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INTELLIGENT SMART PHONE BASED HEALTH MONITORING SYSTEM(ISPBHMS)

Happiness Akabuike Chibuzor, Prof. Mgbeafulike Ike.J

1. Abstract

Due to increase emergence of deadly diseases like noble corona virus (covid-19) which has mandatory forced everyone to work at a distance. There is a great need for an intelligence smart phone-based health monitoring system to enable both the health workers and the patience to operate at a distance thereby minimizing the spread of this deadly diseases. So in this regards, Intelligent Smart phone based Health monitoring System(ISPBHMS) is the best answer for such a pandemic. This study helps to provide a means of reducing the spread of diseases as well as to get a proper diagnosis of patient's health irrespective of where the doctor is presently located. This research is based on literature review and other academic writings. The research is aimed to reduce the spread of deadly and contagious diseases. In this paper i present Intelligent Smart phone based Health monitoring System(ISPBHMS) which can provide medical feedback to the patients through mobile devices based on the biomedical and environmental data collected by deployed sensors.

Keywords: Intelligent, Health, Heart Beat, Temperature, Sensor, Patient, monitoring System, Mobile Health care, Health Monitoring System, Intelligent Medical Server, **ISPBHMS(**Intelligent Smart phone based Health monitoring System**)**

2. Brief Introduction of Smart Phone-Based Health Monitoring System

As it is obvious that monitoring patients' vital signs such as temperature, and heart rate have been a major issue of great concern in health sectors. Intelligent Smartphone-based Health Monitoring System(ISPBHMS)is the application of mobile computing technologies for improving communication among patients, physicians, and other health care workers. As mobile devices have become an inseparable part of our life it can integrate health care more seamlessly into our everyday life

2.1 Summary of Background

An intelligent Smartphone-based Health Monitoring System(ISPBHMS) will make use of Pervasive computing to implement the use of the health monitoring system. Pervasive computing is a software engineering concept that espouses the use of computerized technology anytime and anywhere. Also known as “ubiquitous computing,” the idea is that computing can be done using any device and format wherever the user may be. Pervasive computing can exist in several

forms, stemming from the use of laptops to household appliances. Some of the technologies that make it possible are microprocessors, mobile codes, sensors, and the Internet.

In short, pervasive computing happens every time people use digital devices to connect to technological platforms. The main goal of pervasive computing is to embed computation into an environment that allows users to enjoy everyday objects' benefits through information processing.

2.2 Statement of Problem

The aim of this research is to solve the problem of immediate health monitoring to reduce the high rate of death mortality, and also to reduce the spread of diseases as well as get a proper diagnosis of a patient's health irrespective of where the doctor is presently located.

2.3 Objective of the Study

The goal of the Intelligent Smartphone-based Health Monitoring System(ISPBHMS) is to provide health care services to anyone at any time, overcoming the constraints of place, time, and character..

3 Summary of Literature Review

Health care projects are in full swing in different universities and institutions, with the objective of providing more and more assistance to the elderly. CAST (Center for Aging Services Technologies) is organizing multiple projects including 1. a safe home that will help debilitated elderly by tracking their activities. 2. a sensor-based bed to track sleep and weight, which will later be used in detecting diseases. In The Center for Future Health, a five-room house has been implanted with several infrared sensors, monitoring devices, and bio-sensors. The ultimate goal of the project is to provide a unified solution for the seniors in the home, enabling them to closely participate in disease detection and health management by themselves. A similar type of project named AHRI (Aware Home Research Initiative) Ahamed, M. M et al, March 2007 is going on at Georgia-Tech University. Mobi-Health project is going on to build a system for collecting vital body signals and manipulating those in distant health care institutes. The Terva monitoring system had been introduced to collect data related to health conditions like blood pressure, temperature, sleep conditions, weight, etc., over quite a long time. Here data has been collected four times a day (morning, noon, evening, and night) and saved in the form of a TOD (time-of-day) matrix, and analyzed later. The whole system has been housed in a suitcase that includes a laptop, blood pressure monitor, and several other monitoring devices. As a result, this system loses its mobility and becomes feasible to be used in a static manner in the home. A feedback-based self-monitoring system for managing obesity named Wireless Wellness Monitor has been devised using Bluetooth and Jini network to support Java dynamic networking. The system consists of measuring devices, a home server as the base station, mobile terminals (e.g. PDA or smartphone), and databases that are connected through the internet.

