

EFFICIENT DOCTOR PATIENT PORTAL

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ABSTRACT

The project title is "EFFICIENT DOCTOR PATIENT PORTAL" to propose a doctor patient handling, managing system that helps doctors in their work and also patients to book doctor appointments and view medical progress. The system allows doctors to manage their booking slots online. Patients are allowed to book empty slots online and those slots are reserved in their name and unique ID's that has been generated. The system manages the appointment data for multiple doctors for various date and times. Each time a user visits a doctor his/her medical entry is stored in the database by doctor. Next time when a user login the users may view their entire medical history when needed. At the same time a doctor may view patient's medical history. This allows for an automated patient doctor handling system through an online interface. This system also consists of organ donor module. This module allows for organ donation registration as well as organ search. The module is designed to help urgent organ requirements effectively. At the same time reports can be submitted by patients to their desired doctors and as well they can send their images and documents regarding medical consultation.

Keywords: Doctor Patients Portal, Appointment booking, Report generation

INTRODUCTION

Now a day's Information and communication technology (ICT) plays a great role in different fields or areas among thus Health care system belongs to this. This leads to various studies and researches being conducted to selected health care facilities. It is necessary to ensure a technologically appropriate, equitable, affordable, efficient, and environmentally adaptable and consumer friendly system, designed to fully utilize the ICT for the maximum benefit in the health care industry. Here computers have great relevant on storing data's securely and ease access on them in short period of time. In order to exploit the ICT in health care system. The proposed project is a smart appointment booking system that provides patients or any user an easy way of booking a doctor's appointment online. This is a web-based application that overcomes the issue of managing and booking appointments according to user's choice or demands.

The task sometimes becomes very tedious for the compounder or doctor himself in manually allotting appointments for the users as per their availability. Hence this project offers an effective solution where users can view various booking slots available and select the preferred date and time. The already booked space will be marked yellow and will not be available for anyone else for the specified time. This system also allows users to cancel their booking anytime. The system provides an additional feature of calculating monthly earnings of doctor. Doctor has to just feed the system regularly with daily earnings and the system automatically generates a report of total amount earned at the end of the month.

1. PROPOSED SYSTEM

The portal permits the doctors to maintain their empty slots for bookings by the patients using an online system. Patients are able to look for the empty slots of doctors using the same procedure and reserve the slots using the required information. The system maintains records of all the doctors and manages the appointment data of all the doctors for different times and dates. When a patient visits a doctor their date and time of visit are entered by the doctors in the database. Also the doctors stores their medical progress or reports in the system. In this way the next time if a patient login to their account they can view their complete medical records from the beginning till the end

whenever they need it. Similarly when a patient visits a doctor, the doctor can view the medical records of the patients to have better knowledge of his disease. The doctor can visit a patient's history even before the patient visits him. This automated portal for doctor patient management system requires an online interface. Some online system also contains sections where patients put their requests for donations for money, blood and organs. So that persons requested for organ donation can also efficiently gather their needed requests. After booking has been confirmed the timings for patients to meet the concerned doctors are intimated to patients through their mobile as message intimation.

2. LITERATURE REVIEW

A number of web and mobile based applications exist for finding and booking a doctor's appointment through the application. However, these applications list multiple specialists instead of providing the perfect match of doctor according to user preferences. Though the present apps provide filters to shortlist the selection, yet a user needs to browse through the entire list of doctors. The current work presents a web-based application, Get-a-doc, which provides a user with the best match out of available doctors according to his preferences. A distributed approach to information retrieval has been employed, whereby the database of doctors' data has been stored on a NoSQL based data store, MongoDB. This database has been sharded, into 3 divisions for scalability of the application. Results demonstrate the efficiency of the proposed approach. Our main motivation for building the project was to reduce the effort and hassle that the user needs to go through when he has to go through a list of doctors, to find a suitable match according to his/her needs.^[1]

It's common practice for patients to make an appointment in advance before seeing the doctor. This paper compares two alternative policies to reduce no-show for single server appointment system with exponentially distributed service time, the overbooking policy and open access policy. A specified number of patients call for an appointment before the scheduled day, but may cancel the booking or don't show up under the overbooking policy. Two types of open-access policies are taken into consideration: same-day and same-or-next-day, in which a random number of patients call for the appointment for the same day or the next day. System performances are compared when the expected workloads are the same for both policies. The numerical results indicate the superiority of open-access policies are not so explicit as the results under deterministic assumption. Same-day AS system has a threshold in terms of total operational costs, after which it outperforms the overbooking system; same-or-next-day system is always preferable except when no-show probability or the weight of the patients is low.^[2]

Nowadays, smartphones have reached every hand and every home. As a result, people are making use of the beneficial mobile applications to make their everyday life easier. Using this app people can get numerous benefits like finding hospital information in the city, information about cabin, cabin booking with payment, intelligent suggestion on choosing suitable hospital, finding a doctor, emergency service calling, first aid information, alarm system for medication, Body Mass Index (BMI) calculator etc. This application will be a helping hand for people who find it difficult to select hospital, book cabin, contacting doctor for appointment or seeking help in emergency situation. Besides, it will help the masses in their everyday life by providing health care information, aid and medication information, medicine reminder system, etc.^[3]

Developing countries have challenges of providing health care services to its citizenry, delivering medical services and monitoring patients for progress and real-time data collection for research and development. In Uganda, Malaria, Malnutrition, respiratory tract infections, HIV/AIDS and Tuberculosis are leading causes of morbidity and mortality [7]. There is a great need to deploy technologies like Speech Recognition, IVR, SMS and web applications in the health sector that will provide patients (especially out-patients) with real-time management of illnesses, reactions or side effects to prescribed medication, update patients on scheduled doctor patient appointments and make prescription reminders, provide survey data for medical research, facilitate access diagnosis from a physician and general medical assistance using a combination of a web services, speech recognition, IVR and SMS.^[4]

In an attempt to improve the hospital appointment system and reduce patient waiting time, we developed an intelligent internet-based application for scheduling hospital appointments. A neural network is employed in order to dynamically define the time slots of each doctor's schedule. We present how we encoded the variables of our neural network and we describe the three stages we followed until we concluded in its most proper settings. Finally, we compare its results against the expected ones and prove its reliability.

