ISSN 2515-8260 Volume 07, Issue 09, 2020

Healthcare Android Application for Patient Data Viewer

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Abstract:

Technology-based health treatment in today's environment is even more important. Doctors tend to track patients in hospitals on an daily basis.The condition of patients operated on must be tracked on an ongoing basis. There could be no extremely qualified physicians in the hospital throughout the day.Now, healthcare systems are technically driven. In recent years, mobile devices and their use have also increased. This article describes the concept and implementation of an Android smartphone device implementation framework for a patient data display system. This device helps doctors to remotely monitor and react to the critical parameters of a patient.

Keywords: Android; alerts; vitalhealth parameters;healthcare;server;

1 Introduction:

Today, because of the rising and elderly citizens in the country, health care is a crucial social necessity.Advancing technology has introduced a great amount of creativity and change to this sector and a lot of development is still expected. Doctors require exposure to the patient's main criteria to have quality clinical care. The way doctors and patients have exposure whilst on the run.Android is an increasingly common smartphone operating system and is growing. Since it is open source, it is simple to create and install custom software for users. We seek to use these Android apps to make it simple for doctors to access patient data anywhere and at any time.

The suggested program, Medical Data Monitor, is an Smartphone framework that lets the doctor display up-to-date safety criteria for patients, including blood pressure, heart rhythm and so on. The doctor should be allowed to create and show observations concerning a case. The practitioner will view the patient's ECG recording. If a patient is at danger, the doctor gets alerts whether anyone moves past all of the patient's vital thresholds. All this knowledge is obtained from the hospital registry and submitted to the physician Android app.

For emerging and industrialized countries, the patient-per-doctor ratio is very high.Physicians visit two to three clinics and hospitals. Most patients will be tracked at multiple sites. The physician therefore has use of a technology which helps doctors to separate themselves from the vital signs of a patient.In this article, such a program was tried. Data from the patients under the doctor will be shown remotely by the system. The medical

details from multiple hospitals should also be organized and easily accessible such that the doctor can immediately remember the medical (and his or her condition) and respond accordingly.Due to its open-source resources and the rich user interface functionality, the application was built using the Android framework.

2 Related work:

This is an application built on Android that implements an automated warning device. It concentrates on doctors and patients. Patients do not bear in mind their prescription dose[1] because their infusion timings may be alarmed. Multiple prescriptions and periods like year, duration and definition of medicines can be subject to alarm. We will be told of the ideally patient-selected program by email or call.It research creates a mobile network which enables the storage, update and recovery of information from Cloud Computing technology in electronic healthcare. The smartphone app uses Google's Android Operating System (DICOM format and JPEG2000 application supports) to handle [2] clinical records and medical pictures of patients. The platform has been checked by Amazon's S3 storage provider.

This paper introduces a Machine to Machine (M2M) prototype health solution which integrates mobile and IPv6 technologies in a network of wireless sensors to track patients' health and to provide a range of effective, comprehensive and[3] convenient healthcare services. A low-powered wearable sensor dynamically tests the health parameters and is attached to an M2 M node for wireless communication through the internet or external Connectivity networks through the M2 M Gateway under the principle of IPv6 over the low-power wireless personal area network.Today it has been more beneficial to have universal options for health care providers worldwide because of the accentuation on health knowledge and the rise of new cellular technologies. Following this method, the Handheld Monitoring[4] Terminal AndroidTMSmartPhone is suggested for tracking and study of ECG waveforms in real time from wearable ECG devices under wireless-sensor network (WSN) scope.

This goal is addressed in the area of well-being and health in a real-world market technology scenario. In fact, in our exercise program we have incorporated two separate sensors. We comment on the lessons learnt from the program deployment and usage, e.g. relation and data structure[5]. They deal mainly with the problems of linking the smart mobile system and the external sensors and with the collection of the appropriate application type. Software recommendations for I Secure Medical Tags for the elimination of patient mistakes and ii) Electronic Health Cards for Documentation [6] Records based on Secure NFC Tags, NFC P2P Mode or Card Emulations feature are the key feedback of the paper. A simple safety structure criteria for applications have also been momentarily listed.

