

Healthcare Recommendation System

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Abstract:

Today's people are dedicated to their work, but pay very less attention to their personal health care. Urban lifestyle has evolved in such a manner that a person is paying very less attention towards one health by avoiding the good sources of food and having very less time for physical activities. Due to the unbalanced diet and unbalanced routine, people face problem related to the health. They avoid going in hospital for small problem which may become a major disease in future. People tends to relay on the internet solutions, in such scenario healthcare comes into existence. Healthcare recommendation Systems are becoming a significant platform for healthcare services. In this paper, a healthcare recommendation based application is proposed.

Introduction:

Today's people are more addicted to internet, but they pay very less concern to their personal health. They avoid going in hospital for small problem which may become a major disease in future. During medical emergencies, common people always face problems in deciding which hospital they should visit for required treatment. They can wander from one hospital to another in search of medical facility, medicines, blood supply, etc. Generally, most of them try to search solution for the problem by putting symptoms online. Internet contains many solutions but problem is that which to consider. If a person is only relying on one opinion then he can get into trouble. Healthcare problem is not something that a person should take lightly. So in such scenarios healthcare recommendation system comes into existence.

Due to the exponential growth of data in the recent years, recommendation systems emerged as a solution for data mining and data cleansing. In the early years of 90s, in order to retrieve information effectively, information filtering techniques were required. It was called as "recommender systems form a precise type of information filtering (IF) technique that tries to present items (e.g. movies, music, books, news, images, web pages, etc.) that are liked by the

user”. There are basically three type of recommendation system present according to the literature as shown in figure 1 [2].

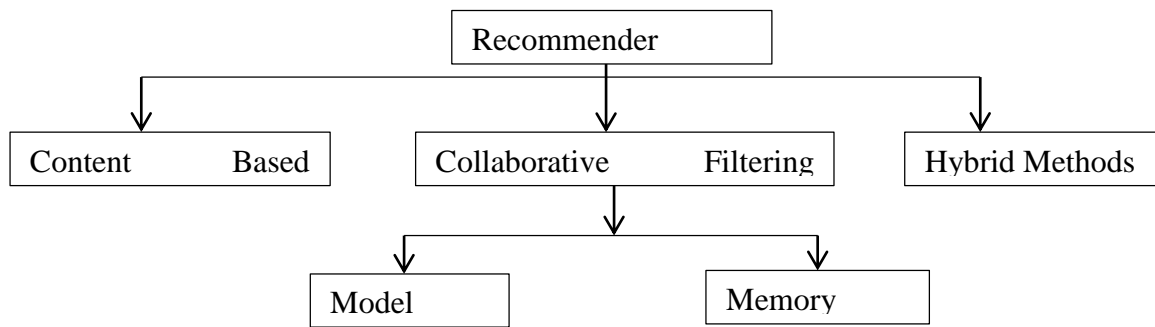


Figure 1: Different Recommendation Techniques

Industry is getting more involved with the recommendation system as they act as a crucial part while making decisions. [1]. Recommender system are basically used to suggest items to user as per user interest. Different types of recommender system such as eBay™ and Amazon™, can be found on the web and many organizations use them on the web. However, Recommendation System is not restricted to marketing products only. RS also serve as decision support mechanism by providing substitutes to decision makers [2, 3]. In the health industry, Recommendation systems are playing crucial part by guiding the decision making ability about individual users. Studies have shown that RS have already been working in health services, as Health Recommender Systems (HRS) [4-7].

Literature Review:

Health Recommender Systems are a category of recommender system being applied in the health industry. They act as health advisory for users and a diagnostic assistant for physicians [2]. Internet, working as a communication platform, also act as health informer and recommender for the user. Author in paper [1] says that information regarding health is being hunted on the web in the form of images, videos, web blogs, forums, tutorials and also publications of medical organizations, governments, patients etc. and Multimedia resources on autopsies. So, HRS does have a significant role of filtering information for users on the web. Other than that HRS is also used by the doctors for filtering process. In this manner, Patient data available online can be used to make recommender system and suggesting online health resources, cancer related web sites and educational resources [1].

Primary care is on-going community based care and also act as pivotal point in terms of availability [8]. It is considered as patient's first choice for HRS. Primary care main focus is taking care for healthcare problem in long term instead of treating patient extensively for a particular diseases or conditions. Primary healthcare is able to achieve 80-90% of healthcare requirements of users throughout their lives and gives more reasonable recommendation to the users [9, 10]. The Main features that need to be in a HRS can be defined as active and communally productive primary care, including completeness, person-centeredness, and steadiness of care.

