

The Smart Health Medicare System

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www.ijcseonline.org

Received: 19/Mar/2017, Revised: 30/Mar/2017, Accepted: 20/Apr/2017, Published: 30/Apr/2017

Abstract— Existing Information System of hospitals mainly focuses on single and separated hospitals. The Smart Health system interconnects multiple hospitals. The project's aim is to develop a wide range of hospital administration processes. This system helps patients to get their information (medical report, lab report) in every hospital with a user name and password. There is no need to carry all medical copies (medical report & lab report). Patients, lab technicians, doctors and hospitals can make use of this software. Better health is central to human happiness and well-being. It provides progress of economics. The project comprises software for doctors and hospitals and a mobile application running on android for the patients. The patient can get the details of the doctors, appointment times, laboratory tests and the specific medicine about his/her medical situation using the system. It also provides assistance for the doctors to retrieve the previously given prescriptions and results of a patient and directly sends lab requests to lab technicians. The software provides security of data, authentication and avoid duplicate entry of data. The patient can book is/her on-line appointment with a mobile phone application. The system helps to save the time of patients as well as the time of doctors. It also reduces the paper work of receptionists.

Keywords— Android Application, online appointment, Software

I. INTRODUCTION

A very important part in our society is health care. An Information System of a hospital is basically a computer system that can handles all the information to allow health care providers to do their jobs effectively [2]. Various numbers of versatile activities goes in a hospital. Various activities include registration of a patient, appointment of doctors, medicine prescription, laboratory tests etc. Concurrent occurrence of these activities takes place in hospitals. Still, hospitals undergo manual old conventional system for management of data. The manual systems have limitations like more time consumption, error and redundancy in data etc. The consultancies also host Patients of around 7000-10000. Even they have a data of 7000-10000 patients [1].

In the current hospital systems there are no provision to connect multiple hospitals. Doctors are helpless to get the fine medical points of the patients, who consulted the doctors in other hospitals. Doctors are not even aware about patient's previous medical history. Since all the medical reports and prescriptions are paper works, a high chance of losing all the data occurs. Once the paper works are lost all the medical

history will be lost and there will be no mechanism to recover the data. Also, the medical prescriptions are paper works, if get lost it can affect the person's health.

In current systems, no communication between Lab technicians and doctors exist. Hence, the lab requests of the lab test concerned with patients will be always correct. The provision to certify whether the lab reports are properly diagnosed by doctors or not do not materialize. When the proper diagnose of patient is not done according to the result, it can also affect the patient's health. If patient do not take right medicines then the health of the patient can get worse [8].

The Smart Health Medicare System is the project proposed for a more influential hospital management. We come up with a system that allows multiple hospitals to interconnect together and share the patient's details. Each patient is promised the full control of her medical records and can share her health data [6]. Doctors can get the medical history of patients even when they consulted another doctor before. The system also provides a significant space for the lab-technicians. Doctors and lab-technicians can also contact with each other about a patient's lab test and result. This

project reduces the usage of paper work in hospitals and health care. All the details including the personal details, medical prescriptions, medical lab reports, amount of bill paid etc. of a patient are been stored in the database. So this system provides a better recovery option of data. This system helps to reduce errors in the data and redundancy of data.

II. RELATED WORK

Many people have worked on standard types of Hospital management. The work done on this field is illustrated below:

A. A Cloud Computing Solution for Information System of Hospital

In [3], the authors come up with a system that provides a provision to share the data and information of multiple hospitals via public internet access or virtual Private Network. A private cloud is established to store and manage information such as patients-records, hospital details etc. Various, the business and management information are stored into commercial cloud server. The suggested system in [3] is implemented by adding a network module into the existing systems. This system is developed with a view that cloud computing is very affordable to use in medical It services. Since, hospitals can connect lots of systems together, thus construction work is reduced minimally and the management can become more efficient. Processing using cloud becomes more cost efficient and can get rid of heavy burden of data. But the suggested system does not contribute any method to connect multiple hospitals or it does not present any patient oriented module to make easy access for patients.

B. Android Application for Doctor's Appointment

The recommended system in [4] mainly comprises two modules: Doctor and Patient. The operation is similar to the normal mobile applications as they can download it and can install it directly it in their mobile devices. In order to initialize to the application, the patient has to register. User name and confidential password will be provided to the patient. After log in, the patients can see the doctors available and book on-line appointments. The patients will get notification two hours prior to the time of consultation. It is useful when the patient forget about his appointment details. This application is a useful one and it is mainly intended for patient-doctor interaction.

C. Design and Implementation of Management System of Hospitals

The suggested system is an automated system that can dominate the particulars about the patients and controls its functionality. This system helps to eliminate redundant data, paper works, inaccurate reports, time required for storing and retrieving data encountered by the traditional hospital system. It improves the overall competence of the hospital organization. The paper mainly helps to:

-Eliminate redundancy. Computer stores all the data, not heap of files.

– Reduce the time wasted in retrieving data especially in finding a past health records.

– Increase Efficiency and Interactivity in any area of field in the hospital.

