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Digital Medicine: An Android based Application for Health Care System

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Abstract: An agitated lifestyles to address quick pace a lot of and a lot of folks face health issues no matter the age bracket. Health care system has therefore become associate inevitable a part of each family. Obtaining economical and fast health care becomes a necessity; so beside the generic approach there comes a desire to adopt a parallel economical and speedy approach called Digital medication. It's associate approach which might be adopted by hospitals to produce fast access to health care services provided by them. Like on-line video conferencing, emergency alarm with important type of medical condition or accidents; uploading of medical reports with security measures necessary whereas consultation, on-line medical prescription, programing appointment, info concerning nearest hospital and medicos, life remainder system to prompt medication intake timely. It's designed with associate aim to facilitate quicker and economical communication between doctors and patients giving transparency to locations or distance wherever they're based mostly whereas mistreatment the applying. The planned application is deployed on robot based mostly mobile phones connecting to the server managed by hospitals and uses GPS and GSM network for communication.

Keywords: GSM, GPS, Digital Medicine, Healthcare System, Video Conferencing, Report Transfer.

INTRODUCTION

The main meaning of introducing the system is to realize location transparency for patients and doctors within the existing ancient health care system. At an equivalent time it helps to scale back the manual paper work on the tending counters. As we tend to wear down sensitive domain, there was conjointly a necessity to handle the information in associate passing secured methodology thence all totally different levels of security measures were adopted. User friendly interface and fast processing and transmission were additionally the demand of application.

Existing System

In the existing health care system, the first demand and disadvantage is physical presence of patient and doctor for each consultation. Conjointly there's a high likelihood of interpretation of knowledge yet as prevalence of errors. Moreover, it's cumbersome and time intense. With the rise in volume of patients within the health care institutes, ancient methodology of management has gone out of part. As a results of this, a sophisticated Health Care Management System has been the demand of your time.

Disadvantages of Existing System:

- No location transparency for patients and doctors.
- Unable to forward urgent notification or emergency alarm to doctors or hospitals.
- Unable to get exact location of accident.
- Unable to get information on nearest hospital and clinic.
- Unable to notify in urgency to hospital and clinic.
- Unable to get online medical prescription.

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- Unable to get immediate services such as scheduling an appointment, booking an ambulance etc.
- Time consuming and high volume of paper work.

Proposed System

Our system consists of two parts: the client and the server. The client is deployed on an android-based cell phone (android 2.2 onwards). There are two parts:

- The emergency alarm.
- Healthcare management system.

With the help of the GPS and GSM network, the system can make sure the location of the users when they are in medical trouble. It triggers the emergency alarm and can also display all nearest hospitals to user. When the doctor or family receives the alarm message, they can immediately take medical measures to rescue the user. The system is using GPS and GSM technology for communication. The Global Positioning System (GPS) is a space-based global navigation satellite system(GNSS) that provides location and time information in all weather, anywhere on or near the Earth. GSM (Global System for Mobile Communications, originally *Groupe Spécial Mobile*), Messages are sent to a Short message service center (SMSC) which provides a "store and forward" mechanism.

Physical presence of patients and doctors are not needed in most cases during follow up consultation. Follow up consultation can be achieved very efficiently through video conferencing module in our system. Also when doctor in rural areas refer their patients to doctor in city hospitals they can use video conferencing module to exchange information about the patient in loop. Our System has adopted Sinch open source for video conferencing module. Sinch offers software development kits for video Calling – the Sinch SDKs – that you integrate with your mobile or web application for easily adding video calling based features.

The system support secure management of health record both in storage and during transmission. This is achieved by using AES algorithm encryption/ decryption of medical reports. The Advanced Data Encryption Standard (AES) is a symmetric-key method of data encryption. AES works by using the same key to encrypt and decrypt a message, so both the sender and the receiver must know and use the same private key. Other health services supported by the system are providing online medical prescription, viewing the nearest hospitals and doctors or diagnostic centers, scheduling an appointment, and booking ambulance. These services are provided using GPS and GSM communication network.

Advantages of Proposed System

- Video conference call between patient-doctor and doctor-doctor.
- Emergency alarm on critical medical conditions or accidents.
- Online medical prescription
- Secured medical report transfer from patient to doctor or doctor to doctor
- Availing health service facilities such as scheduling an appointment and booking an ambulance
- Finding the nearest hospitals and medicals
- Low cost and time saving system
- Different levels of security measures in each module

IMPLEMENTATION

Video Conference Call

For follow up consultancy the patient can use this module to consult with the doctor. The same module can be used for doctor to doctor medical information and history exchange about a patient in loop. Video conferencing is provided by the open source application “sinch”.

Fig. 1: Video Calling

Emergency Alarm

Emergency alarm system can be triggered on critical medical condition such as cardiac arrest or an accident. The alarm action will send emergency messages and calls to the user's family and the doctors. The emergency message can include the location information, in order for the rescue staff to locate the user.

Fig. 2: Emergency Alarm

View nearest Hospital

With the help of the GPS and GSM network, the system can track the location of the user and thereby display information about all nearest hospitals to user by clicking on a particular hospital all information about that hospital will be provided to the user.

Medical Report Transfer

Patients can upload their various medical reports during consultancy with doctors. Also doctors can analyze those reports during the follow up with the patient. These medical reports will be transferred from one system to other in encrypted form. For the encryption of the medical reports AES algorithm is used which will protect the confidentiality of the user and only the authorized person can access it. The history of such uploaded medical reports can be viewed by the doctor for further treatment.

Fig. 3: Report Transfer

Online Medical Prescription

After the follow up consultancy through video conferencing doctor can send the online prescription to the user which will provide the information about the medicines, the frequency and the time of intake.

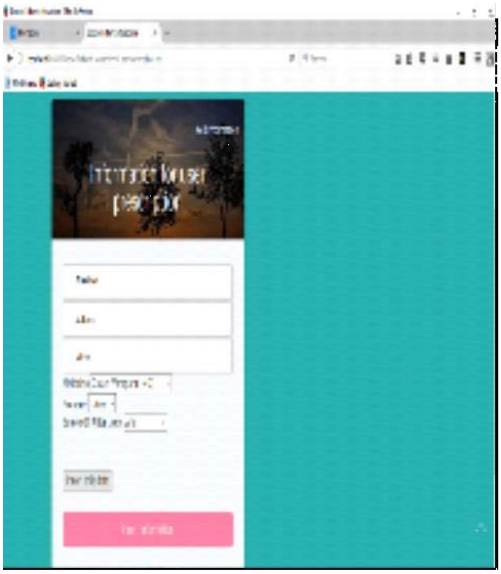

Fig. 4: View Prescription

CONCLUSION

We have developed an aid App that is extremely user friendly and economical in communication and reportage. The appliance developed has met all the objectives that were painted because the benefits of the planned system. By deploying the appliance on mobile phones we've got been able to bring the aid App on the palm of each individual.

The application is deployed on the cloud by desegregation completely different hospitals and linking their servers through the cloud. tho' sufficient security measures are adopted still there can be a scope to extend the safety parameters.

With reference to the feedback of the App users more enhancements is incorporated among the system to create it additional users friendly.

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