Android application for Geolocation based health monitoring, Consultancy and Alarm System

Abstract— **This project looks at the construction of a simple device that will be capable of transferring the data of a patient's vital signs to a remote device wirelessly. The necessity of this project is to alleviate the difficulty that is encountered by medical experts in monitoring multiple patients simultaneously. This project will enable them to observe patients without having to be physically present at their bedside, be it in the hospital or in their home. A patient's body temperature, heart rate and blood pressure are transferred wirelessly through an agent such as Bluetooth technology.**

Keywords - Tele communication, BSN, SPOC, Healthcare

I. INTRODUCTION

In our aging society, cellular Healthcare (m-Healthcare) device has been estimated as an vital software of pervasive computing to enhance health care quality and save lives, in which miniaturized wearable and implantable body sensor devices and smartphones are utilized to provide far off healthcare tracking to people who have chronic clinical situations which includes diabetes and heart sickness. Particularly, in a m-Healthcare device, clinical customers are not needed to be monitored within home or medical institution environments. As an alternative, after being geared up with smartphone and wireless body sensor network(BSN) formed by body sensor nodes, clinical customers can walk outdoor and get hold of the extraordinary healthcare monitoring from scientific specialists every time and everywhere. We advocate a new relaxed and pri- vacypreserving opportunistic computing framework, referred to as SPOC, to deal with this venture. With the proposed SPOC framework, every medical user in emergency can attain the user-centric privacy access control to allow only those qualified helpers to take part in opportunistic computing to balance the high-reliability of PHI process and minimizing PHI privacy disclosure in m-Healthcare emergency. qualified helpers to take part in the opportunistic computing.

II. RELATED WORK

Tele monitoring systems face the problem of delivering medicine to the current growing population with chronic conditions while at the same time covering the dimensions of quality of care and new paradigms such as empowerment can be supported. By periodically collecting patients themselves clinical data and transferring them to physicians located in remote sites, patients health status regulation and response provision are possible. This type of tele medicine system guarantees patient control while reducing costs. So, to avoid hospital overflows we proposed the design and implementation of an architecture based on the combination of ontologys, rules, web services, and the autonomic computing paradigm to manage data in home-based tele monitoring scenarios. This proposed ontology-based solution defines a flexible and scalable architecture in order to address main challenges presented in home-based tele monitoring scenarios and thus provide a means to integrate, unify, and transfer data supporting both clinical and technical management tasks. The proposed system presents an ontology-driven architecture to integrate data management and enable its communication in a tele monitoring scenario. It enables to not only integrate patients clinical data management but also technical data management of all devices that are included in the scenario. The proposed architecture includes three layers: the theoretical layer, Communication data layer and tragedy alert layer. Our proposed system monitor the user health, when there is an emergency means it will produce any action (ex) alarm or call to ambulance. The limitation of existing systems are extra tests ought to be directed to test the proficiency and adequacy of the framework for checking a patient in a genuine situation.

The outcomes appeared in existing that the engineering does not expend numerous assets. Low transmission capacity cost is required to exchange the administration profile and its administration results.

III. PROPOSED METHODOLOGY

The Implementation phase of the Project Management process puts the project into action. The Implementation phase consists of four sub-phases: a) Execution b) Monitor and Control c) Move to Production

a) Execution: When a project moves into the Execution phase, the project team and the necessary resources to carry out the project should be in place and ready to perform project activities. During this phase the focus shifts from planning the project to participating in, observing, and analyzing the work being done.

b)Monitor and Control:Monitoring and controlling progress of a project plays a very important role in the successful implementation of a project. This is accomplished through:

i. Tracking of Action Items

ii. Tracking of Issues

iii. Status Reports

A. Key Functions

There are few key functions in the project. They are:

i. public static String predictingDisease:This function is used to predict disease of the user using the appropriate logic using exception handling which is present in callservice().It contains the username, heartbeat, temperature, pressure and

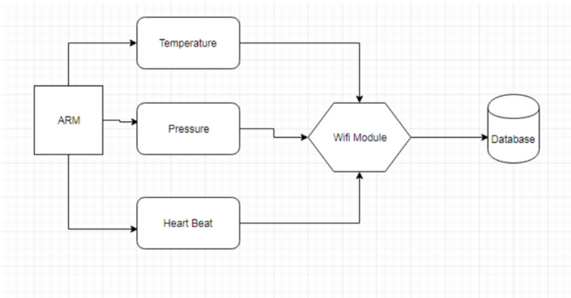

Fig. 1. Block diagram

method name. Whenever a change occurs in health or if there is any emergency this function is used to identify the disease. ii. Public static String(String username,String temperture).This function is used to send obtained values to the server using exception handling which is present in callservice() and contains health information along with latitude and longitude values.
iii. Bluetooth Receiver method contains some of the functions like onpause(), onstart(), onProgressUpdate, onPostExecute which are used for some of the basic actions.

