

HealthChannel - A Health Care Support App

Sujith John¹, Dhikhi T.², Karthikeyan S.³, Advait N. Menon⁴

^{1,3,4}Student, Department of Computer Science, SRM Institute of Science and Technology, Ramapuram campus, Tamil Nadu, India

²Assistant Professor (O.G.), Department of Computer Science, SRM Institute of Science and Technology, Ramapuram campus, Tamil Nadu, India

Abstract - With the outburst in the number of hospital cases, the management of patient records is a tedious task. The amount of infrastructure needed to physically store the patient records is huge and requires regular maintenance.

We have developed a web app that stores patient and hospital records online on a cloud server accessible to both the doctor and patient. It provides various useful tools to the hospital's users such as personnel directory, access to personal medical records collected on regional electronic health record.

The web application keeps track of the doctor's prescription and reorders the medicines for the patient so that the patient does not go out of stock ever and the doctor can make changes to his prescription.

Key Words: Healthcare, Cloud Service Application, Smart Health Application, Digitisation, Medical technology

1. INTRODUCTION

Healthcare is an important social need today due to increasing and ageing population of the world. Advancing technology has brought a lot of innovation and improvements to this sector and still there is a scope for lot of advancement. To provide better healthcare, doctors need access to the vital parameters and medical history of the patient. Such access while on the move is very helpful to both the doctors and the patients.

The primary problem that we are trying to solve is the hassle of hospital patients having to carry all their medical records to and from the hospital for each subsequent visit. The second problem that is in focus is the effort put in to procure medications; the patients who are elderly or those who are unable to be mobile. It is difficult for them have to regularly go to the shop and get the medicines or even to order online, as the method of ordering online has a learning curve.

We have researched and developed a web-based application that is competent and cost effective at the same time. There are many applications that has been developed using the same web-based cloud technology, but they either are filled with ads or follows an expensive subscription-based model, making it less accessible to the larger part of the society.

The existing system consists of an app that has the hospital structure layout and the whole of patient records of a complete region making it difficult to find an individual record. There is no option to keep track of the stock of medicines prescribed by the doctor or to ensure restocking of the same by the period it is consumed in whole by the

patient. Individual patients have no option of viewing their own records for reference or for presenting before a doctor who is different from the one they regularly consult. In addition, Doctors and hospitals cannot update and view data in real time, which makes it difficult to offer remote medical support.

The aforementioned drawbacks leads to our comprehensive health care support app. The proposed system has a separate login for the patient and doctor/hospital. Each party has different access privileges. Patient data is updated in real time making it possible for the patient to seek medical help from another doctor without having to carry around records or do all the tests from scratch. The stock of medications prescribed by the doctor is kept track of by the system and reorders the ones that are about to get over. This helps the patients to have regular supply of stock. Data is stored on the cloud making it less susceptible to accidental loss, saving time, money and resource.

The application has been developed using HTML, SQL, PHP, CSS and JavaScript.

2. LITERATURE SURVEY

This section describes the similar healthcare solutions that have been discussed.

In [1], the system developed web application EUREKA to simply reach their destination in the hospitals thereby making it easy to understand the organization and not getting lost in the medical center. SACS software drives AutoCAD to manage and analyze digital plans of hospital buildings coded on specific layers.

In system [2], the users can analyze their work routine and the changes that come along with it, with the help of sensors and predicting the type of disease they may get. Machine Learning technique is also employed for getting the user lifestyle and produce results efficiently. But the problem is that the user cannot be prescribed with medication since no doctor patient relationship is involved.

In [3], the system is developed to make the elderly people be engaged with activities that keep them occupied so that they do not go into any mental disorders like depression, stress etc. The limitation is that the people may encounter eye problems when they spend more time in front of smart screens and the application do not provide much efficacy on the physical domain.

In [4], the system is developed to protect the privacy of patients by protecting their data in the cloud network also, it is designed in such a way that traffic in the server do not

crash the application. However, the problem is that, there are chances of the application being attacked by the hackers and therefore the identities of the patients getting revealed which is not in the protocol.

In system [5], the application's developed for making the information of specialty doctors available in and around their area, so that there won't be any hassle in finding the doctors needed at the moment during emergencies. But it lacks accuracy and robustness and accessing the factors that influence classification accuracy.

