RUNTIME ENVIRONMENT FOR DATA STREAM MANAGEMENT IN HEALTHCARE MONITORING SYSTEM USING WIRELESS TECHNOLOGIES

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Abstract-*Wireless health care monitoring technologies have the energetic to replace our lifestyle with various application uses in the field of such as healthcare management, retailer, travels, company, dependents care and urgent management, in addition to many area for improving. According to the Population next 20-30 year, the 60-70 and over general population in the growth develop country. The total population is almost 20 to 30%. Hence the need to deliver improve quality management and facility in the develop country for a fastest improving population of younger peoples, while less the health care cost and quality control is a very important idea for the government and health care services and deliver in country. Today Wireless network technology can help and improving health care service, quality of health care, management of health care, low cost improve health care service and providing healthcare facility such as medical surveillance system, memory capacity enhancement, control of house management appliance, medical database uses, and communication between doctor for any emergency situation, Continuous surveillance for health care facility for Wireless network technology will improve fast recognition for emergency situation and different type of diseases in at risk control management for patients and also provide a facility long range of healthcare services management for patients and people with different angle of physical and mental disability .*

Key Words: heart monitoring. GSM modem, Biosensor detecting, microcontrollers, transmitting the data. LCD display.

1 INTRODUCTION

Heart bitrates judgment system indicates the good health of the human physical system. This research work showed a method of measurement the heart bitrates by sensing the replace in blood volume capacity in a finger related artery while the heart is pumping which should allow people to be surveillance under all their day to today life activity. Design & Implementation of Biosensor detecting heart beat rate with integrated GSM modem Design & Implementation of biosensor detecting heart beat rate with integrated GSM modem hardware design worked properly. Total time taken in detecting BPM & transmitting takes less than 1 minute.

GSM Connectivity Modem Test Using Hyper network Terminal.

a. First, find the needs of best GSM modem suits. Application of Wave com FASTRACK M1206 tested.

b. Understand the communication Command set need to with the modem.

c. Setup guide specified the modem to the computer according to the manual provided with the GSM modem Connect.

d. SIM card is required and Put a valid GSM/GPRS modem into the mobile phone.

e. The corresponding set upfor wireless modem Connect your mobile phone driver or GSM/GPRS modem to a computer.

f. Run MS HyperTerminal by selecting Start then Programs then Accessories and Communications and HyperTerminal.

g. In the joining suggestion choose dialog box, enter a name and choose an icon connection. Then push the OK button.

h. In the joining to dialog box, choose the COM port that mobile phone search or GSM/GPRS modem is joining to in the Connect using combo box. For example, choose COM1 if mobile phone search or GSM/GPRS system is connecting to the COM1 port. Then push the OK button.

i. Check The dialog box. Enter the correct port, settings for your mobile phone. or GSM/GPRS modem. Then push the OK button.

j. To find should be used correct port settings with system. Mobile phone or GSM/GPRS modem, consult the manual of system mobile phone, GSM/GPRS modem.

Figure.1 runs time monitoring system

1.1 BENEFITS OF DEVICE

A benefit of the device includes:
(i)   Providing immediate notification of abnormalities in cardiac activity on a monitored patient
(ii)   Its low cost and low power consumption provides a cheap and reliable method for monitoring patients in developing countries
(iii)   Easily accessible
(iv)   User friendly
(v)   Adjustable threshold level for different heart issues
(vi)   Portability

1.2 HEART RATE MEASUREMENT

Heart rate is judgment by searching the pulse of the body. Pulse rate should be judgment at suitable points on the body figure where the artery's pulsation is delivering to the surrounding by pressuring and middle fingers rate; often it is compress technique opposite an measurement infrastructure like backbone. The thumb cannot be used for measurement of other person's heart bitrates, as its strongest pulse may connect with discriminated approach the site of pulsation [5]

Possible points for measuring the heart rate are:
(i)   The ventral aspect of the wrist on the side of the thumb (radial artery).
(ii)   The ulnar artery.
(iii)   The neck (carotid artery).
(iv)   The inside of the elbow, or under the biceps muscle (branchial artery).
(v)   The groin (femoral artery).
(vi)   Behind the medial malleolus on the feet (posterior tibial artery).
(vii)   Middle of dorsum of the dorsalis foot pedis.
(viii) Behind the knee (popliteal artery).
(ix)   Over the abdomen (abdominal aorta).
(x)   The heart use a stethoscope chest (heart apex), which can be fell with one fingers hands. However, it is possible to auscultator .
1.   The temple superficial.
2.   The plural edges of the facial mandible artery.