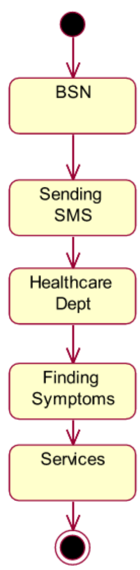

Fig. 2. Flow chart

B. Hardware and Software Specification

a. Hardware:
i. 1 GB RAM, ii. 80 GB Hard Disk,iii. Intel Processor, iv. MicrocontrollerKit, v. Android Mobile Phone with 3G Net Connection, vi. Data Card, vii. GPS, viii. Net Connection
b. Software :
i. Windows OS, ii. JDK 1.7, iii. MySQL, iv. Android Eclipse for Juno, v. NetBeans IDE 7.1.2
c. System Requirement:
a) Operating System:Windows 7 ultimate 32-bit.

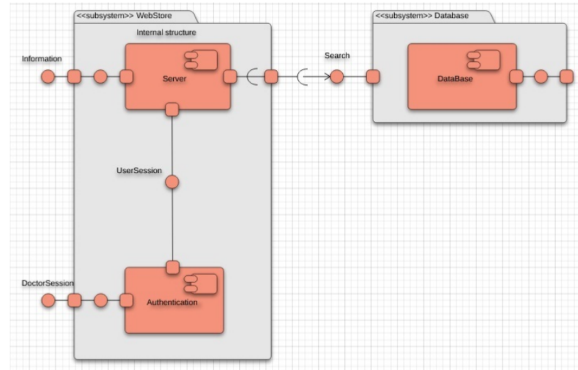

Fig. 3. Component Diagram

C. Modules

Modules:
1. Medical users
2. Body Sensor Network (BSN)
3. Smartphone communication
4. Healthcare Center

1. Medical Users: Normally the medical user personal healthcare information (PHI) is mainly invented for monitoring the patients without direct interaction with doctors. In an m-Healthcare system, medical users are no longer needed to be monitored within home or hospital environments. Instead, after being equipped with smart-phone and wireless body sensor network (BSN) formed by body sensor nodes, medical users can walk outside and receive the high-quality healthcare monitoring from medical professionals anytime and anywhere.
2. Body Sensor Network: Equipped with the sensor This will be equipped directly in the medical user. This BSN will transmit the user details for every time period that we have indicated. For example, each mobile medical users personal health information (PHI) such as heart beat, blood sugar level, blood pressure and temperature and other details will be captured by the medical users Smartphone.

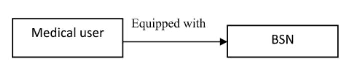

Fig. 4. Module-1

3. Smartphone communication: For each data transmitted from BSN will be aggregated by the Smartphone that, the medical users having with them using Bluetooth communication. This received medical information or symptom will be transmitted to healthcare center periodically with the help of 3G network.

Fig. 5. Module-2

4. Healthcare Center Receives Alert: We propose SPOC, a secure and privacy-preserving opportunistic computing framework for m-Healthcare emergency. With SPOC, the resources available on other opportunistically contacted medical users smart-phones can be gathered together to deal with the computing-intensive PHI process in emergency situation. Since the PHI will be disclosed during the process in opportunistic computing, to minimize the PHI privacy disclosure, SPOC introduces a user-centric two-phase privacy access control to only allow those medical users who have similar symptoms to participate in opportunistic computing.

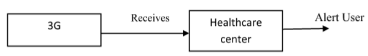

Fig. 6. Module-3

IV. System Architecture

The proposed System enable data integration and its management in an ontology-driven monitoring solution implemented in home-based scenarios. This is an innovative architecture that facilitates the integration of several management services at home sites using the same software engine. The architecture includes three layers: the theoretical layer (the ontology) the communication and data layer and the tragedy alert layer.

1) Theoretical layer includes both the ontology and the definition of rules. In particular, rules are used in combination with the ontology to provide personalized services.

2) The second layer is based on WS technologies. WSs have been successfully used in network management and also in other works to exchange data modelled by ontology.

3) Tragedy alert layer is based on patients health data. If patients health data critical means it will generates alarm.