3. SYSTEM DESIGN

The proposed system has a separate login for the patient and doctor/hospital. Each party has different access privileges. Patient data is updated in real time making it possible for the patient to seek medical help from another doctor without having to carry around records or do all the tests from scratch.

The stock of medications prescribed by the doctor is kept track of by the system and reorders the ones that are about to get consumed by the patient. Data being stored on the cloud makes it less susceptible to accidental loss, saving time, money and resource.

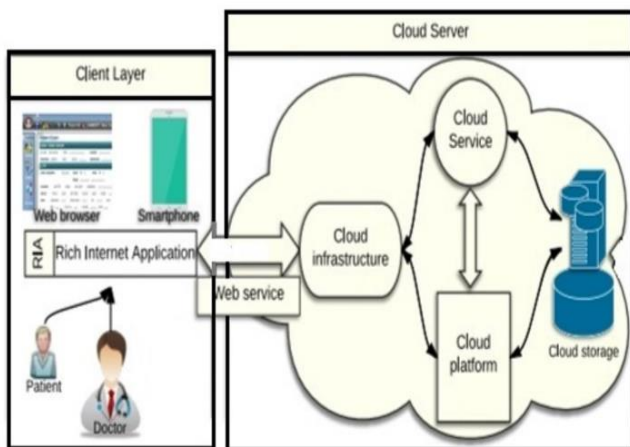


Fig-1 System Architecture

Security of the data transmitted is a major concern that is taken utmost care in implementation.

The service used to host the web application is the Google App Engine included in the Google Platform Suite.

3.1 Registration and login module

Unregistered doctors and patients can sign up to the service using the Register module after providing the necessary details. Already registered users have a separate login window where they can login using the registered email and password. In the event that the user forgets the password, it can easily reset it by clicking on the Forgot Password tab.

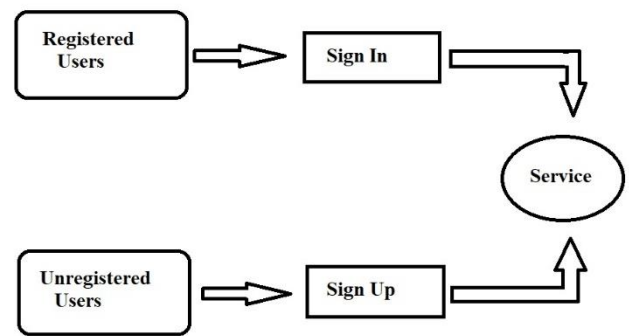


Fig-2 Registration module

After the text edit has been completed, the paper is ready for the template. Duplicate the template file by using the Save As command, and use the naming convention prescribed by your conference for the name of your paper. In this newly created file, highlight all of the contents and import your prepared text file. You are now ready to style your paper.

3.2 Data review module

The data review module has mainly two function - to input the patient details and to display the entered data. Doctors and the hospital staff can input the patient data either by manually entering the parameters individually; or to make the task more user friendly, data can be read by the computer machines off prescriptions that are in a standard machine readable form. This module has a dedicated section for inputting the data. Images of machine readable prescriptions can be uploaded from this upload section. To display the uploaded data, doctors and patients have dedicated interfaces which differ in the amount and detail of information displayed. Doctors are given a comprehensive insight in to the patient data.

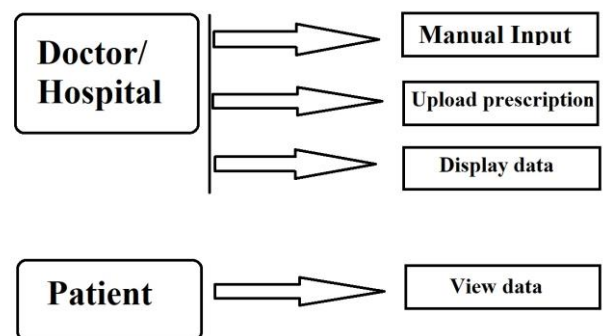


Fig-3 Data review module

Patient users have only a brief view of the medical data as excessive revelation of medical data is not preferred for patient health and security reasons.

3.3 Prescription management module

The prescription management module consists of services to request for medicines prescribed by the doctor and to view the history of purchases made by the user.

Particularly, the service to order medicines and other services from the comfort of the homes of users appeal to patients with limited mobility or inability to do transactions which require physical interaction.

