

WEB SERVICE COMPOSITION IN A DIGITALIZED HEALTH CARE ENVIRONMENT FOR EFFECTIVE COMMUNICATIONS

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Abstract— The routine communication between patient and doctor is time consuming and it is very difficult to find doctor based on symptoms that one possesses. The regular consultation involves a lot of paper work and there is a chance of losing the consulted data of a patient. This could be overcome by digitalization of the communication between doctor and patient. This paper also suggests the doctor based on the symptoms that one has and also predicts the disease. Prediction of diseases pattern with classification algorithm is proposed in this paper. The term disease involves various disabilities that affect the person based on their age, living conditions etc.. Data of the patient will be collected in database to facilitate the diagnosis process is a valuable option and diagnosis of disease is a significant and difficult task in medicine.

Index Terms — communication, patient, doctor, prediction, digitalization.

I. INTRODUCTION

The regular communication between the doctor and patient is time consuming and there is chance of losing the data present in the paper work. This leads to the state of in which the medical reports which were prescribed, tests reports were redone. This consumes a lot of time and money. This issue is focused in this paper and a solution is given in the form of [1] digitalization. This effective communication is to provide a solution for the loss of data in the health care system. To help the patient in finding and fixing the appointment with the doctor [2] by the symptoms which the patient have using effective algorithms and predicting the disease. This paper also suggests the patient a suitable doctor for his symptoms mentioned and allots the appointment slot between patient and doctor. The following measures are needed, they are

A. Authentication

The authorized user can able to access the data present in the system and can perform the various activities provided in the system.

B. Data Digitalization

The reports provided by the doctor are digitalized and stored in the patient as well as the doctor database.

C. Appointment Booking

The patient can book the appointments of the doctor through online. He is suggested with the doctors for the symptom that he has specified. He can book the appointment online as well as he can avail the online payment facility.

The researchers used the data mining algorithms decision trees, Naïve Bayes, neural networks, association classification and genetic algorithm for predicting and analyzing diseases from the dataset. An experiment performed by the researchers on a dataset produced better results in prediction of disease. The experiments were carried out using classification algorithms Naïve Bayes, Decision Tree, K-NN and Neural Network and results proves that Naïve Bayes technique outperformed other used techniques. The researchers uses K-means clustering algorithm on a disease warehouse to extract data relevant to disease. The existing work gives the patient the prescriptions only in the paper and does not store the data of the patient's health record and reports.

NAÏVE BAYES VS DECISION TREE

Naïve Bayes is based on Bayes theorem. It has classifiers. Those are called statistical classifiers. It uses the probability values. It predicts the presence or absence of particular class. This is efficient, simple and has better performance. It suites well with the large amount of real time data and has a disadvantage of independent assumptions.

Decision trees are mainly used for the prediction of the value for a target variable. This has the features of regular trees like it starts at the root nodes and move to the leaf nodes. Decision trees are easily understandable and do not require any domain knowledge. These are robust and work well with both numerical and non-numerical data. The limitation of the decision tree is that it cannot generalize the well-formed trained data.

The contributions are as follows.

This project if implemented in real time, help the people in finding the disease and also the doctor and the patient can have the choice of choosing the doctor. The issue of losing the prescriptions there by affecting the data in the reports is avoided.

II. HELPFUL HINTS

Effective Communication Scheme

This work is very advance and the loss of papers, misplacements of papers were avoided by [3]digitalizing the patient doctor communication and this reduces a lot of work which is to be done by the doctor and other staff of hospital. The data present under the patient id is safe and can be used at time of need. Patient can book [4]appointment online and can process the appointment as well. This reduces a lot of time and money. It can be implemented based on the different corner sections.

A. Patient Corner

User can register himself and can process the pool of questions asked as the symptoms by the mining algorithm called Naïve Bayes and the suitable doctor is allotted for the patient. The patient can book the appointment time and also pay the money online. The conformation mail is sent to both patients and doctor such that the appointment has been booked.

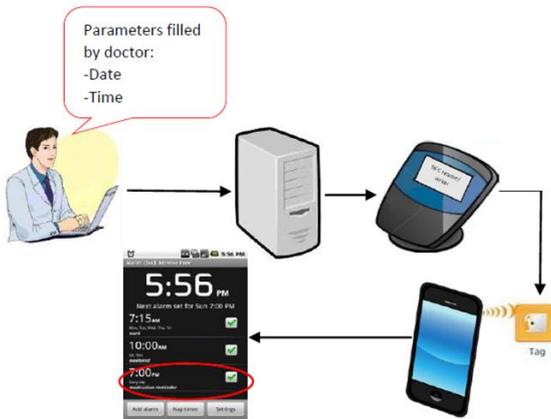


Fig 1 Patient interacting Schema

B. Doctor Corner:

Doctor can login with the id and can check the appointments send the data to the admin. Doctor can request for the change in appointments and reschedules the appointments.