2. RELATED WORK

There are few major areas of research investigated for the purposes of this project are.
a.   Method to be opt for detecting heart beat rate,
b.   Microcontroller selection for its calculation
c.   Signal amplification IC since the acquired signal from body is very low magnitude.
This research played a significant role in determining which parts were eventually chosen for the design; "Design & Implementation of Biosensor detecting heart beat rate with integrated GSM modem" since there are a wide range of microcontrollers and GSM modules available. The following subsections outline the relevant literature that played a determining role in the final design [6].
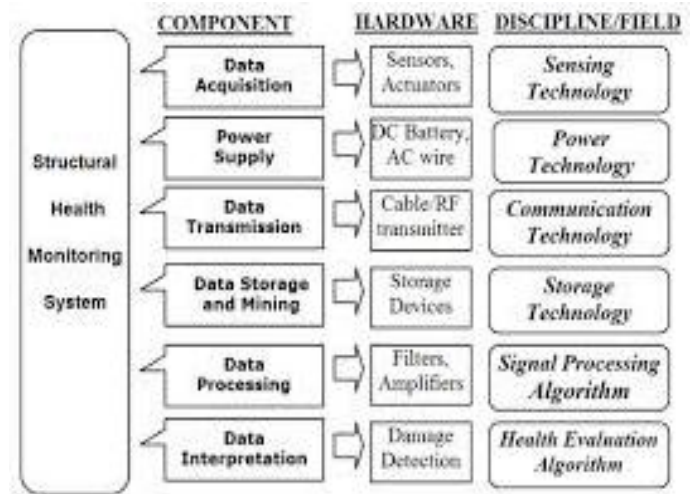

Figure.2. Data Stream Management in Healthcare Monitoring System

Today life every one use intelligent phones (or PDA) the biosensors that save the heart signal and deliver them to a health care service center or hospital management analysis. Some answer can save as well the signals locally. Suppose include new technology [3], Vita phone [5], Venerator pocket view [6] recording facility, exchange information one system to another system viewing and storing ECGs and monitoring directly on the intelligent phone. Some solutions transmit the stored ECG to the health care service center using wireless monitoring technology (e.g. GPRS).

The next group of goal at building platforms for real time remote health surveillance service. like Mobil health, Telemedicine [9], Osiris-SE and PhMon [7]. Provide facility use wireless sensors network to monitor patient's vital signs (e.g. blood pressure ECG, oximeter,). The Indian research develops heart patients such a platform and focuses on heart goal at designing smart biomedical clothes diagnosing and treatment for monitoring system. The platform developed by this next group analysis collects the bio data and send it to a care-center or a hospital for processing and analysis. None of these solutions process the ECG data locally on the smart phone and the ECG signals need to be continuously transferred to a health care center if the patient record needs to be monitored 24 hour and 7days judgment. This can be costly when GPRS is used for deliver the data base [8]. feel well.

3. OBJECTIVE

Develop a Runtime Environment approach for Data Stream Managements in Healthcare Monitoring System Using Wireless Technologies.
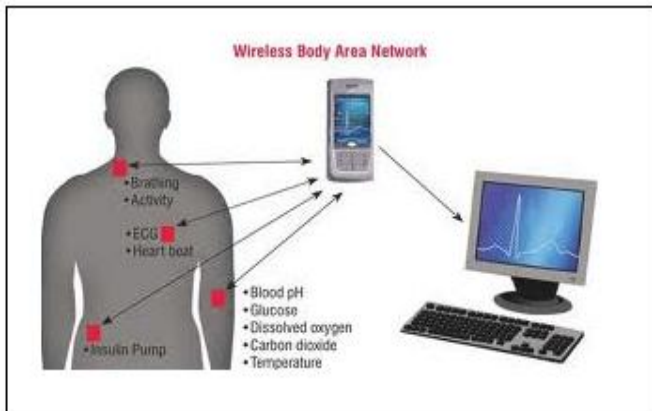
4. PROPOSED APPROACH

Fig .3 Block Diagram wireless body area network

The health management system growing the concept of LED and light detecting resister. The LED needs to be super bright as the maximum light must pass spread in finger and detected by detector. Both LED & LDR are placed inside the band in opposite direction & a finger is placed inside the band. This system measures the amount of light absorbed by the blood in capillaries under the skin.

Now as the heart pumps a pulse of blood moves through the blood vessels & the finger becomes slightly more opaque and so less light reached the detector [2,10] LED and LDR are placed inside the tube which forms a finger band for better result. As we insert the finger in the tube, then light is crossed through the finger and focus on the LDR. Its resistance is to change as per the light on the photodiode is to be change [11].

