

Secure Life : An Android Emergency Alert and Healthcare

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ABSTRACT

An android emergency alert and healthcare management system, which is mainly deployed in an android-based phone that is conveniently used and carried. So system is suitable for most of the people. When the doctor or family receives the alert message, they can immediately take measures to rescue the user. It can also manage the health record of the user. The user can take online medical to send their physical condition and then get prescription from doctor who will send the prescription on the user's phone. After that the life reminder system can remind the user to take medical on time and so on. The self-diagnosis part helps user to diagnosis their disease based on the given symptoms and they can get a detailed report through an email.

Keywords: Healthcare management, emergency alarm, life reminder, Android

I. INTRODUCTION

Now with the growing social pressure and the life more and more quick steps, most people are facing with health problems, especially a lot of high level personnel who are is sub health and modern social accidents occur frequently. It is more important to design a health security system for people like an emergency alert and health care management system, which is mainly deployed in an android based phone that is conveniently used and carried and the system can give emergency help at anywhere at any time. So the system is suitable for most of the people. As mobile phones play more and more important role for people, it is the best choice that the system will be deployed on mobile phones.

Normally, a healthcare emergency alert system is deployed on an independent device, wired or wirelessly linked to a gateway, and then connected to the hospital or emergency center. But the disadvantage of such systems is obvious: once getting out of the coverage of the gateway, the system won't work anymore. Healthcare management system has three main functions. The one is life reminder system. The second one is On-Line medical, and the last one is the self-disease diagnosis. However the life reminder function is useful and helpful for the senior people and chronic patients to give a friendly reminder for medicine and so on. But most of the healthcare management system is separated

from the emergency alert system, which means the users have to keep two systems at the same time. Apparently it is not convenient at all. According to these disadvantages, deploying the systems on cell phone is undoubtedly a better choice.

As a carrier of emergency alert and health care management system, there are some advantages for cell phone. First, the cell phone is convenient to carry. People always carry a cell phone with them, so they can send an alert or get the prescription from the doctor at everywhere and every time. Second, open operating systems on cell phones, such as iOS, Android and Symbian have many applications and easy to extend by developing application. Third, by the cell phone, user can make a phone call to their friends and family.

Medical diagnosis is regarded as an important yet complicated task that needs to be executed accurately and efficiently. The automation of such systems would be extremely advantageous. The World Health Organization has estimated that 12 million deaths occur worldwide, every year due to the Heart diseases. The diagnosis of heart disease is a significant and tedious task in medicine. The main objective is to develop an Intelligent Heart Disease Prediction System. The Heart Disease Data Prediction is designed to support clinicians in their diagnosis for heart disease prediction. System is a Web-based, user-friendly, scalable and reliable that

can be implemented in remote areas like rural regions or country sides, to imitate like human diagnostic expertise for treatment of heart ailment. Experiments have been performed using UCI machine learning data set.

II. METHODS AND MATERIAL

1. Existing System

The existing system has two main parts: emergency alert and healthcare management. Emergency alert system can be send alert manually or automatically when the unexpected event happens. The alert action will send emergency messages to the user's family and the doctors that are saved in the contact list of the application. When the doctor or family receives the alarm message, they can immediately take measures to rescue the user. The healthcare management system has two main functions. One is life reminder system. The other is On-Line medical. However the life reminder function is useful and helpful for the senior people and chronic patients to give a friendly reminder for medicine and so on. It can also manage the health record of the user. The user can use online medical to send their physical condition and then get prescription from doctor who will send the prescription on the user's phone. The whole methodology is shown in Figure 2.1.

The life reminder function which is a part of health care management can helps user to remind when to have medicine and some other things like doctor prescriptions. It is fairly useful for the chronic patients. Furthermore, by linking to the Hospital Information System (HIS), doctors can push directly the prescription to the reminder system for each individual patient via specific interfaces.



Figure 1. The Emergency System

Mobile phones support Internet access, so when the user is not feeling well, he can log in the system, their status will be sent to the server. The server receives the user's information and reminds the on-line doctor that the on-line user needs treatment. According to the user's conditions, doctor sends the prescription to the user's phone in order to protect the user timely to get treatment. After the prescription is sent to the user's mobile phone, the life reminder alerts the user to take medicine on the time and so on.

But most of the healthcare management system is separated from the emergency alert system, which means the users have to keep two systems at the same time. Apparently it is not convenient at all. According to these disadvantages, deploying the systems on cell phone is undoubtedly a better choice. Here the disease diagnosis can be performed if and only if the doctor is available.

2. Proposed System

The system has two main functions: emergency alert and healthcare management. A healthcare management system has three main functions. The one is life reminder system. The second one is On-Line medical, and the last one is the disease diagnosis. It can also manage the health record of the user.