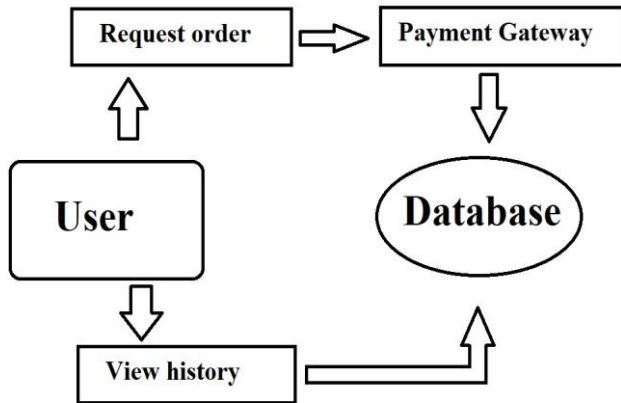


Fig-4 Prescription management module

The purchase service works with the help of a secure payment gateway that safeguards against failed transactions. In the event of a failed transaction, the gateway takes care of the refund process and the user is safeguarded against any loss of money. In a later moment, users can view and verify each transaction that has been done using the purchase history service.

3.4 Support Module

The support module primarily offers services for the user or the doctor to reach out to the app service team in the case of an anomaly.

Doctors or patients can reach the support team either by filling out a support web form describing the issue being faced; which upon being received by the team will be looked into and addressed with the fastest possible turnaround time.

Another method is to directly email the team mentioning the difficulty, which promises a one-on-one support promised.

Patients can also obtain the hospital details and information of the doctor they are consulting like contact info, specialization, etc.

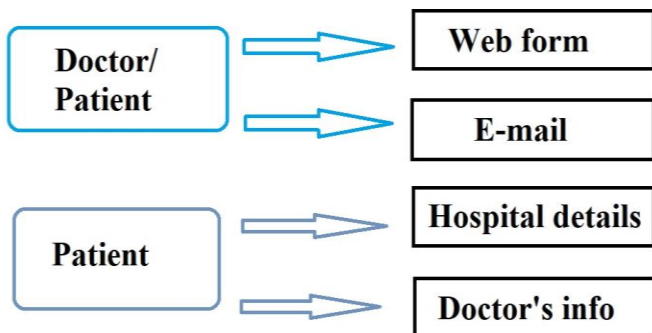


Fig-5 Support module

3.5 Account management module

The account management module offers the user services to deactivate or delete the account from the service in the event that the user does not want to continue using the service. Deactivating an account moves the account details and all associated records into a dormant section of the database, from where it can be reactivated by request from the user in a later point in time.

Deleting an account clears all information and records associated with that account permanently. Recovering such an account is impossible as no data related to that account is stored in the database post deletion. The service provides utmost importance to user data privacy.

4. IMPLEMENTATION

The HealthChannel application is implemented as a web application that runs of a web browser.

The service allows separate login for doctors and patients. Login screens for all types of users are the same. The type of dashboard that is lead to upon login is decided to user id that is used to login.

Doctors have a comprehensive dashboard with more options than a patient to view and interact with the data. In contrast to the doctors, patients have an exclusive option to order medicines online from the prescriptions issued by the doctor. The application home screen is displayed in Fig 6.

5. CONCLUSIONS

Managing the medical history of the patients in this present world where there is surge in the numbers due to lifestyle changes and climatic changes is a tedious task.

Hence, the system we have designed lets the patients to have contact with the doctors and the hospitals they have visiting frequently. This is done by linking the patient medical history in the cloud network where even the doctors can prescribe the medications from this application itself.

The stock of the medicines can also be renewed and prevent the need to go out to the pharmacies directly, which is considered to be very useful for the elderly people.

This application can be further developed in such a way that the patient can interact with the doctor via the application itself and get the diagnosis done from within the home. The payment options can also be updated such that UPI, wallet based payments can also be made for the pharmacies and treatment.

