



RESEARCH ARTICLE

A SECURED PERVASIVE HEALTH SYSTEM FOR MOBILE HEALTHCARE EMERGENCY

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ABSTRACT: *Now everyone use mobile. With Associate in Nursing more and more mobile society and the worldwide preparation of mobile and wireless networks, the wireless communications will Support several current and rising attention applications. During these applications embody health watching and intelligent emergency management system, attention information access, and all over mobile telemedicine. The design and development of a invasive health system sanctioning self-management of patients throughout their daily activities. The projected system integrates patient health watching, standing work for capturing many issues or symptom met, and social sharing of the recorded data inside the patient's community, attending to facilitate malady management system.*

Index terms: *RSA Techniques, Data mining Tech, Android Emulator*

I. INTRODUCTION

A number of non-public health systems and tools are incontestable sanctioning health info management by the patient. Self management is usually thought to be a necessary a part of economical sickness management, enhancing the patient's role and

participation in attention services delivery. Particularly patients are also benefited from self-management activities, in terms of understanding higher their sickness, enhancing their communication with their doctor, increasing their certainty. Self-management and quantitative self-tracking are recently introduced as a part of rising on-line patient communities and social networks. In such networks, the patient is in a position to record bound info in regard with his/her health (e.g. a particular health condition) and share it with alternative patients of the community for functions of emotional support, exchange of experiences and concepts, education, improved self-tracking etc. Patient disposition to share with others personal health knowledge could be a key necessity for achieving the goals. the most practicality is obtainable by bound sites requiring constant on-line property, whereas the combination with health observance infrastructures round the mobile user remains in its infancy. The unassertive work and no mandatory sharing of health info by the mobile users is also of nice help towards effective (in terms of “anytime-anywhere”) and cooperative sickness management. a brand new framework for the development of mobile personal health systems supported the private Health Record (PHR) notion utilizing the acquisition of device knowledge from offered devices for health observance, the recording of health info, and external social networks practicality for sharing personal health info. These systems are significantly targeted at chronic patients throughout their entire everyday activities are exploitation transportable health observance systems are extremely alert to their sickness, and should want to play a additional active role in their sickness management. The framework supports the configuration of event-driven patterns therefore on alter pervasively sharing info inside the user’s grouping. Thus, associate degree atmosphere sanctioning pervasive and seamless communication between the patient and completely different actors (e.g. health professionals, relatives, similar patients, etc.) is built. An example implementation is bestowed wherever unassertive health observance with a wearable multi sensing device is applied, whereas a Service familiarized design (SOA) is adopted for the communication among the mobile device, the back-end server and also the external social networking platform in style micro-blogging services.

ORGANIZATION OF THE REPORT

Chapter 1 describes the literature survey. This Literature Survey helps to focus on the current Knowledge as well as previous knowledge about project. This says about various methodology related to project.

Chapter 2 describes about the completed modules in phase one. To create user authentication, body sensor network, performance evolution, simulation setup. It provides feasibility and scalability.

Chapter 3 explains about System organization. It gives detail about proposed system and architecture. Various sensors is used in this system to monitor the patients.

Chapter 4 illustrates about Modules in the project. User authentication model create medical user ID and password for mobile system. Body sensor network model update the mobile application as three types of sensor implementation to calculate the rage through mobile. Performance evolutions module help to number of qualifier. Report generation generates the information details and gives back it to the user.

Chapter 5 targets on implementation and Results. Eclipse IDE with Android is used to implement webservice.

Chapter 6 concludes the project.it summarizes the details of the project.it also describes the future goal of the project.

MOBILE HEALTHCARE (mHealth)

mHealth (also written as m-health or mobile health) may be a term used for the follow of drugs and public health, supported by mobile devices. The term is most ordinarily utilized in relevancy victimisation mobile communication devices, like mobile phones, pill computers and PDAs, for health services and knowledge, however conjointly to have an effect on emotional states. The mHealth field has emerged as a sub-segment of eHealth, the employment of data and communication technology (ICT), like computers, mobile phones, communications satellite, patient monitors, etc., for health services and knowledge. mHealth applications embody the employment of mobile devices in assembling community and clinical health knowledge, delivery of care info to practitioners, researchers, and patients, time period observation of patient very important signs, and direct provision of care (via mobile telemedicine).

While mHealth actually has application for industrialised nations, the sphere has emerged in recent years as for the most part associate application for developing countries, stemming from the speedy rise of portable penetration in low-income nations. The field, then, for the most part emerges as a method of providing larger access to larger segments of a population in developing countries, yet as rising the capability of health systems in such countries to supply quality care.