The measuring devices collect data and place that on the home server. Mobile terminals can access information wirelessly from the home server or can collect data from the external databases through the home server. The Mobi-Health project can monitor crucial health signals through tiny medical sensors and transmit them to health care professionals through a highly

powerful and cheaply available wireless system. Body Area Network (BAN) has been used in signal monitoring and GPRS and UMTS has been used for transmitting a signal on the fly. In Konstantas, A. Et al ..2004 researchers have depicted several required characteristics of wearable health care systems along with the design, implementation, and communication issues of a plug-and-play system but it is not affordable and needs special hardware. N. Saranummi et al .. 2001 Presented WWBAN (Wireless Wearable Body Area Network) which consists of static sensors communicating only with the central control unit. A. van Halteren et al 2004 developed a system named Wellness Assistant (WA), which uses pervasive computing technologies using inexpensive handheld devices such as PDAs, cell phones, and wrist watches with short-range wireless capabilities. The WA can be used by people with obesity, diabetes, or high blood pressure, conditions that need constant monitoring. Recently U. Varshney (2007) describes various pervasive health care applications and their requirements, required network infrastructures as well as some open issues and challenges. The Centre for Pervasive Health care of the Department of Computer Science at the University of Aarhus M. Weiser (1993) is a dedicated research program to design, develop, and evaluate pervasive computing technologies for clinicians to use in hospitals and for helping citizens to participate closely in taking care of their own health. A large number of works regarding pervasive health care are carried out by them recently.

Why Do We Need a Remote Human-Health Monitoring System?

A Study on Predictive Analytics for Heart Failure Patients- Mohammad Pourhomayoun et al,

Body area networks and remote health monitoring systems allow for collecting physiological data from patients and provide a platform to utilize analytics algorithms to predict medical conditions. It is the prediction for patients with Congestive Heart Failure (CHF) and is based on the physiological data collected in the last days of hospital stay. We examine the proposed algorithm on the Electronic Health Records (EHR) of UCLA Hospital containing over 10 million clinical measurements collected from approximately 10,000 patients hospitalized at the UCLA Medical Center.

Remote Human-Health monitoring System through IoT- Ananda Mohon Ghosh et al.

The parameters that are used for sensing and monitoring will send the data through wireless sensors. Adding a web-based observation helps to keep track of the regular health status of a patient. collected in a database and will be used to inform patients of any unseen problems to undergo possible diagnosis. Experimental results prove the proposed system is user-friendly, reliable, and economical.

Sensor-Based Healthcare Information System- K. SundaraVelrani et al. Propose a novel, IoT-aware, smart architecture for automatic monitoring and tracking of patients from their homes themselves. Staying true to the IoT vision, we propose an Automation Healthcare System (AHS). The proposed AHS is to investigate advanced home health care services. Data produced in AHS is shared with doctors and patients through IoT. The system utilizes IoT telemetry to transmit data from sensors to a remote monitor.

A Real-Time Human-Health Monitoring System for Remote Cardiac Patients Using Smartphone and Wearable Sensors- Priyanka Kakria et al.

A real-time heart monitoring system is developed considering the cost, ease of application, accuracy, and data security. The system is conceptualized to provide an interface between the doctor and the patients for two-way communication. This study is to facilitate remote cardiac patients in getting the latest healthcare services which might not be possible otherwise due to the low doctor-to-patient ratio. The developed monitoring system is then evaluated for 40 individuals (aged between 18 and 66 years) using wearable sensors while holding an Android device Web-Based Human-Health monitoring System- Y.R.Risodkar et al.