Our proposed architecture to enhance its effectiveness and improve its functionalities to handle Maps.Provide member based patients-monitoring that is trusted patients can only use this system. Representational state transfer (REST) style and based on a generic communication method, provides a different design approach that may be reusable for other systems based on ontologys.

A. Implementation

In this paper, we have a tendency to propose a replacement secure and privacy protective opportunist computing framework, known as SPOC, to handle this challenge. With the planned SPOC framework, every medical user in emergency are able to do the user- centric privacy access management to permit solely those qualified helpers to participate within the opportunist computing to balance the high-reliability of letter method and minimizing letter privacy speech act in m-Healthcare emergency. Specifically, the most contributions of this paper area unit threefold. i. First, we have a tendency to propose SPOC, a secure and privacy-preserving opportunist computing framework for m-Healthcare emergency. With

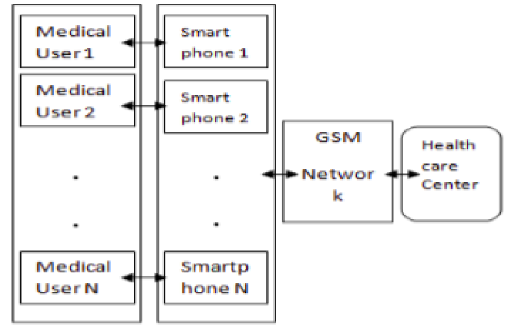

Fig. 7. System Architecture

SPOC, the resources accessible on different opportunistically contacted medical users smart phones will be gathered along to manage the computing intensive letter method in emergency scenario.

ii.Second, to realize user-centric privacy access management in opportunist computing, we have a tendency to gift associate economical attribute based access management and a unique non-homomorphism cryptography primarily based privacy-preserving inner product computation (PPSPC) protocol, wherever the attributed-based access management will facilitate a medical user in emergency to spot different medical users, and PPSPC protocol will additional management solely those medical users UN agency have similar symptoms to participate within the opportunist computing whereas while not directly revealing users symptoms.

iii. Third, to validate the effectiveness of the planned SPOC framework in m- Healthcare emergency, we have a tendency to conjointly develop a custom machine inbuilt Java. Intensive simulation results show that the planned SPOC framework will facilitate medical users to balance the high-reliability of letter method and minimizing the letter privacy speech act in m-Healthcare emergency.

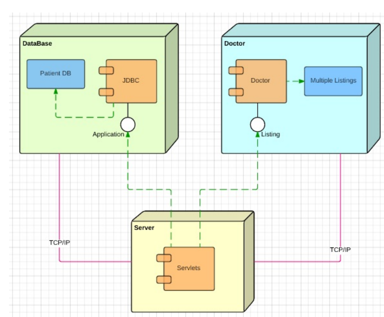

Fig. 8. Deployment diagram

V. Result Analysis

The project involves in providing a result that is very helpful to manage health conditions of any patient who is residing at their own place. To obtain a perfect result, it requires a kit that contains a sensors, Bluetooth along with a micro controller which are connected to 5v and 9v power respectively. This also needs a smart phone with android operating system which needs to be connected with the Bluetooth of the kit. The server which is present at the hospital side contains their own software and hardware things. Firstly the there is a need to get an application phone into our mobile after u get registered with them. Then the Bluetooth's have to be connected so that there will be a file transfer between them. An investigative model that portrays the administration conjuring process among searchers and suppliers is presented. In particular, we infer the ideal number of imitations to be brought forth on experienced hubs, so as to limit the execution time and improve the computational and data transfer capacity assets utilized. Execution results demonstrate that an arrangement working in the ideal setup to a great extent outflanks strategies that don't think about asset imperatives.

Parameters	Age	Captured	Threshold
Tachyacardia	20	98	110
Bradycardia	24	49	55

Fig. 9. Analysis Table

Here we see that, Sensors captured data which was used to predict diseases and send GeoLocation whenever it crosses the threshold values. The captured values 98 and 49 are captured for different conditions which was used to predict diseases. Then whenever a change occurs in the health the values get updated automatically in the mobile through the sensors from which the values are sent to the server. Then an immediate action will be taken according to the situation like sending an ambulance if there is an emergency or else prescribed to a nearby hospital.

VI. CONCLUSION

In this paper, we have proposed a new system for developing scalable system framework. This will eradicate the problem of delivering medicine to the current growing population with chronic conditions while at the same time covering the dimensions of quality of care and new paradigms such as empowerment can be supported. By periodically collecting patients themselves clinical data and transferring them to physicians located in remote sites, patients health status regulation and response provision are possible.