Within the mHealth area, comes operate with a spread of objectives, as well as inflated access to care and health-related info (particularly for hard-to-reach populations); improved ability to diagnose and track diseases; timelier, additional unjust public health information; and enlarged access to current medical education and coaching for physicians.

According to the analyst firm Berg Insight, around 2.8 million patients worldwide were employing home observation service supported instrumentation with integrated property at the tip of 2012. The figure doesn't embody patients that use observation devices connected to a computer or portable. It solely includes systems that trust monitors with integrated property or systems that use observation hubs with integrated cellular or fixed-line modems. Berg Insight forecasts that the amount of home observation systems with integrated communication capabilities can grow at a compound annual rate (CAGR) of twenty six.9 p.c between 2011 and 2017 reaching 9.4 millions of connections globally by the tip of the forecast amount. The amount of those devices that have integrated cellular property inflated from zero.73 million in 2011 to regarding one.03 million in 2012, and is projected to grow at a CAGR of forty six.3 p.c to seven.10 million in 2017.

Motivation of mHealthcare

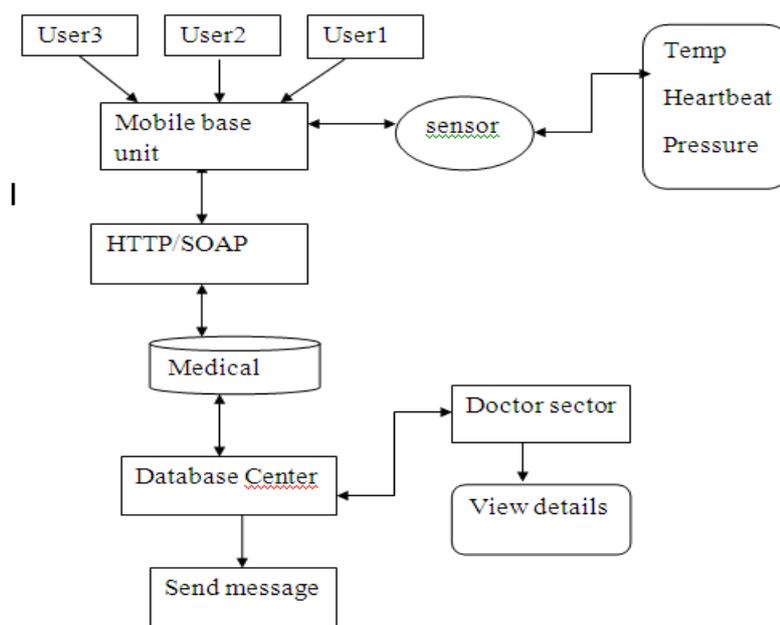
Mobile Health is one side of eHealth that's pushing the boundaries of the way to acquire, transport, store, process, and secure the raw and processed knowledge to deliver important results. mHealth offers the powers of remote people to participate

within the health care price matrix, which cannot be done within the past. Participation doesn't imply simply consumption of health care services. In several cases remote users are valuable contributors to collect knowledge concerning sickness and public health issues like out of doors pollution, medicine and violence.

The motivation behind the event of the mHealth field arises from 2 factors. The primary issue is the myriad constraints felt by care systems of developing nations. These constraints embody high increase, a high burden of sickness prevalence, low health care hands, giant numbers of rural inhabitants, and restricted money resources to support care infrastructure and health info systems. The second issue is that the recent speedy rise in portable penetration in developing countries to giant segments of the care hands, yet because the population of a rustic as an entire. With larger access to mobile phones to any or all segments of rustic, as well as rural areas, the potential of lowering info and dealings prices so as to deliver care improves.

The combination of those 2 factors have impelled abundant discussion of however larger access to portable technology is leveraged to mitigate the many pressures faced by developing countries' care systems and each factors are mentioned here.

II. SYSTEM ARCHITECTURE



Problem statement:

- This is social issue that is heavily expressed in Europe and United State. Patients are always concerned about their health information.
- The current E-health applications use many of the sensing devices that are made available by different types of application.
- Some of these sensors are not standardized so integrating such sensors application still an open problem.

- The Smartphone's energy could be insufficient when an emergency takes place.

