Accumulation of Next Generation Automated Electronic Medical Support Systems

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Abstract— *The necessity of human needs expands exponentially with every second that engrosses. The main ideology in e-medical systems is to maintain a database that can be effectively and efficiently used for patient records and treatment. Thus the collaboration of both these aspects together into one system encompasses the vital need of future enhancements in the technical aspects of how humans are treated with respect to medical sciences. Each one in the mankind world is considered to be treated in an obsolete manner if their medical history is found to be absent or complicated. Hence there is a requisite for a medical tracking system that automates the reports and medication given to each one of the 23 pairs of chromosomes of each human. Thus a medical tracker that helps to store the patients' details, auto-retrieves it based on the medication prescribed and also shows the automated dosage level of each medicine that generates based on the type of ailment, helps the patient to be universally treated irrespective of his unknown origin or past health knowledge.*

Keywords— EHR, Automated Electronic Medical Support Systems

I. INTRODUCTION

The medical systems works on the concept involving electronic health records (EHR). A web document that is rich in technologies like Servlet, DOM and other web technologies and uses Biometric Pattern matching to also improve the security and intelligence of the system. This type of system hence alerts patient time to time regarding their medical records, easing human efforts and medical treatment, implementing with the essential and efficient use of today's technology.

II. PROPOSED SYSTEM

The proposed system is made to function and ease out the human efforts into the databases, data retrieval and report generation. The in-patient diagnosis part of this proposed web application is a medical report generator that allows doctors to enter patient details in a form structure.

From this form, the data is extracted and a full-fledged report is generated and saved as PDF. This PDF report can then be mailed to the patient, thus removing the necessity for paper based reports.

The out-patient diagnosis does not use any forms. It simply provides an area for the prescription to be typed by the doctor and sent as Short Message Service (SMS) to the patient.

The entire system eliminates the need for storing medical records in hard copy form. Thus the patient need not worry about carrying his medical records wherever he goes.

A comprehensive medical report pdf is generated by the application and stored in the local system with patient id as name. The doctor is then given an option to mail the medical report and thereby directed to the email page which integrates SMTP and MIME to send an email with attachment.

The application also stores the certain patient details in the database which is achieved using a servlet. This database is used as a reference when an in-patient comes for a follow up review.

III. IMPLEMENTATION

Our web application caters to the needs of doctors for in-patient and out-patient diagnosis. The in-patient diagnosis part of the web application is a Medical report generator that allows doctors to enter patient details in a form structure. From this form, the data is extracted and a full-fledged report is generated and saved as pdf. This PDF report can then be mailed to the patient, thus removing the need for paper based reports. Also, the application provides a facility to keep track of all the patient details so that when an in-patient discharged from the hospital comes for a follow-up consultation, his medical record can be pulled up and verified based on his unique patient ID.

The out-patient diagnosis does not use any forms. It simply provides an area for the prescription to be typed by the doctor and sent as SMS to the patient. The entire system eliminates the need for storing medical records in hard copy form. It also gives the patient access to his medical record from anywhere across the globe since it is sent to his mail. Thus the patient need not worry about carrying his Medical records wherever he goes.

IV. SYSTEM ARCHITECTURE

When the Doctor starts the application, he is presented with a login page. His username and password are authenticated by a servlet before giving him access to handling respective patients. If the patient is to be admitted in the hospital, in-patient diagnosis is chosen by the doctor and he gets directed to a web page that contains a form. After filling up the form details, a comprehensive medical report pdf is generated by the application and stored in the local system with patient id as name. The doctor is then given an option to mail the medical report and thereby directed to the email page which integrates SMTP and MIME to send an email with attachment.

When the patient comes for a follow up review, his medical record is retrieved from the system and using it as reference, further diagnosis is done and this report is also mailed to the patient. In case of an out-patient, the doctor is directed to a web page where a text area is provided to type in the prescription. This prescription is then sent as an SMS to the patient.

The application also stores the certain patient details in the database which is achieved using a servlet.

This database is used as a reference when an in-patient comes for a follow up review. His credentials are matched to see if his records exist in the system.

V. STRUCTURAL DESIGN

The system explains the processes involved in the system proposed to be used by the doctors for in-patient and out-patient diagnosis. The in-patient diagnosis part of the web application is a Medical report generator that allows doctors to enter patient details in a form structure. The patient details and ailments are obtained, studied, entered and reported. Further on when the prescription is generated, it is sent along with the report to the patient's mail id to be accessed from anywhere. In the form, the data is extracted and a full-fledged report is generated and saved as pdf.

The out-patient diagnosis does not use any forms. It simply provides an area for the prescription to be typed by the doctor and sent as SMS to the patient. Also, the application provides a facility to keep track of all the patient details so that when an in-patient discharged from the hospital comes for a follow-up consultation, his medical record can be pulled up and verified based on his unique patient ID.

The entire system eliminates the need for storing medical records in hard copy form. It also gives the patient access to his medical record from anywhere across the globe since it is sent to his mail and his local drive, a cloud storage. When the patient comes for a follow up review, his medical record is retrieved from the system and using it as reference, further diagnosis is done and this report is also mailed to the patient.

VI. FUTURE ENHANCEMENT

The future extensions and enhancements play a pivotal role in how this entire system is steered into the healthcare systems in the future.

Some of the interesting future enhancements include-

A. Chip Implantation

The process of implanting a chip is a new trend in the day to day processes. It not only enables to track a person from time to time but also identifies the exact match. Individuals can be physically located by latitude, longitude, altitude, speed, and direction of movement.

Researchers at the Massachusetts Institute of Technology (MIT) and elsewhere have embarked on an ambitious $32 million "human body-on-a-chip" research project that will use micro-electro-mechanical systems (MEMS) microfluidics to mimic people's reactions to substances-of-interest.

A pin code could be used to activate the chip – or to deactivate it to maintain privacy. They are easy to install and remove, and, because they are implanted under the skin, they are unobtrusive. The chips, which could be the size of a thumbnail, could be injected into an arm or a hand.

GPS would not work because skin would block the signal, although new Near Field Communication chips like those in current smartphones could work because of their low-power requirement. However, no-one has yet tried to implant NFC chips.

B. Smart Device Access

The report can be universally acclaimed and accessed by the patient. The updating of smart devices corresponds to the fact of using smart integration between scanning systems like an ECG scanner or X-ray machine, which can be integrated with the corresponding patients' id and updated online to his portal directly instead of a hard copy.

C. Expert Systems Linkage Network

With the daily access of expert systems in the near future, there could be a separate network set up exclusively for all smart devices and expert systems in the future.

With that coming into existence, it is possible for the patient as well as the doctor to understand the patients' case and symptoms wherever possible on the go, not only at a restricted clinic and medication can be prescribed through such a system then and there through smart communication for the patient for their quick recovery.

D. Governmental ID Medications

It can be made a possibility in each nation that a valid governmental proof is produced before or during the course of medication for identity purposes and patients' online portal update, that serves the purpose of national identity and authentication.

VII. CONCLUSION

An expert system in the field of medical sciences is a great stipulation that needs to be adhered in the future. With all the necessary requirements and advanced, yet balanced technological inputs we possess today, it is indeed a great step for mankind to promote the medical care utilities and systems present. With this ideology proposed it is undoubtedly the best human-like medical attention that can be given to treat the needy. Healthcare systems will definitely have a revolutionary change with this makeover that transforms the treatments and services offered to the best, from time to time with latest inputs and today's technology.

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