The EMR is a multimedia archive containing every patient's documentation of the conventional medical report on paper. The EMR is a medical log for a department, who the view such records as a practitioner, patient or administration.[7] Data from the centralized portal will be extremely protected and safe for approved individuals to view the details. We propose to address these problems by providing the patient with encryption from all over the world access to the multimedia medical record using Elliptical Curve Cryptography (ECC)

algorithm, including authentication and control of data.The paper describes an emergency warning and health care program that is mainly used and held on an android-based computer. And, for most users, our program is appropriate. The program will verify that users are in danger and activate the warning utilizing the GPS and GSM [8,11] network.This includes technologies that concentrate primarily on laypeople / patients and healthcare practitioners in various contexts, including education and administration technologies on safety, nutrition and lifestyle, living support[10] applications for climate, technical continuing educational resources and solutions for monitoring of public health. The devices tested include those that deal with the treatment of chronic diseases, whether as independent software or as part of a BAN (Body Area Network) and remote server settings. We provide comprehensive explanations of the [9] implementation in the sense of the eCAALYX mobile program for older adults with various medical illnesses (Enhanced Total Environmental Assisted Living Study, 2009-2012).

3. Patient Data Viewer System Design

Figure 1 demonstrates the Patient Data Display System's basic architecture. The architecture involves components such as transducers and other equipments to calculate the essential parameters, a controller to gather and transmit data from numerous devices to a server, and a computer to store and connect the data to the physician's Mobile smartphone. A patient record is stored on the computer.

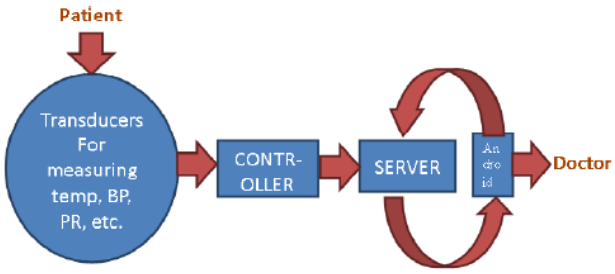

Figure 1. Patient Data viewer system Design

A monitoring system such as a multi-channel display, pulseoxymeter, ventilator, etc. are linked to people who are in hospitalized. They all turn the critical parameters of the patient into digital evidence. This detail is submitted to a patient station manager. The device gathers details, compiles and preserves details from all the devices related to different patients.The details is posted to the hospital registry regularly. Once a certain patient exceeds the acceptable limits by one of the critical thresholds, the dispatcher warns the system and restores the patient details on the list. There are several controls attached to a central computer on various wards.

A hospital registry offers a patient record with information including the name of the patient, age, sex, location, supervisory doctor, medical background of the patient. The archive frequently contains reports of case trials, medical operations conducted or therapy completed. Often included are legalities, accounting, etc. Blood pressure, electrocardiography (ECG), respiratory rate, pulse rate, temperature, oxygen saturation, inspiratory CO2 and expiratory CO2 are the main parameters used within the index. The system must automatically submit

an alarm to a mobile device of the doctor in question if the controller receives an emergency notice.

The program on the Android computer is the client apps. This program works with the hospital system for the physician. The doctor opens the device and signs in with your account and your email. When logging in, the device checks in to the registry and discovers the list of doctor treatment patients. The software displays the relevant details regarding the patient as the doctor picks a particular case.The software collects warning alerts from the medical system and produces a pulse and sound alarm bar to the physician. Therefore, the doctor may access medical records and is alerted through emergency reports. The hospital server is the gateway between the client program that runs on the android computer of the medical doctor and the patient-related transducers. Therefore, the interfacing of cell telephones with the transducers is not needed.

A. Software

The Patient Data Viewer Program, built for mobile apps, was created and deployed on the Android platform.This contains a workstation, middleware and main programs. The Android SDK offers libraries that are essential to integrate and deploy Android apps with high-level hardware.Java software for Android Apps, for view formats XML and for SQLite databases. Each program consists of four components: Event, Product and Content Provider.Event form to build a screen is expanded.

Service type is used for contexts, such as audio replay, etc. Throughout the framework, the Content Suppliers are used to store info. Broadcast receivers are used with two device correspondence. Goal class is used for performing an operation, program or communicating from another task.For data collection, the SQLite service is used. This is a compact weight storage program specifically built with the typical characteristics of mobile device with less power and energy use.