SYSTEM DESCRIPTION

This is the initiation phase of the desired task. It develops the mobile application and adds three sensors Heart beat sensor, Temp sensor and last one Pressure sensor. This process implements only a person wearable and calculates the range through mobile. That mobile send all data in server. In suppose any emergency occurrence as doctor sector view the patient detail information and send the message to patient mobile base unit. The MBU (Mobile Base Unit) is the systems core part consisting of different parts:

- Personal health Information Repository
- Personal Health Information Controller
- Social Networking Controller
- Communication Controller
- User Interface

Project comprises of four modules. They are,

- User Authentication
- Body Sensor Network
- Performance Evolution
- Simulation Setup

Major tasks of the project are,

- Patient Monitoring
- Status Logging
- Social Sharing

User Verification

The process of identifying an individual based on a username and password. In security systems to authentication is distinct from *authorization*, which is the process of giving individuals access to system objects based on their identity. Authentication is ensures that the individual is who he or she claims to be but says nothing about the access rights of the individual.

Sensor Network

A Body Area Network (BAN) can be defined as a network on the human body, comprised of wireless sensor nodes that monitor body parameters and transmit those data to a central device or sink. BSNs are an important development for ambulant patient monitoring.

It develops the mobile application and adds three sensors:

- Heart beat sensor
- Temp sensor
- Pressure sensor

Trusted Agent

Performance Evolution is defined as communication between body sensor network and Smartphone are always workable are each other's transmission ranges.

The performance metrics used in the evaluation are

- Number of Qualified Helpers
- Resource Consumption Area

Medical Database Centre

The simulator implements the application layer under the assumptions that the communications between smart phones, Base Station Networks and smart phones are always workable are within each other's transmission ranges. In report generation is a health care centre generate crystal report from the data base collection.

In simulation settings major tasks are,

- Transmission of Smartphone and Body Sensor Network
- Emergency Location

III. IMPLEMENTATION AND RESULT

SOFTWARE DESCRIPTION

Android

Android is a software stack for mobile devices that includes an operating system, middleware and key applications.

The Android SDK provides the tools and APIs necessary to begin developing applications on the Android platform using the Java programming language.

Android includes a set of core libraries that provides most of the functionality available in the core libraries of the Java programming language.

Android Runtime

Every Android application runs in its own process, with its own instance of the Dalvik virtual machine. Dalvik has been written so that a device can run multiple VMs efficiently.

The Dalvik VM executes files in the Dalvik Executable (.dex) format which is optimized for minimal memory footprint.

The Dalvik VM relies on the Linux kernel for underlying functionality such as threading and low-level memory management.

Eclipse IDE with Android:

Eclipse is a multi-language Integrated development environment (IDE) comprising a base workspace and an extensible plug-in system for customizing the environment. It is written mostly in Java. The Eclipse software development kit (SDK) which includes the Java development tools, is meant for Java developers. Users can extend its abilities by installing plug-ins written for the Eclipse Platform, such as development toolkits for other programming languages, and can write and contribute their own plug-in modules. Eclipse SDK is free and open source software.

JSP:

Java Server Pages (JSP) is a Java technology that allows software developers to dynamically generate HTML, XML or other types of documents in response to a Web client request. The technology allows Java code and certain pre-defined actions to be embedded into static content.

SERVLETS

The Java Servlet API allows a software developer to add dynamic content to a Web server using the Java platform. The generated content is commonly HTML, but may be other data such as XML. Servlets are the Java counterpart to non-Java dynamic Web content technologies such as PHP, CGI and ASP.NET. Servlets can maintain state across many server transactions by using HTTP cookies, session variables. The Servlet API, contained in the Java package hierarchy `javax.servlet`, defines the expected interactions of a Web container and a servlet.

A Web container is essentially the component of a Web server that interacts with the servlets. The Web container is responsible for managing the lifecycle of servlets, mapping a URL to a particular servlet and ensuring that the URL requester has the correct access rights.

Servlets are Java technology's answer to CGI programming. They are programs that run on a Web server and build Web pages. Building Web pages on the fly is useful (and commonly done) for a number of reasons:

- The Web page is based on data submitted by the user.

IV. INTRODUCTION TO MODULES

- User Authentication
- Body Sensor Network
- Performance Evolution
- Simulation setup

User Authentication

In this method we use to store patient details such as Patient Heart rate, skin temperature and other activities. Because in this method we use mobile sensor devices. It sense all the activities and stores it in medical database . This application we find patient details or the health professional , in the system that mobile sensor device sensing all the details and then the device send medical centre(constituting the

system's back end) for disease or emergency management by the healthcare professional. Patient monitor means only monitors the data and retrieval the data or generate the all details, For example, an alert of high heart rate may be reported as a result of an average heart rate value captured within a time-window that exceeds a specified threshold.