A physiology signal monitoring system can help medical staff to monitor and analyze human‟s physiology signals effectively, such that they can not only monitor the patients‟ physiological states immediately but also reduce medical costs and save a lot of time for patients to visit the hospital‟s doctors. Meanwhile, the proposed system also developed a friendly web-based interface that is convenient for the observation of immediate human physiological signals. Moreover, this study also proposes an intelligent data analysis scheme based on the modified cosine similarity measure to diagnose abnormal human pulses for exploring potential chronic diseases. Therefore, the proposed system provides benefits in terms of aiding long-distance medical treatment, exploring trends of potential chronic diseases, and urgent situation information for sudden diseases.

1.1 Definition of Terms

- **Tele-Health Care**: Tele-health care is the use of digital information and communication technologies, such as computers and mobile devices, to access health care services remotely and manage your health care. These may be technologies you use from home or that your doctor uses to improve or support health care services.
- **Telemedicine**: Telemedicine can be defined as the use of technology (computers, video, phone, messaging) by a medical professional to diagnose and treat patients in a remote location. Telemedicine allows health care professionals to evaluate, diagnose and treat patients at a distance using telecommunications technology. The approach has been through a striking evolution in the last decade and it is becoming an increasingly important part of the American healthcare infrastructure. (https://chironhealth.com/telemedicine/what-is-telemedicine/)
- **Tele-monitoring :** Tele-monitoring is a medical practice that involves remotely monitoring patients who are not at the same location as the health care provider. In general, a patient will have a number of monitoring devices at home, and the results of these devices will be transmitted via telephone to the health care provider. Tele-monitoring is a convenient way for patients to avoid travel and to perform some of the more basic work of healthcare for themselves.
- **Heartbeat Sensor :** The heartbeat sensor is based on the principle of photo plethysmography. It measures the change in volume of blood through any organ of the body which causes a change in the light intensity through that organ (a vascular region). In the case of applications where heart pulse rate is to be monitored, the timing of the pulses is more important. The flow of blood volume is decided by the rate of heart pulses and since light is absorbed by the blood, the signal pulses are equivalent to the heartbeat pulses.

- **LM35 Temperature Sensor *:*** Temperature is one of the most commonly measured parameters in the world. They are used in your daily household devices from Microwave, fridges, and AC to all fields of engineering. A temperature sensor basically measures the heat/cold generated by an object to which it is connected. It then provides a proportional resistance, current, or voltage output which is then measured or processed as per our application.
- **Arduino:** The Arduino Uno is a microcontroller board based on the ATmega328. Arduino is an open-source, prototyping platform and its simplicity makes it ideal for hobbyists to use as well as professionals. The Arduino Uno has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz crystal oscillator, a USB connection, a power jack, and ICSP header, and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with an AC-to-DC adapter or battery to get started.

Below are the basic features of Arduinio;

1. It is an easy USB interface. This allows interface with USB as this is like a serial device.

2. The chip on the board plugs straight into your USB port and supports on your computer as a virtual serial port. The benefit of this setup is that serial communication is an extremely easy protocol which is time-tested and USB makes connection with modern computers and makes it comfortable.

3. It is easy-to-find the microcontroller brain which is the ATmega328 chip. It has more number of hardware features like timers, external and internal interrupts, PWM pins and multiple sleep modes.

4. It is an open source design and there is an advantage of being open source is that it has a large community of people using and troubleshooting it. This makes it easy to help in debugging projects.

5. It is a 16 MHz clock which is fast enough for most applications and does not speeds up the microcontroller

- **Cloud computing*:*** It is an information technology (IT) paradigm that enables ubiquitous access to shared pools of configurable systems resources. Cloud computing relies on sharing of resources to achieve coherence and economies of scale, similar to a public utility.

