In future, To increase the accuracy and efficiency so that patients can get direct help and also Management of disease related data. In our project the following are the draw backs that can be resolved in future.

- We can include SMS alert.
- We can include E-mail OTP security.
- We can include online transactions

References

1. Parajuli, Anil. " DR Mahboob Khan(PhD) "Smart Health Prediction using Data Mining" International Journal of Advanced Research in Computer Engineering & Technology (IJARCET).
2. Daniel Lowd , Pedro Domingos "Naïve Bayes Model For Probability Distribution" , Department of Computer Science and Engineering, University of Washington, Seattle, WA 98195-2350, USA
3. Sujatha, Sumathy, Anitha Nithya c, International Journal of Innovative Research in Science, Engineering and Technology Vol. 5, Issue 8, August 2016
4. Pei-Fang Tasi, I-Sheng chen, Pothoven K ―Development of handheld healthcare information system in an outpatient physical therapy clinic‖ Proceedings of the 2014 IEEE 18th International Conference, 21-23 May 2014.
5. Ball Chadwick D.W, Mundy D ―Patient Privacy In Electronic Prescription Transfer‖ Date of Publication: Mar-Apr 2003 Date of Current Version :08 April 2003, Issue Date: Mar-Apr 2003, Sponsored by: IEEE Computer, Publisher: IEEE.
6. B. Struif German Ministry of Health. ―German Health Professional Card and Security Module Card Part 2‖: HPC Applications and Functions, vol. 2.1.
7. S. Sharples and A. Woodhead, "Improving Security: Electronic Transfer of Prescription Data in Primary Care", British J. Healthcare Computing and Information Management, vol. 13, no. 1, 1996.
8. B. Dhanalaxmi, G. Apparao Naidu, and K. Anuradha, ―Defect Classification using Relational Association Rule Mining based on Fuzzy Classifier along with Modified Articial Bee Colony Algorithm,‖ Indian Journal of Applied Engineering Research, Vol. 12, Number 11, June 2017, pp 2879-2886.
9. B. Dhanalaxmi, G. Apparao Naidu, and K. Anuradha, ―A Fault Prediction Approach based

on the Probabilistic Model for Improvising Software Inspection,‖ Indians Journal of Science and Technology, Vol. 9, Issue 45, December 2016.

10. C. Siva Ram Murthy and B. S. Manoj ―Ad Hoc Wireless Networks Architectures and Protocols 2004‖: Prentice-Hall.
11. R. Foot and L. Taylor "Electronic prescribing and patient records—Getting the balance right‖, Pharm. J., 2005

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