4.1 AMPLIFICATION STAGES.

An instrumentation amplifier very first stage of common signals between the inputs are rejected Common Mode Rejection small voltages for received from the probes need to be amplified significantly [12]. The latter function is the device a feature moving the Common Rejections Ratio LDR is joined to the op-amp amplifier. Since the output of the LDR is low amplitude current, some signal conditioning must be applied before it can be used. Operational amplifier is an ideal choice for which we used LM324 IC. With each heart pulse the detector signal varies. This variation is converted to electrical pulse. This signal is amplified and triggered through an amplifier which outputs +5V logic level signal.

For a bio-signals amplifier once of the important characteristics of the Op-amps to be used are its CMRR and Gain [13].

CMRR is generally affected by the matching of the resistance values throughout the circuit. Therefore the use of resistors with accuracies of 0.1% is highly desirable.

The overall gain of the IA circuit is given by equation 1 below.

$$\frac{V_0}{V_S} = \left(1 + 2\frac{R_1}{R_2}\right)\frac{R_5}{R_4}$$

4.2 PROCESSING & DISPLAY

An AT89S52 microcontroller is chosen to process the through message produce by the amplification stages. This amplified signal is fed to microcontroller for calculating the BPM (beats per minute) & display the resulting BPM (beats per minute) on a LCD screen. The using microcontroller for measurement of beat rate per minutes [14], it has suggested that a liquid crystal display module should monitor most appropriate flexible for display. The natural plane that several segments monitor display should be used for against. This will be warmth to integrate the monitor display binding together and condition for the small parts of necessary required. The information system which connecting the LCD should convey the better system. Microcontroller is best measurements technique for controlling the more appropriate performance for the better efficiency and fast [15].

4.3 INFORMATION TRANSMISSION

GSM model is selected to transmit the information wirelessly sending a message on a desired mobile number whenever BPM reaches above the preset threshold value. This threshold value can be adjusted according to the patient. Two switches have been placed in the system for setting up the threshold value up & down. This makes a system more flexible to use for human in general. Hence it is not designed for a particular age person, it can be used by any person with varying BPM (beats per minute) [5].

5. RESULT

The Design & Implementation of Biosensor detecting heart beat rate with integrated GSM modem is equipment in which detects heart condition & displays on LCD. The measured signal from finger is amplified and A/D conversion of the signal performed as expected. The most significant part was the emergency messaging which has been done without any delay.

Design & Implementation of biosensor detecting heart beat rate with integrated GSM modem hardware design worked properly. Total time taken in detecting BPM & transmitting takes less than 1 minute.

6. CONCLUSION

The heart bit rate is measurement by specialized medical devices like an electrocardiograph suitable device e.g private agency and government agency heart bit rate surveillance which normally consisting of a chest strap with electrode. Despite of its efficiency, somehow it is costly, involve many

clinical management and patient can be join by medical intelligent for continuous surveillance. For a patient with already diagnosis system with vital heart rate monitoring, the heart rate ideology has to be searching all time. For our system is prepare "**Design & implementation of** biosensor detecting heart beat rate with integrated GSM modem" is an automatic alert system work. This is also quality to surveillance the heart beat rate mapping of people. The heart beat rate is recognition, using an attach continuous of LDR & LED and finger is placed attach the system. the heart beat rate recognition is working through the LED flashes with each heart beat this output signal is processed using AT89S52 microcontroller is finding the heart beat rate per minutes (BPM). Then, it is displayed on a LCD screen & sends automatic monitoring alert system (SMS) for the mobile phones of medical treatment expert attaché members of family or relatives through SMS. Thus, health care expert can be suggest a appropriate knowledge and checking the diagnosis of needy people, different type of conditional problem solve continuous and should suggest as soon as precaution for the needy patients and also alert the family relative and members as possible as to quickly attend the needy patients.

7. HEALTCARE MONITORING APPLICATIONS LIKE

A number of healthcare monitoring application area enable by WSN technology like:
(1) Monitoring control in large casual disaster,
(2) Medical Assistance system for health care system.
(3) The study of medical behavioral study.
(4) develop a monitoring system in hospital management,
(5) Mobile Wireless Health Acre Monitoring System Develop.

8. FUTURE WORK

The microcontroller based biosensor heart beat monitoring with integrated GSM modem equipment designed in this project has a lot of advantages, but can also be improved on.
(i) Possible future improvements are better packaging of the circuitry, instead of adjusting finger inside the band it will be worn on wrist.
(ii) Emergency calling & messaging via cell phone instead of a GSM modem for more compact size of a design, and more accurate and faster algorithm.

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