AAROGYACHAR: An Alternate Therapy

Ajinkya Valanjoo
Dept. of Artificial Intelligence and Data Science
Vivekanand Education Society's Institute of Technology
Mumbai, India

Vijayalakhsmi, PhD
Dept. of Artificial Intelligence and Data Science
Vivekanand Education Society's Institute of Technology
Mumbai, India

Manas Mahajan
Dept. of Artificial Intelligence and Data Science
Vivekanand Education Society's Institute of Technology
Mumbai, India

Prathmesh Dubey
Dept. of Artificial Intelligence and Data Science
Vivekanand Education Society's Institute of Technology
Mumbai, India

Sahil Gupta
Dept. of Artificial Intelligence and Data Science
Vivekanand Education Society's Institute of Technology
Mumbai, India

Swayam Gaikwad
Dept. of Artificial Intelligence and Data Science
Vivekanand Education Society's Institute of Technology
Mumbai, India

ABSTRACT

In India, the healthcare system is characterized by significant inequalities in healthcare delivery and changing disease patterns, which have led to a dual burden of communicable and non-communicable diseases. The majority of people in India turn to private healthcare providers due to poor access to public healthcare and low-quality services. However, private healthcare is often expensive, unregulated, and of variable quality, making it unreliable for the illiterate and unaffordable for low-income rural populations. The healthcare sector faces numerous challenges, including poor quality of care, limited access to facilities, poor accountability, and lack of awareness.

To address these challenges, a healthcare project has been developed that provides urgent medical assistance to those who cannot visit a doctor in person. The project is especially useful for people living in remote regions where access to medical services is limited. Additionally, the project offers home remedies in some cases, potentially reducing the need for a visit to a doctor altogether.

General Terms

Probability, Recommendation, Python, application, Naive-Bayes Algorithm.

Keywords

Medical Symptoms, Remedies, Disease Prediction, Medicine Suggestion, Naive-Bayes Algorithm.

1. INTRODUCTION

AAROGYACHAR - An Alternate Therapy is an e-pharmacy project designed to address the prevalence of self-medication in rural areas. Self-medication, or the use of drugs without a prescription or medical advice, is common in developing countries. Patients diagnose their own illness and purchase drugs from medical shops to treat it. However, self-medication can be dangerous as it may lead to drug interactions and adverse effects. Studies on self-medication patterns and non-doctor prescribing in India are limited, but one study reported an increase in adverse drug reactions due to self-medication. Increasing healthcare costs and poor socio-economic conditions in rural areas may contribute to the use of self-medication. NSAIDs are the most used drugs for self-medication according to previous studies.[2]

The AAROGYACHAR offers an interface that provides precise instructions on what medications or treatments to take based on the user's symptoms. This can help reduce the risks associated with self-medication by providing accurate information and guidance to those who do not have access to medical professionals.

2. PROBLEM STATEMENT

People who reside in rural locations find it challenging to access professional medical care. Thus, they prevail on self-medication, which increases the risk to their health. This needs prompt legislative action, which we can solve through our app.

People in remote areas without many doctors can use this app to treat themselves, and in certain circumstances they won't even need to see a doctor because it also offers home cures.

3. OBJECTIVE

The objective is to create a recommendation-based application in the medical field. When a user is ill, they can enter their symptoms on our app, and the AI software will then propose medications based on those symptoms. In this scenario, our app will serve as an interface for user interaction with the AI software.

To prevent any negative effects, it will also ask for their medical history as soon as they log in. Home cures will also be offered to the user, who can use them to treat their sickness or alleviate its symptoms.

4. SCOPE OF PROJECT

People who live in distant places or in areas where there is little access to medical care often find it difficult to seek professional medical treatment and instead rely on self-medication, which puts their health at danger. The main reasons reported for self-medication were having an old prescription (41.6%), and the top indication was fever (39.4%). Non-Steroidal Anti-Inflammatory Agents (NSAIDs) were the most commonly self-medicated category of drugs (40.7%) [1]. We can address this through our app and urge fast legislative action.

Our software has no age restrictions, so anyone with any illness or symptom they encounter and want to treat can use it.

Some of the future enhancements in the app:

● A separate section of the app will offer dietary recommendations for what to eat to recover more quickly and what to avoid.

● An online appointment with the nearby Health Care Professional

● The application could provide a section for online pharmaceutical purchase.

● Deploy strategic networks with compelling e- business needs.

5. RELATED WORK

Practo is a prior technology utilized in this industry that we used as a reference.