A. Emergency Alert

Emergency alert system can be triggered manually when an unexpected event happens, for instance, the myocardial infarction. The alert action will send emergency messages to the user's family and the doctors. The alert action will also make calls to the numbers in the contact. When the doctor or family receives the alarm message, they can immediately take measures to rescue the user.

B. Healthcare Management

A healthcare management system has three main functions. The one is life reminder system. The second one is On-Line medical, and the last one is the disease diagnosis. However the life reminder function is useful

and helpful for the senior people and chronic patients to give a friendly reminder for medicine and so on.

C. On-Line Medical

This part of system seems like Query Online, which is designed for the user to see a doctor conveniently and quickly. When the user is not feeling well, then log in to the system, their status will be sent to the doctor. After the user sends his information to the doctor, the doctor will receive the information and create prescription to push the user's phone. User can add past physical condition in the medical History. The user sends present condition to the doctor and he can ask questions to the doctor through ask doctor option. According to the user's conditions, doctor sends the prescription to the user's phone in order to protect the user timely to get treatment. Doctor can review the user's prescription and decide whether to change, create new one, or delete it. The prescriptions contain dosage details which include medicine name, medicine level, dosage duration and dosage type. After the prescription is sent to the user's mobile phone, the life reminder alerts the user to take medicine on the time and so on.

D. Life Reminder System

The life reminder function that is one of healthcare management's functions can help user to remind when to have medicine and some other things which is often call as doctor prescriptions. It is useful and helpful for the senior people and chronic patients to give a friendly reminder for medicine and so on. Like a calendar, this is designed for medical information reminder. Doctors can push directly the prescription to the reminder system for each individual patient. Here the reminder is implemented based on the dosage details. The user can set reminder after getting prescription from doctor based on the dosage details. Dosage details include medicine name, dosage level, dosage type and dosage duration. The reminder part will produce an alert that will help the user to take medicine on time.

E. Self-Diagnosis

Medical diagnosis is regarded as an important yet complicated task that needs to be executed accurately and efficiently. Therefore, an automatic medical

diagnosis system would probably be exceedingly beneficial by bringing all of them together.

The diagnosis of heart disease is a significant and tedious task. Using medical profile such as age, sex, blood pressure and blood sugar it can predict the likelihood of patients getting a heart disease. Here use classification techniques to predict the heart disease. Classification is a data mining (machine learning) technique used to predict group membership for data instances. Classification analysis is the organization of data in given class.

The self-diagnosis part helps user to diagnosis the diseases based on the given symptoms and they can get a detailed report through an email and it can be used for later consultation. This report gives the information about the chances of occurring heart diseases in future.

III. RESULTS AND DISCUSSION

Implementation

The system consists of two parts: the client and the server: In client part, first implement the emergency alert part. Here it provide an option to store the required contact details in application. When the client presses the send alert button, the alert will automatically to all contacts. This part of system gives the user a convenient way to send an alert to their family and doctors. It is an android application and it is executed using the SmsManager functionality provided by Google.

The second client part is healthcare management. It contains three different parts such as life reminder system, online medical and self-diagnosis system. The life reminder is designed for medical information reminder. Through the interface between the client and the server, doctor can push prescription to user's phone. Then the life reminder will remind user to take medicine at right time. A prescription is a Java class, defined for a certain prescription created by a doctor.

After received the Prescription objects, the reminder parses the data first, and then writes them into local database. When the set time arrives, it will automatically remind user to take medicine. The online medical part of system seems like Query Online, which is designed for the user to see a doctor conveniently and quickly. After the user sends his

information to the server, the doctor will receive the information and create prescription to push the user's phone. After received the information from the user, the doctor creates prescription and send to the user, like as the life reminder system.

The self-diagnosis system can be used to automatic diagnosis of diseases. Here using heart disease dataset from Cleveland Heart Disease database, on line repository of large datasets. Here the data mining technique classification and prediction are using. These data mining technology provides a user-oriented approach to novel and hidden patterns in the data. The discovered knowledge can be used by the healthcare administrators to improve the quality of service.

Classification is a data mining (machine learning) technique used to predict group membership for data instances. Classification analysis is the organization of data in given class. These approaches normally use a training set where all objects are already associated with known class labels. The classification algorithm learns from the training set and builds a model. Many classification models are used to classify new object.

The output in the training and test data is binary because the heart disease is either present or not. Hence classification algorithms would be ideal to train the Cleveland dataset. The following steps define the classification workflow

1. The training and test data is preprocessed.
2. Several learning algorithms are evaluated for performance and the best one is selected.
3. A training set consisting of records whose output class labels are known, is used to build the classification model by using the learning algorithm
4. After training, this model is run against the test set which consists of records with unknown labels.
5. The performance of classification model is measured based on the number of correct classifications.

