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A Mobile Based Smart Healthcare System

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Abstract - In a Homeopathic Consultancy, a patients records are maintained manually, which requires lot of time for searching and updating. Even the communication order to reduce this time requirement & introduce a smooth Doctor-Patient interaction, we need to digitize the whole system. This will result in much more efficient consumption of the resources, viz. time, stationery and man-power. An Android based app will be developed, providing humongous number of features to both, Doctor and Patients. Even the communication process between the Doctor and Medicine Room will be digitized. A confidential database containing the whole CASE-FILES of a respective Patients will be made using MySQL and SQLite. This database could be accessed by the Doctor only. By deploying the database on a Cloud, we will ensure portability, mobility and flexibility in accessing the same for the Doctor. The Front-End, i.e. the App will be interfaced by the database using Web Server.

***Key-Words*:** **MySQL, SQLite, Android OS, Cloud Computing, Recommender System, Heath-Care System, Case-Files, Item-Based.**

1. INTRODUCTION

In a Hospital, various number of versatile activities goes on. Right from registration of a patient, consultation with the doctor, taking prescribed medicines, doing some tests as per doctor's diagnosis, to scheduling next visit. All these activities occur concurrently with number of patients at the same time. Most of the Hospital still go for the old, conventional, tiresome and tedious manual system. Where everything is done on paper with complete human efforts. This Manual System has many loop holes, viz. excessive time consumption, induces human error, etc. The consultancies also host Patients of around 7k-10k. Even they have a data of 7k-10k Patients. And so, even they need a good, low scale HMS fulfilling their basic requirements of hosting their Patient's Medical Records, Account Management, Medicine Recommender System, some medium through which they can keep in touch with their Patients, notifying them time to time about their health, time to take their Medicines, etc.

Answer to all these problems lies in Mobile Computing. Mobile, now-a-days has become like blood to our veins. Everyone uses it and importance of Apps has reached beyond the skies. So we can basically integrate all these problems and create a singular solution.

2. PURPOSE

The aim of the project is to create proper low scale HMS which can take care of complete Consultancy and carry out all the activities efficiently. Recommend probable Medicines to the Doctor. Along with ensure better services to the Patients.

3. SCOPE

The scope of the system is to reduce the amount of resources required on the Consultation side, viz. time consumption, manpower, stationery, etc.

4. LITERATURE SURVEY

- **Item-Based Hybrid Recommender System For Newly Marketed Pharmaceutical Drugs**
  Authors: Shruthi Bhat & K.Aishwarya

In this paper, we studied that the Recommender Systems are Information Systems that predict user preferences and present product/item/service recommendations that are personalized and subjective. These systems is used in the field of e-commerce and research extensively. The system in this paper aims enlightening the medical community on the newest introductions to the market. In this system user can log in and search for any drug available in the market. Based on this, relevant recommendations for new similar drugs are presented to the user in the subsequent log in sessions.

Steps:
(a) Gather the information.
(b) Employing item-based Top-N recommendation algorithm to compare and contrast search histories of users with a common background and determining item-item similarities based on product features; ultimately Top-N recommendations are then presented to the user.

- **A Smart Health care System Framework**
  Author: Haluk Dakurman

In this paper, we studied that the Smart Health care Systems Framework (SHSF) has been designed, which provides opportunities for health care organizations to deploy platform-,technology- and location-independent solutions with fewer risks and increased context awareness. It also emphasizes on the challenges in health care system .The various challenges discussed are common languages, system complexity, system adaptation etc. In this paper, Research focused on smart health care systems offers an opportunity to develop new theories, models, and methods to help better design, implement, adopt, and manage these technology-based services in terms of usage and contributions to health care performance.

- **Design and Implementation of Hospital Management System**
  Authors: Adebisi O.A, Oladosu D.A, Busari O.A and Oyewola Y.V