Practo is an application that derives its recommendation from human intelligence. With the help of this app, you may schedule a doctor's appointment, engage in a live video conversation with the doctor, and receive treatment recommendations depending on your symptoms.

Practo is revolutionizing healthcare by enabling consumers to find the best doctors, book instant appointments, consultations, and make better, more informed health decisions. We intend to substitute artificial intelligence for human intelligence in our app.

6. PROPOSED SYSTEM

The suggested system uses the Python Multinomial Naive Bayes algorithm to build a disease prediction model. Whereas the model will be trained and tested using a dataset including diseases and their accompanying symptoms. The dataset we select would go through preprocessing to manage missing values, clean, and normalize the data, and transform categorical variables into numerical features. The training set will be used to train the Multinomial Naive Bayes model after we have divided the dataset into training and testing sets. Metrics like accuracy, precision, recall, and F1-score will be used to evaluate the trained model on the testing set in order to judge the caliber of the predictions. Additionally, in order to better understand the connections between the diseases and their symptoms, we will visualize the data using tools like matplotlib and Seaborn as well as construct a 3D plot of the data using mpl_toolkits.mplot3d.

6.1. Data Preparation

We used three datasets from the Kaggle website for data preparation, testing, and training: diseases, symptoms, precautions, and drugs.[3]

6.2. Algorithm

The algorithm used is Multinomial Naive Bayes algorithm in Python, along with various supporting packages including mpl_toolkits.mplot3d, sklearn.preprocessing, numpy, pandas, os, pickle, streamlit, and base64. Naive Bayes is a classification algorithm that relies on Bayes' Theorem, which assumes independence among the predictors. This means that the presence of a feature in a class is not related to any other feature. Naive Bayes is capable of handling both binary and multi-class classification problems.

Bayes' Theorem is a statistical tool that describes the probability of an event based on prior knowledge of conditions that may be related to it. For instance, if we have a hypothesis (H) and evidence (E), Bayes' Theorem can help us calculate the probability of the hypothesis before (P(H)) and after (P(H|E)) obtaining the evidence. [4] The formula is as follows:

$$P(H|E) = P(E|H) * P(H)/P(E)$$

Prior probability = P(H) is the probability before getting the evidence
Posterior probability = P(H|E) is the probability after getting evidence.

6.3. Mobile App

A mobile app will be used by the user wherein the user first login with the help of the credentials, and then further they fill out a medical form just to have an information about the past medications they have been taking so as to avoid any kind of major issues. Further they see the option to upload their symptoms and then check the disease they may be suffering from and to get the suggestion of medicine. They also have an option to book an appointment with nearest doctors just in case they may have some severe conditions which need to be addressed by a doctor in person itself.