The outline of this paper is as follows: We provide the short descriptions of the related works in Section 2. System Architecture of **ISPBHMS** is described in Section 3 followed by the characteristics of the **ISPBHMS** in Section 4. The impact of **ISPBHMS** is given in Section 5. Section 6 presents the evaluation of the system. Our future research direction and concluding remarks are in Section

4 Proposed System, Methodology and Implementation

This study presents the planning of an Intelligent smartphone-based health observation system(ISPBHMS) that collects patients' physiological data through the bio-sensors. {the data|the info|the information} is mass within the sensor network and an outline of the collected data is transmitted to a patient's personal computer or cell phone/PDA. These devices forward

data to the medical server for analysis. when the info is analyzed, the medical server provides feedback to the patient's personal computer or cell phone/PDA.

The patients will take necessary actions betting on the feedback. The ISPBHMS contains 3 elements. They are 1. wearable Body device Network [WBSN] two. Patients Personal Home Server [PPHS] three. Intelligent Medical Server [IMS]. they're represented below. wearable Body device Network [WBSN] wearable Body device Network is created with wearable or implantable bio-sensors in a patient's body. These sensors collect necessary readings from the patient's body. For every organ, there'll be a cluster|a gaggle|a bunch} of sensors that may send their readings to the group leader. The cluster leaders will communicate with one another. They send the aggregated info to the central controller. The central controller is responsible for the transmission of a patient's information to the non-public laptop or cell phone/PDA. A. van Halteren et al 2004 steered that for wireless communication within the chassis, the tissue medium acts as a channel through which the data is shipped as magnetic force (EM) oftenness (RF). So in WBSN, info is transmitted as magnetic force (EM) oftenness (RF) waves. The central controller of the WBSN communicates with the Patient Personal Home Server [PPHS] exploiting any of the 3 wireless protocols: Bluetooth, WLAN (802.11), or ZigBee.

Bluetooth is often used for short-range distances between the central controller and PPHS. LLAN are often accustomed support additional distance between them. today ZigBee introduces itself as a specialized wireless protocol appropriate for pervasive and omnipresent applications. therefore ZigBee is often used for communication too. The patient's home server is often a private laptop or mobile device like a cell phone/PDA. we advise mobile devices as a result of it'll be additional appropriate for the users to use their mobile devices for this purpose. PPHS collects info from the central controller of the WBSN. PPHS sends info to the Intelligent Medical Server [IMS].PPHS contains logic to work out whether or not to send the data to the IMS or not. Personal Computer-based PPHS communicates with the IMS exploitation the net. Mobile devices supported by PPHS communicate with the IMS exploitation GPRS / Edge / SMS. the most effective thanks to implementing IMS is by net Service or Servlet-based design. The IMS can act because of the service supplier and therefore the patient PPHS can act because of the service requester. By providing these forms of design, an outsized range of heterogeneous environments is often supported with security. therefore laptop computers or cell phones/PDA are often connected simply to one IMS with no downside. Intelligent Medical Server [IMS] Intelligent Medical Server [IMS] receives information from all the PPHS. it's the backbone of this complete design. it's capable of learning patient-specific thresholds. It will learn from previous treatment records of a patient. Whenever a doctor or specialist examines a patient, the examination and treatment results are kept within the central info. IMS mines this information by exploiting progressive data processing techniques like neural nets, association rules, and call trees betting on the character and distribution of the info. After processing the data it provides feedback to the PPHS or informs medical authorities of vital things. PPHS displays the feedback to the patients. Medical authorities will take necessary measures. The IMS keeps patient-specific records. It will infer any trend of diseases for the patient, family even vicinity. IMS will address

health variations because of seasonal changes, epidemics, etc. IMS is controlled and monitored in the main by specialized physicians. However, even a patient will facilitate training IMS by providing info specific to him. When mining the info keep in IMS, vital info concerning the final health of the folks is often obtained. It will facilitate the authority to opt for health policies. Massive numbers of patients are going to be connected to the IMS exploitation of their PPHS. Therefore the security of the patients could be a major issue here. Therefore RFID is often used for this purpose. Radio-frequency identification (RFID) is an associate degree automatic identification methodology, that depends on storing and remotely retrieving information exploitation devices referred to as RFID tags or transponders.