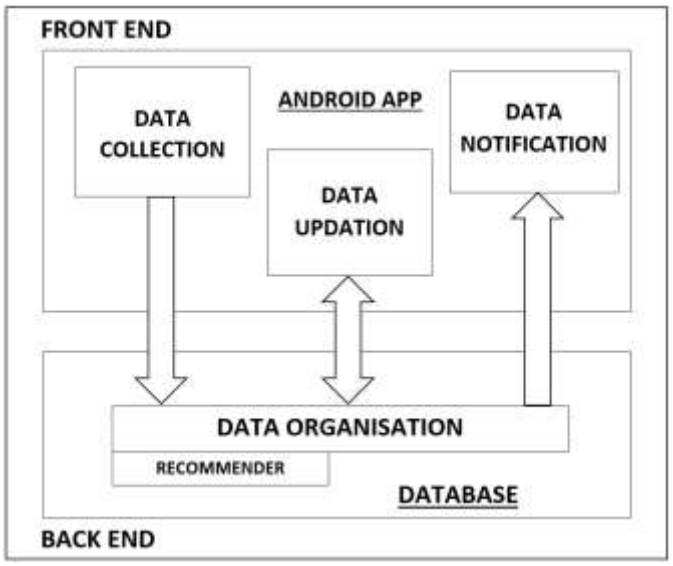
This paper implemented an automated system that is used to manage patient information and its administration. So that they can eliminate the problem of inappropriate data keeping, inaccurate reports, time wastage in storing, processing and retrieving information encountered by the traditional hospital system in order to improve the overall efficiency of the organization. The tools used to implement the system are Hypertext Markup Language (HTML), Cascading Style Sheets (CSS), Hypertext Preprocessor (PHP), and My Structured Query Language (MySQL). The design provides excellent patient services and improved information infrastructure. The purpose of the paper is to design HMS that helps to:

– Eliminate redundancy in term of data storage. Data will be stored in a computer 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 specialization in the hospital.

- **Design and Implementation of Hospital Management System Using Java**
  Authors: Olusanya Olamide O, Elegbede Adedayo W and Ogunseye

In this paper, research work is done on design and construction of Hospital Management System (HMS). And the system is made such that it provides the benefits of streamlined operations, enhanced administration & control, superior patient care, strict cost control and improved profitability. The system uses JAVA as the front-end software which is an Object Oriented Programming language and has connectivity with the back-end software. The basic concept implemented in this paper is digitizing manual systems of hospitals for better management and simpler administration. Introduction of HMS, i.e. Hospital Management Systems. There are different modules in the process of Hospital Management System. These include:

– Patient management
– Services management



5. SYSTEM ARCHITECTURE

The overall system design consists of following modules:

(a) Data Collection.
(b) Data Organization.
(c) Data Recommendation
(d) Data Updation.
(e) Data Notification.

The System is a basic and conventional, two part system with Front-End and Back-End. Front-End being the ANDROID APP and the Back-End being DATABASE. On another overview, the System has five modules as mentioned above with specific functionality for simpler design and lower complexity.

First of all, the System starts and ask the user that might be the Doctor or the Attendant or the Patient for credentials to access the system. Then the system proceeds through the credentials verification and the system tasks as shown in the Figure 4.1 i.e. A Doctor can create a new Case-File, collect this data and store in a structured database (SQLite). After this, some Organization tasks like categorizing the data stored in database and then giving the data in output whenever required.

Using this above data, the Recommendation Module recommends probable medicines to the Doctor. It uses the Item-Based Top-N Recommendation Algorithm.

After getting expected output, data is updated as per requirement. Post Updation, again Organization takes place, in order to go for Notification. This is a loop activity and occurs in a cyclic manner.

6. SYSTEM EVALUATION

6.1 ADVANTAGES

- User Friendly.
- Access to authorized personnel only.
- Memory space utilized efficiently.
- Scalable, reliable and portable.

6.2 DISADVANTAGES

- No specific medium of converting existing Case-Files into digital format.
- Requires constant Internet connectivity.
- Redundant data may exist on multiple iterations.
- Sometimes, Performance issues may rise, resulting in System Freezing.
- Algorithm could take a bit more amount of times in certain cases

6.3 APPLICATIONS

- After some minor changes, could be deployed for almost every Clinic and Consultancies.
- The Recommender Algorithm with certain modification could be used for drug recommendation in any health care segment.

7 CONCLUSION

The proposed system consists of 5 phases like Data Collection, Data Organization, Data Recommender, Data Updation and Data Notification. The final output of this system is in the form of visuals and notifications. The main output is the conversion of the Manual HMS to Digitalized HMS. Thus, reducing a lot of resources being consumed at the moment. The system can also be reformed in future by a more improved system than the proposed system.

Thus, on the basis of literature survey and by analyzing the existing system, we have came to a conclusion that the proposed system will not only aid the Clinics and the Consultancies but will also help to digitize their Patient's Database and in turn help to deploy resources efficiently to prevent loss of excessive and increase safety, security, sound health and much more better services to the citizens.

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