The user must first log in to the mobile app using their email address before being directed to our home page. Here, the user has the ability to fill out previous medical forms, schedule an appointment, and diagnose problems through symptoms and get necessary precautions and medications for the same.
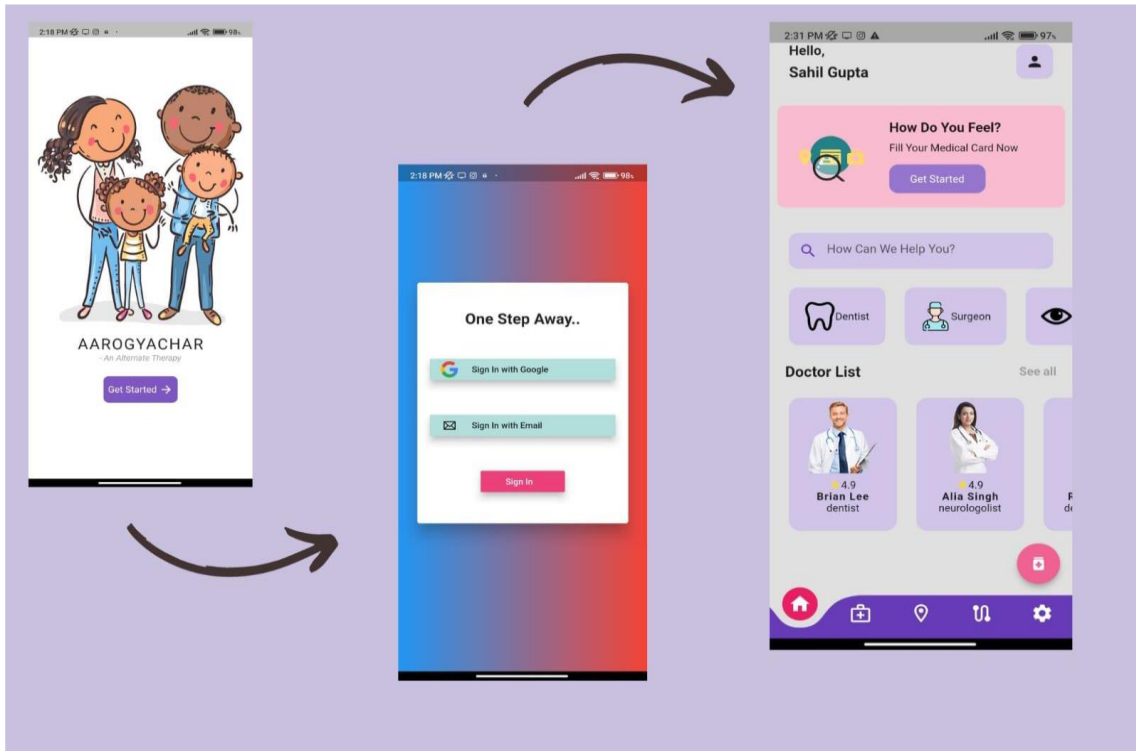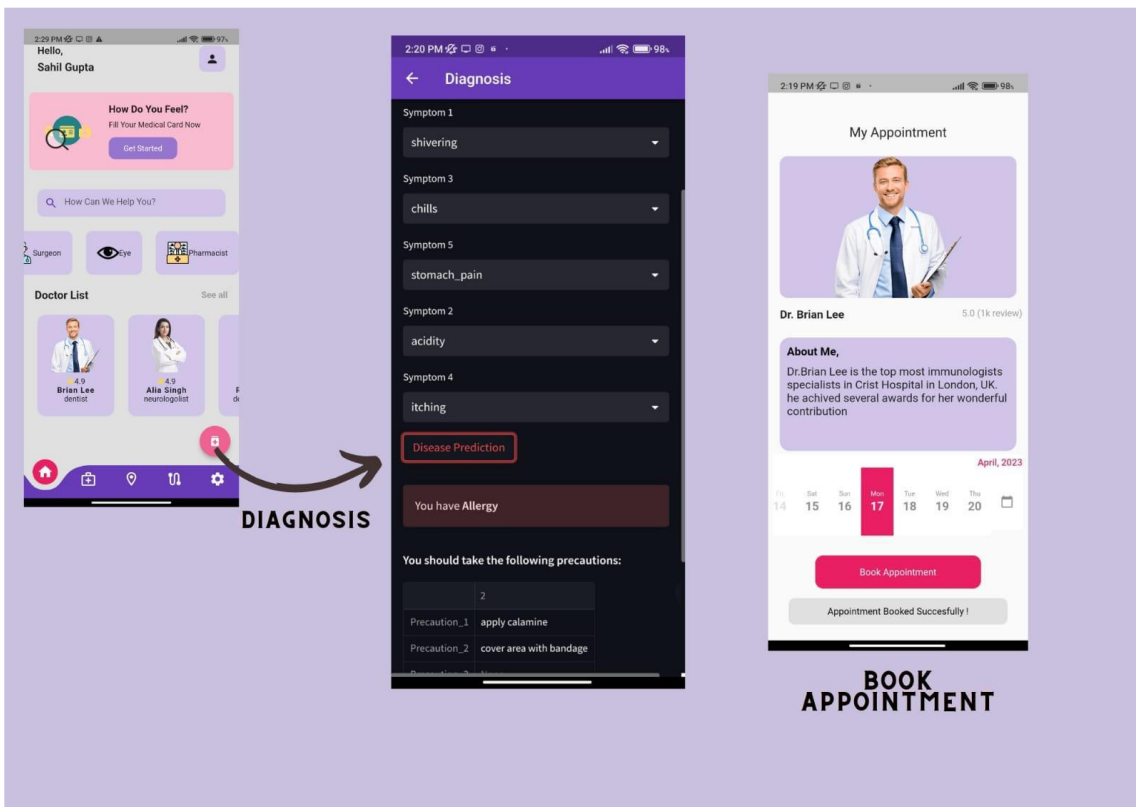
Fig 1: Flow of the Application (Part 1)

Fig 2: Flow of the Application (Part 2)

Fig 4: Snippet from Data Set

Fig 5: Result According to the snippet

8. REFERENCES

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