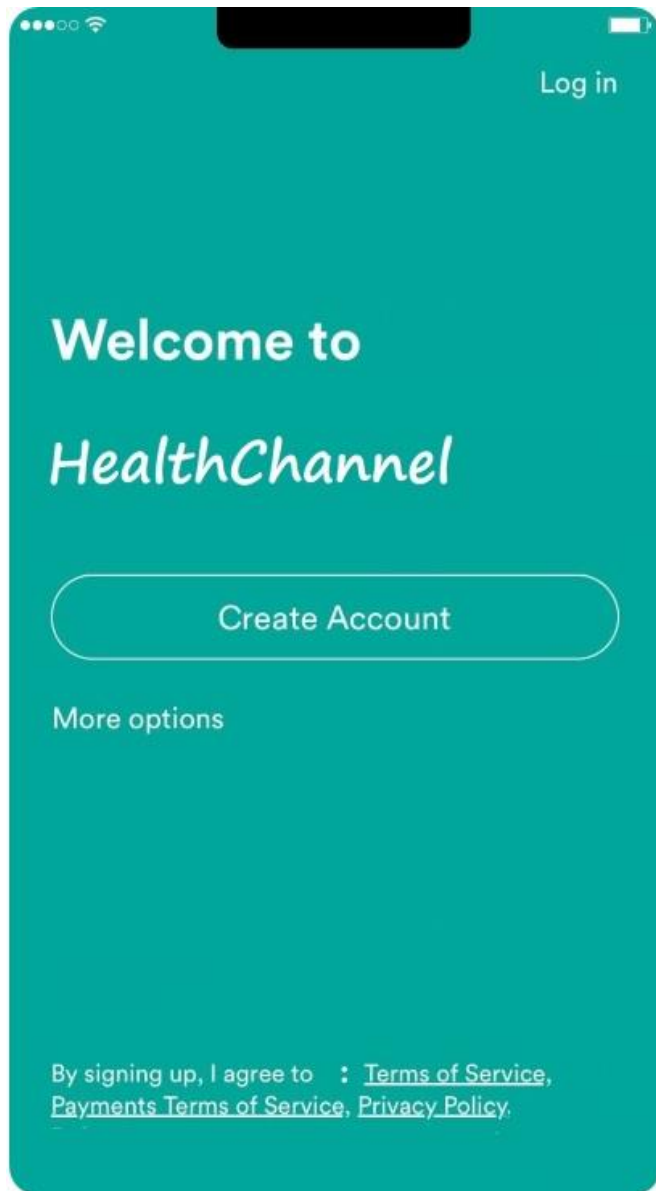


Fig-6 Mobile home screen

REFERENCES

- [1] A. Luschi, A. Belardinelli, L. Marzi, F. Frosini, R. Miniati, and E. Iadanza, "Careggi Smart hospital: A mobile app for patients, citizens and healthcare staff", IEEE-EMBS International Conference on Biomedical and Health Informatics (BHI), Valencia, Spain, 2014.
- [2] S. Bussadee, S. Suwannatria, A. Chonrawut, E. Thamwiwatthana, and K. Pasupa, "Inside Me: A proposal for healthcare mobile application", 2016 Fifth ICT International Student Project Conference (ICT-ISPC), Nakhon Pathom, Thailand, 2016.
- [3] E. I. Konstantinidis, G. Bamparopoulos and P. D. Bamidis, "Moving Real Exergaming Engines on the Web: The webFitForAll Case Study in an Active and Healthy Ageing

Living Lab Environment", IEEE Journal of Biomedical and Health Informatics, vol. 21, no. 3, pp. 859-866, 2017.

[4] A. Mehmood, I. Natgunanathan, Y. Xiang, H. Poston, and Y. Zhang, "Anonymous Authentication Scheme for Smart Cloud Based Healthcare Applications", IEEE Access, vol. 6, pp. 33552-33567, 2018.

[5] A. Paglialonga, M. Riboldi, G. Tognola, and E. G. Caiani, "Automated identification of health apps' medical specialties and promoters from the store webpages", 2017 E-Health and Bioengineering Conference (EHB), Sinaia, Romania, 2017.

BIOGRAPHIES



Mr. Sujith John is a student at SRM Institute of Science and Technology, Chennai pursuing a degree in Computer Science engineering.

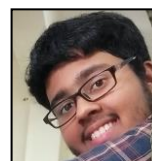
Passionate about evolving technology and the innate curiosity best describe him.



Ms. Dhikhi T is an Assistant Professor (O.G.) at SRM Institute of Science and Technology, Chennai with a strong passion for research work.



Mr. Karthikeyan S. is a student at SRM Institute of Science and Technology, Chennai pursuing a degree in Computer Science engineering. He comes with a good level of dedication to work.



Mr. Advait N. Menon is a student at SRM Institute of Science and Technology, Chennai pursuing a degree in Computer Science engineering. Perfectionism and dedication would be his tagline.