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HUMAN WEARABLE DEVICE USING IOT

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ABSTRACT

Health has prime importance in our day-to-day life. Sound health is necessary to do the daily work properly. This project aims at developing a system which gives body temperature and heart rate using thermister and pulse sensor respectively. These sensors are interfaced with controller Arduino nano board. Wireless data transmission done by Arduino through WI-FI module. WI-FI is used for wireless data transmission on IoT platform i.e. thing speak. Data visualization is done on Thing speak. So that record of data can be stored over period of time .This data stored on web server so that it can seen to who logged.

KEYWORDS: Wearable Sensors; Person Centered Healthcare; Mobile Health; Pervasive Healthcare

1. INTRODUCTION

Biomedical is one of recent trend to provide better health care. Not only in hospitals but also the personal health caring facilities are opened by the IoT technology. So having a smart system various parameters are observed that consumes power, cost and increase efficiency .In according to this smart system , this paper is reviewed. In traditional method, doctors play an important role in health check up. For this process requires a lot of time for registration, appointment and then check up. Also reports are generated later. Due to this lengthy process working people tend to ignore the checkups or postpone it. This modern approach reduces time consumption in the process. In the recent years use of wireless technology is increasing for the need of upholding various sectors .In these recent years IoT groped the most of industrial area specially automation and control. Biomedical is one of recent trends to provide better health care. Not only in hospitals but also the personal health care facilities are opened by the IoT technology. So having a smart system, various parameters are observed that consume power, cost and increase efficiency .In accordance with this smart system, this paper is reviewed.[3] Medical scientists are trying in the field of innovation and research since many decades to get better health services and happiness in human lives. Their contribution in medical area is very important to us and cannot be neglected. Today's automotive structures have the root ideas coming from yesterday's basics.

Characteristics

The basic element of any wearable device. On the other hand, these are the apt example of things of internet gadgets too. So, a sensor is the one that measures the change in body behavior and pattern. It catches impulses fluctuations like temperature, calorie expenditure, and pulse.

Pulse Sensors

Perhaps the most commonly read vital sign, pulse can be used to detect a wide range of emergency conditions, such as cardiac arrest, pulmonary embolisms, and vasovagal syncope. Pulse sensors have been widely researched, both for medical purposes and for fitness tracking.

Respiratory Rate Sensors

Another of the vital signs is respiratory rate, or the number of breaths a patient takes per minute. Monitoring respiration could aid in the identification of conditions such as asthma attacks, hyperventilation due to panic attacks, apnea episodes, lung cancer, obstructions of the airway, tuberculosis, and more.

Fig No 1: wearable devices

Body Temperature Sensors

The third vital sign is body temperature, which can be usedto detect hypothermia, heat stroke, fevers, and more. As such,body temperature is a useful diagnostics tool that should be included in a wearable healthcare system

Blood Pressure

Whilst not a vital sign itself, blood pressure (BP) is frequently measured alongside the three vital signs. Hypertension (high BP) is a known risk factor for cardiovascular disease, including heart attack. It is also one of the most common chronic illnesses, affecting 32% of adult Australians.Of those affected, 68% had uncontrolled or unmanagedhypertension [50]. As such, incorporating BP into a WBAN for healthcare would provide vital information for many patients

2. EXISTING SYSTEM

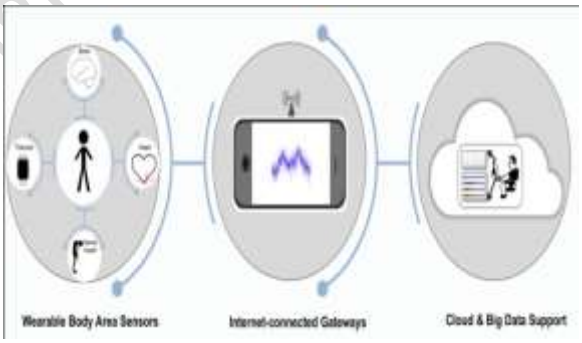
This project is to design the project for heartbeat and the temperature monitoring through the GSM. In a transmitter side patients heartbeat and temperature is monitoring with the help of heartbeat and the temperature sensors. This sensors output is given to the PIC microcontroller through SCU. Signal conditioning unit is used to change the sensors output equivalent to the PIC. Here we use flash type reprogrammable PIC microcontroller. Which we have already programmed for our process. This controller calculates the heartbeat and the temperature value depending upon the signals from the IR and thermister sensors. These values are transmitted to the receiver via GSM. In a receiver side first GSM modem model receives the value from the transmitter and given to the Smart phone. Mobile to send information PC through RS232.RS 232 is a serial communication cable. If any parameter gets more than the present value automatically relay activates by the PIC. It is done with the help of driver circuit.