D. An Investigation of the Achievement of Information Systems of Hospitals Implementation: A Case Study

The study is conducted in the province of Isfahan's selected hospitals and it finds the amplitude of success of information system [2]. The study also identified the important critical success in those hospitals. Structured questionnaire was used to collect required data. Interviews are conducted by authors to single out the factors which results in the lack of complete success in HIS implementation. The paper revealed that HIS in province of Isfahan was not completely successful but success was satisfactory.

E. Implementation Challenges of System of Information in Super Speciality Hospital "A Case Study of PGIMER, Chandigarh"

This paper presents the ultimatum faced in fulfilment of HIS in super speciality hospital, Institute of Medical Education and Research, Chandigarh (PGIMER) and strategies adapted to overcome them [5]. The authors studied about the application level challenges and administrative challenges. This paper identified the success factors like proper planning of the project, state holder participation, effective training, user friendliness, ownership, site preparation and higher management support [5].

III. METHODOLOGY

The suggested method consists of three major modules such as Admin, Hospitals, Doctor, Lab-technicians and patients. The patient module that helps to aid the patients is an android application. The recommended system allows the communication between doctor, patient, lab-technicians and hospitals. Modules are as follows:

- Admin
- Hospital
- Doctor
- Lab-Technician
- Patient

1. Admin

The admin can log in using a user name and confidential password. Add hospital in the admin module can add a particular hospital by entering all the details of that hospital. It intakes hospital name, address, contact number, mail id. Using the view hospital, the admin can outlook the approved hospitals in the index and he/she can get the fine points of the hospital. He can also edit the particulars of the hospital if

needed. In change password the admin also allows changing his password if required.

2. Hospitals

The hospitals can also log in using a user name and confidential password. The operations involved in hospital module are adding technicians in the lab and doctors. In this module, the hospitals can add the lab technicians available in their hospital. The module can also add the doctors available. In view staffs, hospital can prospects the staffs (both the doctors and lab technicians) available in their hospital. It can also drop the staffs from their list. In send bills module also sends bills to the respective patients. In edit function, we can edit their profile and password.

3. Doctor

The doctor commit login using their user name and confidential password. The operations involved in doctor module include view earlier results where the earlier history of patients can be out looked by the doctor. The entire details of diseases that the patient had gone through are available to the doctor. In view appointment operation, it helps the doctor to outlook the line-up of requests that the patients had made for him on a particular date. The doctor enters the id of the patient and all the significant material about the patient is demonstrated in front of him [7]. The doctors can either admit or deny the request. In consulting operation, provides doctors the provision to enter the fine points of the disease and the tests for the patient. In add timing, the doctors are given an arrangement to enter their available timings at the hospital and the total number of tokens that he/she can consult. In lab report module, the results of lab reports can be out looked by the doctors.

4. Lab-Technician [8]

Lab technicians can also log in using a user name and confidential password. The operations involved in this module include view the requests where the lab technicians can picture the line-up of requests that they must do. The doctors directly send the requests to the respective categories of lab technicians. In view earlier results the lab technician can view the earlier history of tests that he/she had made on that particular patient.

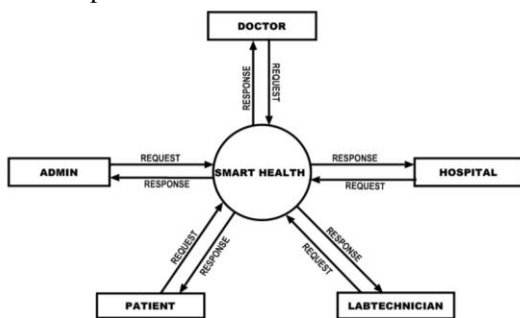


Fig. 1: System Architecture

5. Patient

The patient module comprises an android mobile application. Patient can view different hospital details, doctors available etc. She/he can also take on-line consulting appointment. Patients can view their medical prescriptions, lab reports, bills etc.

IV. CONCLUSION AND FUTURE SCOPE

"The Smart Health Medicare System" is software that helps to aid the doctors, lab-technicians and hospitals. The system also has an android mobile application used to aid the patients. This system also provides a good interaction between the modules especially doctor and patient. The system provides a provision to interconnect multiple hospitals each other. The details of hospitals can also be shared between different hospitals mean-while providing confidentiality and authentication. The system works in JAVA and ANDROID languages. This paper takes the conspicuous features of cell telephones and computers. Developing this project required the studying related papers. Internet connectivity and server are the criteria for this paper.

There are many projects and software related to management system of hospitals and like any software product or design, there is still scope for future enhancement. Many features can also be added with the Smart Medicare System. Features can also include Artificial Intelligence based system and bar code reader related systems. On future enhancement, patients can get the prescriptions even if the doctors are not available. An artificial based intelligent system can also be added to the recommended system for better treatment and diagnose.

ACKNOWLEDGMENT

We would like to express our thanks of gratitude to our Head of Department, Prof. Imthiyas M P and sincere thanks to Asst. Prof. Keerthy Raj and all the respected teaching faculties of the computer science department & engineering, STCET who provide all guidance we needed. Also, we would like to express our thanks of gratitude to our parents, friends for motivating us in this project work activity. Our special thanks to all the authors of reference papers that have been referred by us.

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Open Source-Cloud and Devops on October 26th,2016 organized by IPSR in association with Red Hat and IIITMK, Technopark, Trivandrum.

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