3. ADMIN

Admin controls the entire system that has been managed with doctors and patients and their activities that has been done throughout the system.

4. DOCTOR LOGIN

Doctors can login to their desired account to view the requested patient's details and their timing slots. Each doctor has been provided with unique ID's to access their accounts.

5. PATIENT REGISTER AND LOGIN

Patients have to register their basic information so that admin can acquire their details and provide unique ID to every patient involved in the system.

6. APPOINTMENT AVAILABILITY

After login the doctors can view the availability of booked patients and their needed details in a prominent way. Attaining unique ID the patients can login to their account and book appointments to the doctors related to their needs. The appointment details has been intimated to the patients to their mobiles as a message.

7. SEND AND RECEIVE REPORTS

Doctors can send and receive the reports that has been related to every patients involved in the system. The reports can be in an image format, as a document, PDF etc. Every patient can upload their reports regarding their health issues to concerned doctors, and the reports may be a image, document, PDF etc.

8. CHATTING PROCEDURE

Doctors can communicate to their patients and verify their medical reports and they can provide medical explanations according to concerned patients' needs. Through this chatting process doctors can be in contact with their patients in a timely manner, which enhances every patient's behavior involved in the process.

9. PAYMENTS

Payments of the patients are maintained and processed by various payment gateways in an efficient manner. The payment can be done through online and through cash. Payments can be done by the patients through online and through cash based on their requirements and medical needs.

10.ALGORITHM STUDY

The Advanced Encryption Standard (AES), also known by its original name Rijndael is a specification for the encryption of electronic data established by the U.S. National Institute of Standards and Technology (NIST) in 2001. AES is a subset of the Rijndael cipher developed by two Belgian cryptographers, Vincent Rijmen and Joan Daemen, who submitted a proposal to NIST during the AES selection process. Rijndael is a family of ciphers with different key and block sizes.

For AES, NIST selected three members of the Rijndael family, each with a block size of 128 bits, but three different key lengths: 128, 192 and 256 bits.

Support-Vector Machines (SVMs, also support-vector networks) are Supervised learning models with associated learning algorithms that analyse data for classification and regression analysis. Developed at AT&T Bell Laboratories by Vladimir Vapnik with colleagues ,SVMs are one of the most robust prediction methods, being based on statistical learning frameworks. Given a set of training examples, each marked as belonging to one of two categories, an SVM training algorithm builds a model that assigns new examples to one category or the other, making it a non-probabilistic binary linear classifier (although methods such as Platt scaling exist to use SVM in a probabilistic classification setting). An SVM maps training examples to points in space so as to maximise the width of the gap between the two categories. New examples are then mapped into that same space and predicted to belong to a category based on which side of the gap they fall.

In addition to performing linear classification, SVMs can efficiently perform a non-linear classification using what is called the kernel trick, implicitly mapping their inputs into high-dimensional feature spaces. When data are unlabelled, supervised learning is not possible, and an unsupervised learning approach is required, which attempts to find natural clustering of the data to groups, and then map new data to these formed groups. The **support-vector clustering** algorithm, created by Hava Siegelmann and Vladimir Vapnik, applies the statistics of support vectors, developed in the support vector machines algorithm, to categorize un-labelled data, and is one of the most widely used clustering algorithms in industrial applications.

$$\begin{aligned} \text{Overall accuracy} &= \frac{\text{TP} + \text{TN}}{\text{TP} + \text{TN} + \text{FP} + \text{FN}} \\ \text{Sensitivity} &= \frac{\text{TP}}{\text{TP} + \text{FN}} \\ \text{Specificity} &= \frac{\text{TN}}{\text{TN} + \text{FP}} \end{aligned}$$

11.RESULT AND DISCUSSION

Efficient doctor patient portal is developed to decrease the work that has been done manually at hospital centers. Every single step is done with the help of system, services such as patient registration, maintaining their reports and records, patient appointments, organ donor details and organ requesters' information can be efficiently managed and processed. To gather doctor timing slots to book appointments we implement SVM algorithm and to fetch accurate information K-Means has been implemented in our proposed system.

The proposed system of efficient doctor patient portal is developed in future work as it intimates patients to take tablet in every two hour back after intimation. The registered customers are allowed to use this service. Security issues for patient reports are enhanced and stored in cloud server. And also patient health information can be monitored by using wearable devices in the patient's body and through that patients' heartbeat, BP level, sugar levels can be efficiently monitored and intimated to concerned doctors in a timely manner.

12.CONCLUSION

The project entitled as efficient doctor patient handling, managing system that helps doctors in their work and also patients to book doctor appointments and view medical progress. The system allows doctors to manage their booking slots online. Patients are allowed to book empty slots online and those slots are reserved in their name. The system manages the appointment data for multiple doctors for various date and times. Each time a user visits a doctor his/her medical entry is stored in the database by doctor. Next time a user logs in he may view his/her entire medical history as and when needed. At the same time a doctor may view patients medical history even bore the patient visits him. So the user is easily view collecting appointment and no wastage of time.

13.REFERENCES

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