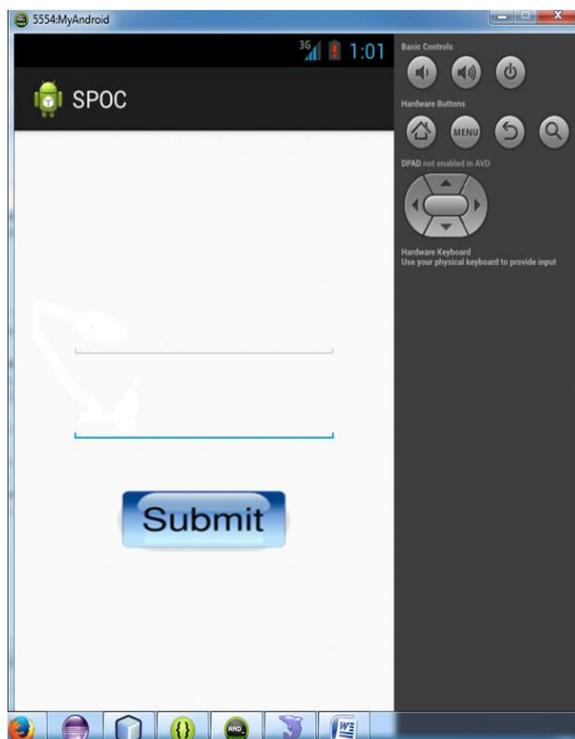


Figure 4.4.1 User Authentication

Body sensor network

Body sensor network (BSN) is terms used to express the application of wearable computing devices. It develops the mobile application and adds three sensors Heart beat sensor, Temp sensor and last one Pressure sensor. This process implements only a person wearable and calculates the range through mobile. That mobile send all data in server.

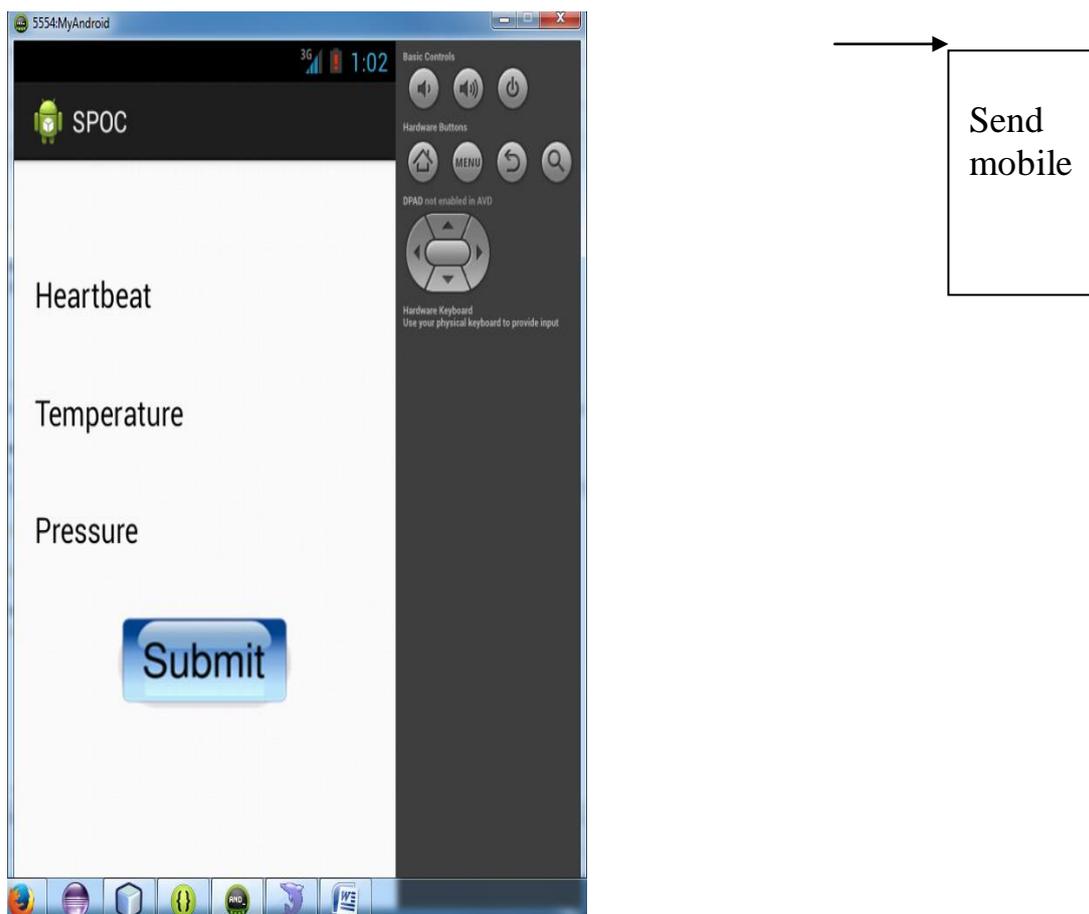


Figure 4.4.2 Body Sensor Network

Performance Evaluation

In this module, the performance metrics used in the evaluation are : 1) The average number of qualified helpers (NQH), which indicates how many qualified helpers can participate in the opportunistic computing within a given time period, and 2) The average resource consumption ratio (RCR), which is defined as the fraction of the resources consumed by the medical user in emergency to the total resources consumed in opportunistic computing for PHI process within a given time period.