An associate degree RFID tag is an associate degree object that may be applied to or incorporated into a product, animal, or person for the aim of identifying exploitation radio waves. Some tags are often browsed from many meters away and on the far side of the road of sight of the reader. Therefore security is often provided by providing RFID tags to every patient. Our main contribution is that the Intelligent Medical Server (IMS) that could be a novel plan. Therefore we tend to are describing it in additional detail with attainable eventualities below. Scenarios In medical aid units, there are provisions for unending observation of patients. Their heart rates, temperatures, etc. are unendingly monitored. However, in several cases, patients improve and are available back home from the hospital. However the un-wellness might come, he might get infected with a brand new un-wellness, and there is also an explosive attack that will cause his death. Therefore in several cases, patients are free from the hospital however still, they're powerfully suggested to be beneath rest and observation for a few amount of your time (from many days to many months). In these cases, ISPBHMS are often quite handy. Patients with force per unit area getting victimized thanks to an explosive amendment of pressure. It can't be expected and conjointly a traditional person can't be unbroken beneath the medical observation of a doctor or a hospital all days of the year. Blood pressure amendment suddenly and may be life-treating.

Using ISPBHMS, they'll get alerts once their pressure level simply starts to become high or low. Patient knowledge (temperature, heart rate, aldohexose level, pressure level, etc.) is going to be often measured and sent to PPHS. The amount of causation (say each three min) will be set from the patient within the central controller of WBSN. Usually, aldohexose levels are going to be sent once many days or per week. Heart rates will be sent each minute Associate in Nursing temperatures will be sent once 0.5 an hour etc. however these will be parameterized to make sure that once a patient is traditional, not several readings are going to be sent so sensors have an extended lifespan. However once the patient is sick, readings are going to be taken often and sent to PPHS. PPHS can have some logic to make a decision whether or not the knowledge is warrant causation to IMS. Say, the temperature is within the safety range(less than 98F), and so PPHS won't send this data to IMS to avoid wasting value for the patient. Again say, the aldohexose level is safe and also the same because the last many days, then this data additionally needn't be sent. knowledge should be sent to IMS once there's a modification in standing (say the

temperature of the patient goes to 100F from 98F or a patient with severe fever 102F has simply got the temperature right down to 99F).

Again if there's a fast modification in pressure level or aldohexose level, then this data should be sent to IMS. IMS learns patient-specific thresholds. Say the regular vital sign of a patient is ninety-eight. 2F whereas one person feels feverish if his vital sign is ninety-eight. 2F. By using the Associate in Nursing averaging technique over a comparatively while IMS will learn these thresholds for patients. However, patients may offer these thresholds as inputs supporting the directions of their doctors. Using IMS, one will read his case history date-wise, event-wise, etc. IMS will perform data processing on a selected patient knowledge to find necessary facts. Suppose someone incorporates a medium-high temperature that starts within the evening and lasts until the time of day. If this development continues for many days, IMS can mechanically discover this truth and send a message to PPHS oral communication "You often have a short-period fever which will be an indication of a foul illness. Consult a doctor immediately". Using IMS, one will read his case history date-wise, event-wise, etc. A patient may enter additional info like he has had pain these days, or he's often projection, he has rashes on his body, etc. in PPHS. In IMS, there'll be a group of rules for the preliminary prediction of illness. These rules are going to be pre-learned supported neural networks or data processing of existing illness databases that square measure out there online. Now IMS, with the extra info, can check the principles. If it finds an identical rule, then it'll predict the illness and send the message to PPHS. International Journal of Management and Automation Vol.2, No.3, Sep twenty09 20 PPHS will transmit continuous graph knowledge. Suppose a patient has returned home once viscus surgery. If the patient has viscus issues like cardiac arrhythmia, then there'll be an Associate in Nursing irregular variation of heart signals. This could occur one time or double on a daily basis. However if PPHS transmits continuous graph knowledge, such variations are going to be straightaway detected and alerts are going to be issued. The foremost necessary truth regarding IMS is that it will facilitate stopping the unfolding of diseases. Whenever it finds that many folks from the constant neck of the woods over a tiny low amount of your time square measure have a constant illness, it'll predict that the illness is spreading enter that neck of the woods so authorities will take immediate action. Say, once some folks of constant space report that they're having high fever, pain over the body, and rashes, IMS can report this that the doctors will interpret that dandy fever is breaking enter that space and also the authority incorporates a probability to require actions at the terribly initial stage so epidemic will be avoided.