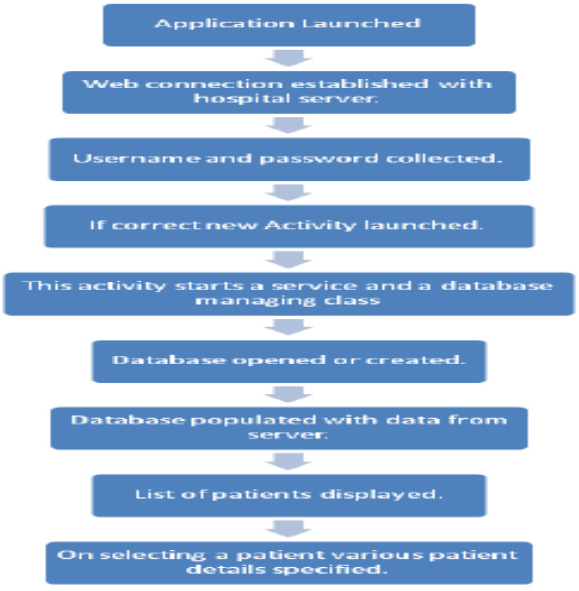

Figure 2. Work Flow for the System

ISSN 2515-8260 Volume 07, Issue 09, 2020

B. Work flow

The Patient Data Viewer method flow is shown in diagram. 2. The software is linked to the hospital registry when the device is installed. There is a wireless link. If these are right, the patient list and their information shall be submitted to the server in the form of JSON (JavaScript Object Notation) objects. The server will use a file with its user name and password to validate this. A server with the duty of upgrading the database is generated on the computer. A database in which patient data from the registry are stored is built or released.The program then identifies and shows the number of patients in the database. The doctor will search the details more in order to see specific results.

IMPLEMENTATION

The program is split into 3 modules: a module to store and extract information from the database, a module to collect data in the database, and a module to view warnings.

A. Module for receiving and storing data

Both medical details can be contained on the hospital list.The IP address of the server is given when the device is mounted on the smartphone. The phone connects through the default HTTP client when the doctor offers authentication details. The server creates a network link and validates authentication information. The system also contains the medical information under the guidance of the specialist. The artifacts are submitted as JSON artifacts.

The program collects, decodes and saves these JSON artifacts on your computer.The advantage of this system is that the hospital management will code the server according to their specifications. The only thing to do is send data in JSON object format to the server. The current software programs can be conveniently inserted into the system.The obtained data is processed in a database of SQLite. The database includes a table with the patient's addresses, existing conditions of fitness, illness, and records.

B. Module for displaying data

The software shows the patient list and querying details from the website. The doctor will navigate to the current heath parameter list of the patient, from a range of navigational choices, analysis, ECG, X-ray view, etc. A single patient can even be recognized by the specialist. This is stored in the patient's computer log.

B. Alerts Module

In the extreme hospital, the data for all patients are constantly reviewed to see if all the patient's parameters are healthy. When the vital values (including patient identity, disturbing safety criterion and recognition word) are violated, the hospital server may deliver a text message to the relevant doctor on the computer.

4 Result and discussion:

The software configuration for the Patient Data Client requires sent text messaging authorization. The device is immediately activated if the sent notification is from the doctor (contains the term identification).The doctor is informed of this emergency with a status bar warning, complete with vibration and tone.The doctor

will then open the document to show the patient's data to respond to the case. It greatly cuts the reaction period. Fig. 3 shows the screen shots of the application.

Figure 3. Application Screenshots

In addition to the non-critical patients, the Android-based health software provides a bandwidth for doctors to monitor their progress.

A. Critical care:

A patient of a heart failure is admitted in the ICU and after a monitoring of specific factors such as blood pressure rates, etc., a day or two is finished. In the meantime, another heart attack is possible. Some emergency devices controls the blood pressure constantly. This creates digital data that is delivered to the internal controller that updates the hospital registry patient records. The doctor automatically sends an warning to her phone and can have the care required quickly in the case of a heart attack.

B. Non-critical care:

Some Android apps only require a camera to sense a heart rate and rhythm that can be transmitted to the hospital server directly through your computer. Diabetic doctors, on the other side, have mobile machines for monitoring blood sugar and blood pressure. This data can be input into the phone. The distinction in the two situations is that in the first situation, the patient has to calculate parameters, while the integrated camera will do the measurements on the android unit. Without repeated trips, the doctor will frequently review the health of his patients. It function allows for immediate diagnosis of every disease. Dedicated dementia and other diseases software are available.

5 Conclusion:

Through this research, we have created an Android Open Source Patient Data Viewer Program. The machine lets the physician track the patient's data and his safety through the mobile app. The device would be particularly helpful for doctors on the run who do wish to track the state of the patient. In order to validate the data of the patient and generate warnings, we are creating a prototype of this program.We also implemented a strategy of

using SMS for triggering the device to warn the physician since there is no Android application push service. Currently, Google will provide App application move with the Cloud to Device Messaging process. The framework should also be expanded to provide data from patients who do not remain in hospitals owing to the use of wearable tracking tools.

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