The classification algorithm learns from the training set and builds a model. Many classification models are used to classify new objects. We using LDA, SVM, C-4.5, K-NN, BLR, MLR, PLS-DA, The k-means algorithms, Entropy based mean clustering algorithm, The apriori algorithm these methods are used for the classifications. The user can be use according their needs. The some of these are gives high performance and some of them are gives accurate result.

So based on the user's needs they can select the appropriate classification techniques.

The Heart Disease Data Prediction is designed to support clinicians in their diagnosis for heart disease prediction. The quality of medical diagnostic decisions for heart disease can be increased by improvements to these Predicting systems.

This data mining exercise use two of the datasets from UCI heart disease database – The Cleveland Clinic data for training, and the Switzerland data for testing. The database originally consisted of 76 attributes with details about patient body characteristics. The goal was to determine if presence of heart disease can be diagnosed from this data.

Data Attributes and Instances - While the original dataset had 76 attributes, only a subset of the 14 most important ones were published on the public domain. Some of the patient sensitive information like name, SSN, etc. was removed for security purposes. There are 303 instances of patient data in the training dataset and 123 instances in the test data set. The output attribute is an integer that represents the presence or absence of heart disease. There were 4 missing values for attribute "ca" and 2 missing values for attribute "thal".

The 14 attributes of the patient are described below:

1. age (numeric) - age of the patient in years
2. sex (numeric) - represented as a binary number (1 = male, 0 = female)
3. cp (numeric) - represents chest pain type as an integer. Values range from 1 to 4.
 - Value 1: typical angina
 - Value 2: atypical angina
 - Value 3: non-angina pain
 - Value 4: asymptomatic
4. trestbps (numeric) - resting blood pressure measured in mm Hg on admission to the hospital.
5. chol (numeric) - serum cholesterol of the patient measured in mg/dl
6. fbs (numeric) - fasting blood sugar of the patient.
If greater than 120 mg/dl the attribute value is 1 (true), else the attribute value is 0 (false)
7. restecg (numeric) - resting electrocardiographic results for the patient.

This attribute can take 3 integer values - 0, 1, or 2.

- Value 0: normal
- Value 1: having ST-T wave abnormality

- Value 2: showing probable or definite left ventricular hypertrophy
8. thalach (numeric) - maximum heart rate of the patient.
 9. exang (numeric) - exercise induced angina. Values can be 1 for yes or 0 for no.
 10. oldpeak (numeric) - measurement of depression induced by exercise relative to rest
 11. slope (numeric) - measure of slope for peak exercise. Values can be 1, 2, or 3
 - Value 1: up sloping
 - Value 2: flat
 - Value 3: down sloping
 12. ca (numeric) - represents number of major vessels. Attribute values can be 0 to 3.
 13. thal (numeric) - represents heart rate of the patient. It can take values 3, 6, or 7
 - Value 3: normal
 - Value 6: fixed defect
 - Value 7: reversible defect
 14. num (numeric) - contains a numeric value between 0 and 4.

Each value represents a heart disease or absence of all of them.

- Value 0: absence of heart disease
- Value 1 to 4: presence of heart diseases

In server part, it contains the online medical part. The admin can set the department and doctors of each department. The admin can also manage the availability of doctors. In online medical part we have a doctor. When the doctor or family receives the alert message, they can immediately take measures to rescue the user. It can also manage the health record of the user. The user can take online medical to send their physical condition and then get prescription from doctor who will send the prescription on the user's phone. After that the life reminder system can remind the user to take medical on time and so on. The doctor push the prescription based on the user's query and their previous medical history. He can set the medicine dosages and time interval based on these details user can be set the life reminder.

IV. CONCLUSION

Motion detection system is one among the latest technologies used for security purpose. This is broadly used in many computer vision tasks like pose estimation, human tracking and face recognition, these are all the basic part of computer vision tasks. The designed system

is an android-based Emergency alert and Healthcare management which is practically deployed on android-based Phones. The system can give emergency help at anywhere and anytime, can remind users for medicine or response by the doctor's prescription. This is undoubtedly useful to senior people and the chronic patients and it is more convenient and safe to use. The emergency alert helps to send alerts to saved contacts in case of emergency.

The Heart Disease Prediction is designed to support clinicians and the user in heart disease prediction. An intelligent and effective heart disease diagnosis system is produced using classification and prediction techniques. By providing 13 input attributes, one predictive attribute is identified and the output is based on a binary value. Here considered only 2 class labels, 1 for "Heart Disease" and another for "No Heart Disease".

V. REFERENCES

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