

Medical License

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Abstract— The objective of the project is to develop a personal medical smart card for maintaining and transferring patient health records which would act as medical license for the patient. Each patient will carry a credit-card shaped personal smart card containing his or her medical records. Cards will be funded by the government and provided to patients by registered hospitals. When read, the hospital staff will be able to access the patient's medical records and could carry out the treatments on patient in case of emergency situations. Hospital staff will be responsible for updating the card with any relevant changes every time the patient visits the respective hospital. The usage of smart cards as the medium of holding patient's medical record in a central database would prove beneficial for handling the emergency situations like accidents. Individual patients will possess their records in most convenient and secured form. In addition, implementing such a system will effectively begin converting all current paper based medical records into electronic format, serving as a key intermediate step towards transitioning into fully nationalized electronic medical records which can be used during emergencies.

Key words: Medical License, Adhaar Card, Smart Card, Medical History, Healthcare, Portable, Barcode

I. INTRODUCTION

In today's fast paced world, unpredicted post-accidental consequences could lead to any emergency situation where an individual might require immediate treatment keeping in consideration his medical history. In order to deal with these undesirable situations, a portable card carrying patient's medical information is needed to be mechanized which will include his past medical treatments, blood group, allergies he is susceptible to diseases he has suffered from, etc. This project aims at summoning all the patient's medical data at one place so that it could be easily accessible by the patient or the hospital he wishes to receive treatment from. In medicinal terms, this card would act as a medical license for the patient. It will hold a unique id that would be mapped to an aadhar card number of the respective individual. The card could be generated at any registered hospital. Also it can be updated in a secured manner with the treatments or surgeries the patient has went through recently in any hospital.

A. Application

Smart health cards can support a wide variety of features and applications in the field of medicine. It can be proved to act as a medical license for the patient which carries the medical information of patient's medical history, treatments underwent and medication taken. Medical license can improve the security and privacy of patient information, provide the secure carrier for portable medical records, reduce healthcare frauds, provide secure access to emergency medical information, provide an ease to update the medical information of the patient dynamically and provide the

platform to implement other applications as proposed by the medical hospitals.

B. Scope

At an initial stage, our project will be collaborated with two hospitals having their own local databases. These local databases will be connected to central database. In registration as well as in updation, copies of patient's medical information will be replicated on hospital's local database as well as central database. This project can be further expanded to include patient's adhaar card number as a unique pin to access his information through medical license. Future perspective of the project includes a license that would store medical information of the labors working in extreme conditions at construction sites and also of the masses affected by destructive natural calamities. It will also prove beneficial during post-war emergencies so as to carry out diagnosis and treatments on soldiers severely wounded at war-places. The project shows a great potential in willful acceptance nationwide so as to ensure a quick medication on affected one's.

C. Problem Definition

Emergency situations may arise in cases when an individual meets with an accident at some place where there is no quick medical aid available nearby. Firstly, this may result in undesirable circumstances where in some cases the individual may lose his life if he doesn't receive a proper treatment in a stipulated time. These situations include extreme cases like road accidents, accidents at a construction site, etc. Secondly, lack of knowledge of victim's medical history may result in receiving wrong treatment by him which could make the scenario even worse. To overcome these undesirable situations, idea of carrying one's medical information on a smart card in the form of medical license will prove beneficial for any individual. Additionally, the license could be used at different hospital organizations for updating the medical history of the patient from time to time. This would allow the hospital staff to have a prior knowledge of patient's history and decide the righteous treatment for the patient visiting the hospital in case of emergencies.

II. LITERATURE SURVEY

Various countries with national health care programs have deployed smart card systems. The largest is the German solution which deployed over 80,000,000 cards to every person in Germany and Austria. These memory cards are issued by the health insurance organizations and contain the insured person's personal data which used to be entered on the paper insurance form. The smart patient data stored in the chip can be read very simply with the aid of the appropriate smart card reading device and facilitates the secure sharing of patient clinical data amongst multiple healthcare providers. Altogether they have been responsible for a considerable reduction in administrative work for the insurance organizations and in the hospitals and medical practices

seeking smart health solutions. Patients will no longer need to fill out their personal information each time they visit their doctors since the cards will contain pertinent critical information such as medications, allergies and chronic conditions along with demographics and insurance history. By inserting the patient card in a computer in the exam room, the physician can have instant access to accurate and up-to-date information on the patient. Patients can also check their stored information by using a computer kiosk in the physician's office or they may purchase a card reader to use with a home computer. For the patient, a PIN is required to gain access to their data.