The proposed technique as shown in figure 2 mainly consists of two modules which have different functionalities and objectives. The first module objective is to find the disease and provide the prescriptions accordingly. One can find the medications for their disease easily as we have developed the algorithm to find the disease according to the symptoms provided by the user. The algorithm was designed by taking the reference of classification algorithm in the category of Supervised machine learning. This algorithm takes the symptom line by line entered by the user and identify the disease from the datasets which are provided to it. The algorithm is designed in Python. Python is the most efficient language which is used for the machine learning and for the data analysis. After analysing the disease, the disease will be displayed to the end user. Then the end user could find the medications in the app itself by entering his/her age. According to the age the medications will be provided. The datasets are maintained in such a way that the medications provided by the application are correct and classified according to the age of the user.

The second module objective is to display the nearby hospitals to the user. This module is made in Android Studio by the Google Maps API. To use this feature in the application one need to have strong internet so that the location can be found. As the google APIs work only with internet so the application needs the internet to access your location and respond accordingly. i.e., displaying the hospitals nearby the end user so that the user can rush even in the emergency cases. By this feature the user can visit the nearest hospital according to their convenience.

The application runs both in online and offline mode. The offline mode is used to predict the disease according the symptoms that are taken as input from the user and provide some medications to the user and the online mode is used to find the nearby Hospitals that patient could visit according to their convenience. Today's people are more likely addicted to internet,

but they are not concern about their personal health. They avoid going in hospital for small problem which may become a major disease in future. The primary goal of this Proposed is to identify the disease according to the symptoms given by the user. The main idea behind the developing of this app is to provide the prescriptions for the end users related to their diseases. If the prescriptions not available in the database for that disease in the app it suggests the end user to visit the hospital which are nearby the user by providing locations of nearby Hospitals.

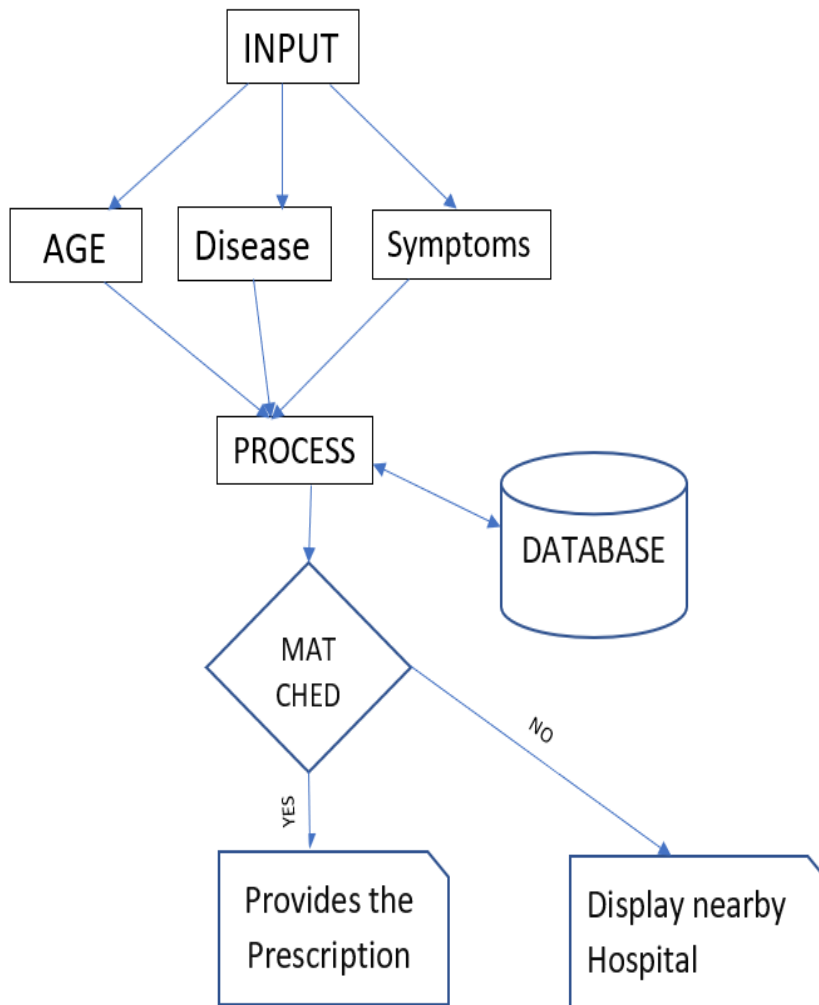


Figure 2: Proposed Healthcare Recommendation System

Conclusion

Primary part of the Proposed Technique is an application which provides support and assistance to the users for their medications. The application consists of different modules with each module having different functions, for example modules are authentication, disease analyser

from the given inputs, providing the medicine regarding the user disease and displaying the nearest hospitals etc. The application acts as health care purpose application which provides all the medicines for the basic diseases according to the symptoms or disease entered by the user with respect to their age as well.

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