Characteristics

The characteristics of ISPBHMS have described below: Simplicity The system architecture of ISPBHMS is a simple one with no complex s system or communication architecture. Though the setup of WBSN is quite sophisticated but to get help from such intelligent health monitoring systems bio-sensors need to be implanted or worn into the patient's body. Cost-Effective ISPBHMS is cost-effective. WBSN setup consists of some low-cost bio-sensors. The communication from WBSN is also cheap due to the use of low-cost Bluetooth or ZigBee adapters. PPHS setup is cost-effective due to the use of personal computers of normal configuration or low-cost cell phones. IMS will incur some costs due to a large number of patient

support. But with respect to the number of patients served by a single IMS, this cost is worthy. Secure Security is a major issue in ISPBHMS. Suppose a heart patient's data is manipulated by malicious attackers. The normal reading can be changed as a serious one and heart patients can be affected by the faulty result that may even cause him serious heart attack. So without security, the ISPBHMS is not complete. As mentioned in the System Architecture, security in ISPBHMS is provided by using RFID. Each patient will be provided RFID tags that will be used to uniquely identify the patient. The IMS will maintain patients' profile information with the RFID in the central database. So malicious attacks can be blocked using this information because a patient can be easily tracked using RFID. Moreover, large volumes of data need to be transmitted between the three components of the ISPBHMS. So data must be transmitted in encrypted form between the components to protect from a security vulnerability. Flexible communication protocol The communication protocols of ISPBHMS are flexible. The WBSN central controller can communicate with the PPHS using any of the three protocols: Bluetooth, WLAN, or ZigBee. Moreover, the PPHS can be a personal computer, cell phone, or PDA. In the case of the computer, it can communicate with the IMS using the internet. Cell phones or PDAs can communicate with the IMS using any of the three ways: GPRS / Edge / SMS. So we can see a large number of alternative ways of communication are supported in IMHMS making the communication protocol a real flexible one. Capability to predict the spread of diseases The intelligent IMS can predict the spread of diseases in a specific locality. The IMS contains some strong and efficient data mining algorithms that can be used for this purpose. Capability to help the authority determine general health policies The IMS is capable to help the authority determine general health policies. For example, in a specific locality, a large number of people (who are the client of IMS) are affected by diseases that occur due to the lack of a specific vitamin, the IMS can track this situation and can generate alert messages for the authority to inform them. Then the authority can determine the health policy by forcing the market to bring and sell foods having the specific vitamin as well as make people aware of their vitamin deficiency.

Broader Impact

The ISPBHMS has a broader impact on developed and developing countries. Health care through mobile devices with a central medical server is not a new concept for developed countries. But the medical server used there is mainly for data storage. But the IMS of ISPBHMS not only stores data but also uses it for automated medical feedback. So for developed countries, all the existing central storage servers can be replaced easily with IMS. So to integrate IMS with the existing health care services, their central medical server's data needs to be migrated to IMS. Then IMS can intelligently support all the existing health care services. The people of the developing countries extensively use mobile devices but they are not familiar with the mobile device-based intelligent services. So ISPBHMS can be very handy for them by providing health care services anywhere anytime through their mobile devices. For developing countries,

ISPBHMS can aid physicians and specialists in better treatment of the patients as their whole medical data and treatment history is stored in IMS.