2.1 DISADVANTAGES

- GSM used SMS sending only.
- PIC controller used program instruction is high.
- User needs the external programmer kit.
- Price is high.

3. PROPOSED SYSTEM

. The Temperature sensor is used to senses the change body temperature. The output of the temperature sensor is given to the amplifier to amplify the weak signal. The amplified signal is passed to the analog to Digital converter. The Analog to Digital converter converts the analog signal to the Digital signal. The Digital signals are given to the Arduino nano controller.



The Heart Beat sensor is used to measure the heart beats of the patients then the output signal is given to signal conditioning unit in which the signal is conditioned. Then the signal is given to pulse shaping circuit. Here the signal is converted into

square pulse. The converted square pulse signal is given to microcontroller. A Arduino nano microcontroller (or MCU) is a computer-on-a-chip used to control any electronic device. The micro controller is programmed already according to our objective. The corresponding measurements are displayed on the LCD display. When the parameters are reduced from set level microcontroller gives an information alert to IOT server the WI-FI device.

3.1ADVANTAGES

- tracking information on real time basis
- Take the snapshot of your day to day activity and sync them with mobile **devices** or laptop computers.
- It can increase productivity. The best wearable technology is designed to make everyday tasks easier and more convenient.

Fig No 1: Architecture diagram

4. METHODOLOGYS

- Biomedical Signal Compression
- Wearable Sensor & Central Nodes
- Long-Range Communications
- SHORT-RANGE COMMUNICATIONS

4.1 .Biomedical Signal Compression

An innovative low-cost simple data compression scheme for m-healthcare monitoring devices is introduced Using the periodicity found in many medical signals, such as ECG, this method is based on MPEG compression (e.g., video compression) but is especially suited for biomedical and healthcare monitoring. Several studies have focused exclusively on ECG signals, incorporating techniques such as discrete wavelet transform (DWT) discrete cosine transform (DCT) and discrete Fourier transform (DFT)

4.2Wearable Sensor & Central Nodes

Wearable sensor nodes are those that measure physiological conditions. Recommended sensors are those that measure the vital signs - pulse, respiratory rate, and body temperature - as these are the essential signs for determination of critical health. Further sensors that could be implemented are blood pressure and blood oxygen sensors, as these parameters are often taken alongside the three vital signs. Special-purpose sensors such as blood-glucose, fall detection, and joint angle sensors could also be implemented for systems targeting a specific condition..

4.3 Long-Range Communications

Data obtained by the central node is not useful unless something can be done with it. This data should be forwarded to a database where relevant parties (such as caretakers or doctors) can securely access it. There are again several considerations when selecting a suitable long-range communications standard for use in a healthcare system, including security, error correcting capabilities, robustness against interference, low-latency, and high availability.

4.4 Short-Range Communications For sensors to communicate with the central node, a short range communications method is required. There are several important requirements to consider when choosing a short-range communications standard, including effects on the human body, security, and latency.

5. CONCLUSION

In general IOT based health care platform which connects with smart sensors attach with human body for health monitoring for daily checkup. In this paper we discussed about IOT based patient monitoring system. The system technologies being used by smart phones or gadgets in present time where we also mentioned about advantages, challenges and opportunities. Due to the importance of observing medical patient, continuous remote monitoring is necessary. Our project work is giving the opportunity to monitor patient continuously by using the web and apps service along with live monitor and mobile message service. This paper also compared the early aged medical system between present time health monitoring. The present time represents the time reducing, reduce health care cost especially for rural area people.

6. FUTURE ENHANCEMENTS

This system, named the WristEyesystem, can discern and analyze learners' attitudes, reactions, and behaviors as they participate in computer literacy classes. In the WristEyesystem, a kinematic sensor attached to a student's wrist can detect differences in wrist orientation and vertical acceleration and determine which learning computer operations are in process, i.e., directing the mouse, hitting the keyboard, idle, and random undirected movement of the mouse. Moreover, a remote backend server receives the detected signal from the wearable unit by a wireless sensor network and then analyzes the corresponding computer learning effectiveness to produce results in graphic and score form to an instructor who can use this information to better tailor his lessons and activities to the needs of the learners.

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