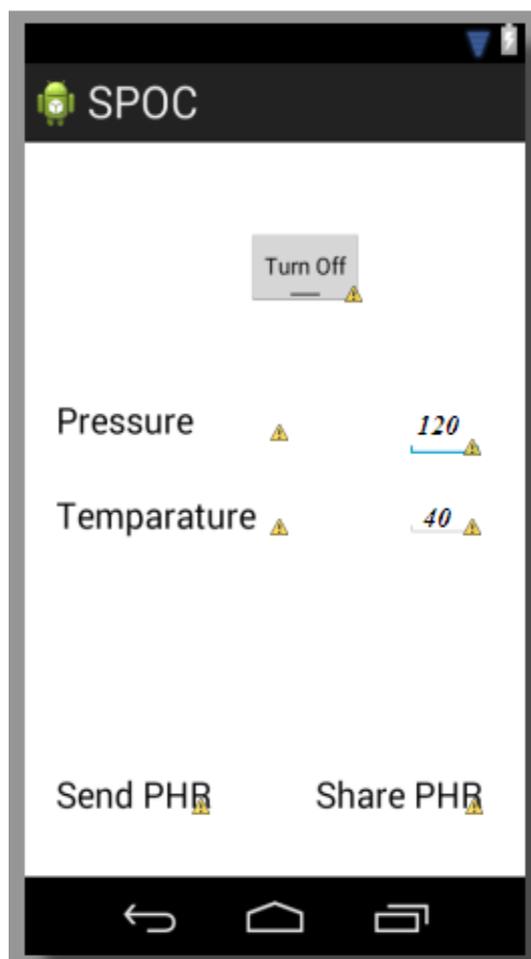


Fig 4.4.3 Performance Evaluation

Simulation Setup

The hardware implements the application layer under the assumptions that the communications between smart phones and the Communications between Base Station Networks and smart phones are always workable when they are within each other's transmission ranges. It sense the detail information as sends to mobile. Furthermore detailed patient health information passed in the Bluetooth via sender to medical database centre.

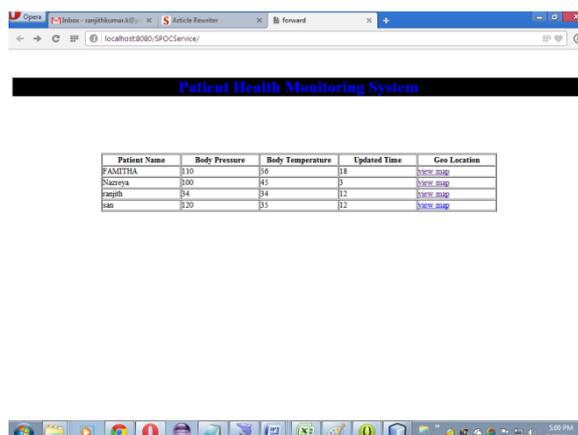


Fig: 4 Simulation setup

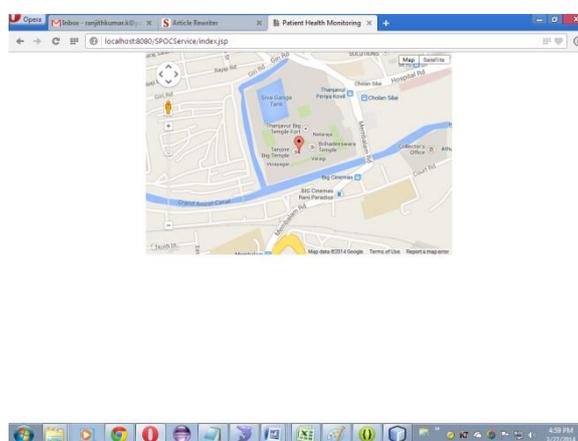


Figure 5, Simulation Setup

V. CONCLUSION AND FUTURE WORK

The patient self management based on mobile personal system encapsulating services to support patients in health information management and sharing. The primary focus of this work was on the implementation of a mobile solution to achieve pervasive and communication among patients and their network community. In phase -1 body sensor network has been implemented. In phase2 updating patient health monitoring, medical database center to external social networking.

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