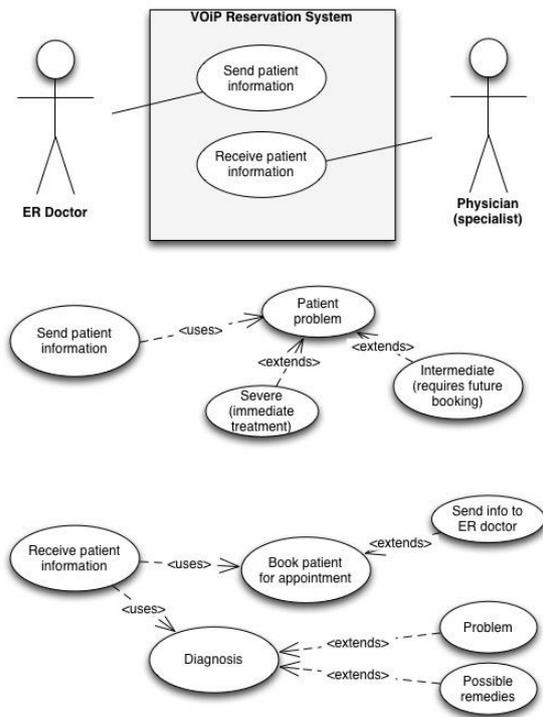


Fig 2 Doctor Activity Schema

C. Admin Corner

Admin is the person who digitalize the data of the patient and doctor databases corresponding to their id and can be seen in both patient and doctor databases.[5] He adds the new diseases, symptoms, doctors available to the system.

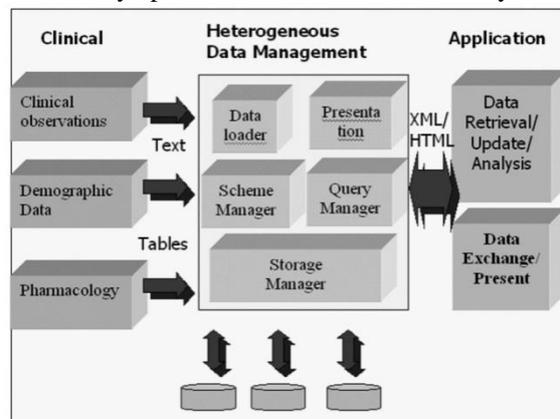
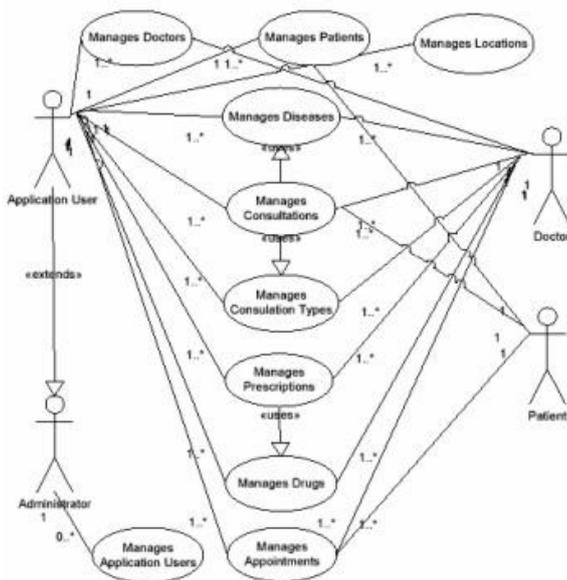


Fig 3 Movement of Admin

D. Authentication System

The patients as well as doctor have to get permission from the admin by means of login credentials to ensure that they are the true users. The user's privacy is maintained and the several types of files can also be shared between doctor and patient.



A. Fig 4 Architecture of Digitalized Record SystemReferences

III. CONCLUSION

In this work, we have provided a solution for the issues that were present in the traditional consultation by the doctor by digitalizing the reports. We have also proposed a system which intelligently identifies the diseases based on the symptoms provided by the patient and the patient can book their appointment with the doctor through online. This project also provided a solution to the loss of data either from patient side or doctor side which is in the paper by altering it in the digital format. The best of the available data mining algorithms can be used to improve the prediction of disease. By using such a proposed system in the real time environment we can avoid various problems.

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