Moreover, it is not always possible for the patients to avail the services of special care units like ICU (Intensive Care Unit), and CCU (Critical Care Unit) due to the limited number of such units and money. So in these cases, ISPBHMS can help the patients by providing continuous health monitoring.

4.1 Methodology Adopted

The method of analysis and design used in this work is Object Oriented Design Methodology (OODM). Object-oriented analysis and design is a technical approach for analyzing and designing an application by applying object-oriented programming as well as using visual modeling throughout the development life cycle to foster better stakeholder communication and product quality. Object-oriented analysis and design use an iterative approach with an emphasis on modularity and re-usability. Object-oriented analysis and design combine both data and methods into cohesive units and classes.

4.2 Implementation

I used the subsequent approaches. 1. Implement a model of various elements of IMH MHMS 2. Psychological feature walkthrough strategy model Implementation we have a tendency to square measure acting on building WBSN. This implementation isn't complete nonetheless. Thus, we have a tendency to take into account the information provided by the bio-sensors as a well-structured XML file. 2 attainable implementations square measure there for PPHS. It will be enforced in notebook computer. Whereas implementing for private laptop, the foremost appropriate communication media between WBSN and PPHS is Bluetooth as a result of its convenience and low price. The private laptop primarily based PPHS implementation needed Bluetooth Server setup within the notebook computer. The medical knowledge of the patients are going to be transferred from WBSN to PPHS through the Bluetooth Server. Then the private laptop primarily based PPHS processes {the knowledge| the info |the information} and send necessary data to the IMS. However we recommend mobile devices for implementing PPHS as a result of it'll be additional appropriate for the users to use their cell phones or organizer during this purpose. The important quality of the answer will be provided by mobile devices. For mobile device primarily based implementation, we have a tendency to initial take into account 2 decisions. One is J2ME and also the different is Google golem. Golem continues to be in machine level with none implementation however it's not terribly remote that it'll rule the sphere of mobile computing. We decide J2ME primarily based custom application, so it will be deployed in real time during a sizable amount accessible| of obtainable |of accessible} cell phones or organizer available within the market. The J2ME primarily based PPHS mechanically collect patient's knowledge from the WBSN and transfer it to the IMS. It's additionally chargeable for displaying results and feedback from the IMS to any specific patients. We have a tendency to enforce the skeleton of the IMS. IMS is constructed with the Java Servlet primarily based design. To attach to the IMS, PPHS needs package to be put in. we have a tendency to enforce a J2ME application that processes the XML file of patient's knowledge victimization

KXML that is associate degree open supply XML computer program. The applying connects to the IMS victimization GPRS or EDGE. It will connect victimization SMS additionally if SMS receiving capable application will be developed within the IMS. Our J2ME application connects to the IMS's net Servlet by GPRS or EDGE. The SMS primarily based portion isn't enforced nonetheless. To implement the SMS primarily based portion the IMS should be interfaced with variety of cell phones or organizer to receive SMS from the PPHS and send the feedback to the PPHS as SMS. The WBSN collects patient knowledge and send the information to the PPHS. PPSH receives {the knowledge| the info |the information} and processed the information to cut back the transmission of spare data to the IMS. The PPHS communicates with the IMS victimization GPRS or EDGE. The IMS contains a knowledge Mining Unit, a Feedback Unit and central information. The information contains the complete patients' profile, continuous health knowledge and an outsized set of rules for data processing operations. The information Mining unit processes the information and returns the feedbacks and results to the Feedback Unit. The feedback unit then sends the information to the corresponding PPHS. Furthermore the patient's will log in to the IMS victimization licensed patient-id and secret to supply data manually and to look at the patient's entire history.