A. Similar Existing Project Comparison

The similar project has been implemented in Canada by Canada Healthcare organizations where there are various cards maintained for different diseases and surgeries. For example, distinct card for pregnancy related treatments, card for daily routine checkup, card for heart surgeries, cards for diabetes, etc. Implementation of various cards results in maintenance of different database records thus degrading the integrity of data and jeopardizing its security. Our project aims at reducing this redundancy and combining the entire data in a single card.

B. Analysis

The existing project includes too many cards assigned to a particular patient. This may cause generation of huge amount of data categorized in different sections. To maintain this variety of data, multiple databases are needed to be monitored for integrity, security and accountability. The failure of any one of the databases may cause hindrances in justifying the above mentioned features. Moreover data of the respective patient generated at one hospital cannot be accessed by another hospital if the patient visits another hospital for the next time. Our project aims at reducing these duplications by merging only the significant medical history of patient maintained at a single, central database. The copies of medical records will also be replicated on the local database of hospital whenever patient wishes to update his recent information.

III. PROPOSAL

A. Problem Statement

To create a portable card in the form of medical license where patient can have access to his medical history which can be used for daily routine check-ups or during the emergencies like accidents, pregnancy related emergencies, post war emergencies, emergencies occurring due to accidents at a construction site, etc. This could reduce the paper work in hospitals and ensure the security and integrity of data.

B. Proposed Work

We propose developing a personal medical license for maintaining and transferring patient health records. Each patient, if he or she elects to do so, will carry a credit-card shaped personal smart card containing his or her medical records. The data on these cards will not be accessible unless the card is scanned by a barcode scanner available to registered hospitals. When read, the provider will be able to access the patient's medical records or update the information into the preferred format with which the provider stores

patient record in database. Hospital will be responsible for updating the card with any relevant changes. Our proposal of using smart cards as the medium of patient record transfer between hospital organizations will depend on the type of database organization used internally to store information, which would require a centralized medical record database. Individual patients will possess their records in a convenient form, and professionals can be certain all available records are present. In addition, implementing such a system will effectively begin converting all current paper based medical records into electronic format, serving as a key intermediate step towards transitioning into fully nationalized electronic medical records.

C. Proposed Methodology

The patient will be provided with a smart card. Every registered hospital will be provided with a unique ID and password to carry out the operations, when patient visits for the first time in hospital either for registration process or when he needs to update his clinical information in the card. With the help of this card, medical record information will be read, modified, or added. A unique barcode can be generated for a particular card in the system that would act as a key mapped to particular patient's information on the central database. Patient's medical information will reside at two different databases-one in the hospital's local database where the patient registers for the first time and other in the central database. This would ensure data availability even if any of the database system crashes or fails to respond. A reliability will be maintained as only the hospital authorities would have access to patient's information through their system.

To address the issue of lost cards, a central database should be kept of active cards, and nothing more. If a card is lost then a patient will report it and obtain a replacement card. If a lost card is scanned, the card will be deleted. There should also be a central database for valid card readers. Each reader is registered to a specific organization. This makes theft of cards or readers unlikely, and only unauthorized use of readers at hospitals will pose a problem. In order to ensure such non-violations, data confidentiality and agreement policies will be established between hospital and the patient at the time of medical license registration.

IV. SIMULATION RESULTS

The project has been developed using a smart card based on the adhaar card number of an individual. The smart card has an imprinted barcode- directly formed from the adhaar card number of the individual- which is read using a barcode scanner. On the successful reading of the barcode, a database is retrieved on the screen of the desktop. This page displays all the medical details of the patient.

As a result, using this project, we can analyse the medical history of an individual and thus, in emergency situations, we can easily get the medical records/history of the individual in question.

The project will provide us with a very high level of portability- we do not need to carry the cumbersome files and medical test results- all information will be stored in the card database itself. As a result, we will move towards a more digitized version of storing medical records.

V. CONCLUSION

We propose developing a personal medical license for maintaining and transferring patient health records. Each patient, if he or she elects to do so, will carry a credit-card shaped personal smart card containing his or her medical records. The data on these cards will not be accessible unless the card is scanned by a barcode scanner available to registered hospitals.

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