The interfaces of PPHS and IMS square measure user-friendly. Any individuals with very little or no technical information will use it with none difficulties. The communication design of IMHMS is extremely straightforward and versatile as we have a tendency to claim. There are no complexes in communication between the elements of ISPBHMS. Therefore the model implementation was quite swish. The model implementation involves an occasional price telephone and a private laptop. The telephone acts because the PPHS wherever because the notebook computer acts because the IMS. The telephone communicates with the private laptop victimization GPRS that is extremely low cost and accessible currently with each telephone. Therefore the setup for the analysis was very price effective. We have a tendency to square measure acting on providing RFID primarily based security. Within the analysis we have a tendency to encrypt the information victimization Advanced secret writing customary (AES). We have a tendency to used Java Cryptography Extension (JCE) for this purpose that may be a framework for secret writing, key generation, and key agreement and message authentication code (MAC) algorithms.

Cognitive walkthrough strategy

Cognitive Walkthrough Strategy encompasses one or a bunch of evaluators who examine a computer program by hunting a collection of tasks and assess its comprehensibility and easy learning. To gauge our ISPBHMS, we tend to follow this strategy. 1.Who are going to be the users of the system? Two phd. students (Computer Science and Eng.), two graduate students (Computer Science and Eng.), one undergraduate student (Chemical Eng.), two patients with some technical data and three patients while not technical data were chosen because the users. We've tried to hide all kind of finish users and each male and females having completely different ages. 2. What tasks are going to be analyzed? The services provided by our IMHMS were dead by the users. We've tried to pick out the tasks to be analyzed in such some way that no major task has been unmarked. 3.

what's the proper action sequence for every task? 1st, we tend to in short explained the task sequences and method to urge result.

5 Results, Discussion and Conclusion

5.1 Results

This Research will produce an intelligent smart phone based health monitoring system**(ISPBHMS)** enable both the health workers and the patience to operate at a distance thereby minimizing the spread of this deadly diseases.

5.2 Discussion and Conclusion

The whole system of mobile health care victimization biosensor network places forward some future works like finding the foremost effective mechanism for making certain security in biosensors considering the severe restrictions of memory and energy, representing the collected information within the most informative manner with stripped storage and user interaction, modeling of {information} so the system won't represent all the info however solely relevant information therefore saving memory. These are the generic works that may be wiped out future within the sector of mobile health care. For ISPBHMS our vision is far wider. We predict of a system wherever the patients needn't try to any actions in the slightest degree. With the advancement of detector technologies it's shortly enough once the bio-sensors itself will take necessary actions. A patient required aldohexose doesn't have to be compelled to take it manually rather the bio-sensors will push the aldohexose to the patient's body betting on the feedback from the IMS. It appears to be not possible to attain by everyone. However, nothing is not possible. These days we tend to imagine of one thing and see that it's enforced within the close to future. However, if we tend to stop imagine and thinking then however not possible is created possible? This paper demonstrates an intelligent system for mobile health observation. Good sensors provide the promise of great advances in medical treatment. Networking multiple good sensors into AN application-specific resolution to combat sickness may be a promising approach, which is able to need analysis with a special perspective to resolve AN array of novel and difficult issues. As wireless networks of sensors are developed for medical specialty applications, the data gained from these implementations ought to be accustomed facilitate the event of detector networks for brand-new applications. Efficient development of deep-seated good sensors to remedy medical issues presents clear advantages to people yet as society as an entire. There's the plain profit to persons with exhausting diseases and their families as these patients gain an increased quality of life. Medical specialty implants that monitor for cancer can facilitate convalescent patients maintain their health. Not solely can these people in person have the benefit of their improved health and well-being, however society will have the benefit of their enhanced productivity and social group contributions. Once the technology is refined, medical prices for correcting chronic medical conditions are going to be reduced. Because the world population will increase, the demand for such system can solely increase. We tend to are implementing he ISPBHMS to assist the people yet because the whole humanity. Our goals are going to be consummated if the ISPBHMS will facilitate one individual by observation his or her health and cautions him to require necessary actions against any coming serious diseases.

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