SMART HOME WITH HEALTH MONITORING SYSTEM FOR PHYSICALLY CHALLENGED PERSONS

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ABSTRACT

In recent years the concept of the Internet of Things (IoT) has evolved to connect commercial gadgets together with the medical field to facilitate an unprecedented range of accessibility. T development of medical devices connected to internet of things has been praised for the potential of alleviating the strain on the modern healthcare system by giving users the opportunity to reside in the home during treatment or recovery. With the IoT becoming more prevalent and available at a commercial level, there exists room for integration into emerging, intelligent environments such as smart homes. When used in tandem with conventional healthcare, the IoT offers a vastrange of custom-tailored treatment options. This paper studie srecent state-of-the-art research on the field of IoT for health monitoring and smart homes, examines several potential use-cases of blending the technology, and proposes integration with an existing smart home test bed for further study. Challenges of adoption and future research on the topic are also discussed.

Key words :Smart home with Health monitoring

1. INTRODUCTION

We have designed an interesting and cheap smart home . This Gadget helps you to protect your house and physically disabled persons . In this project we are going to use an Arduino Uno R3 Board, heartbeat Sensor module, LCD and some other components. This Project can either powered with 9V Battery or with U.S.B of your computer.This is a basic heartbeat sensor alarm that detects when someone physically challged person in a home. When an intruder is detected, it activates emergency message. Our body generates heat energy to temperature which is invisible to human eyes. But it can be

detected by temperature sensor. This type of sensor is made up of crystalline material that is Pyroelectric. In this project, we are using heartbeat Sensor Module as an heart rate will be increased then sends a signal to Arduino. According to level of the temperature in front of sensor, Arduino displays the status on L.C.D and start GSM module and glows the mobile.A simple program is running on Arduino which checks sensor.

2. LITERATURE REVIEW

2.1 YIN, Y., ZENG, Y., CHEN, X., FAN, Y.: "THE INTERNET OF THINGS IN HEALTH CARE": an overwiew.J.Ind.Inf.Integer.1,3-13(2016)

The Internet of things (IoT) is the network of physical devices, vehicles, home appliances, and other items embedded with electronics, software, sensors, actuators, and connectivity which enables these things to connect, collect and exchange data.

2.2 WANG, X., WANG, J.T.,ZHANG , X., SONG, J.: "A MULTIPLE COMMUNICATION STANDARDS COMPATIBLE IoT SYSTEM FOR MEDICAL USAGE. In: IEEE FAIBLE TENSION FAIBLE COMMUNICATION (FTFC)",Paris,pp 1-4(2013)

Iot involves extending Internet connectivity beyond standard devices, such as desktops, laptops, smartphones and tablets, to any range of traditionally *dumb* or non-internet-enabled physical devices and everyday objects. Embedded with technology, these devices can communicate and interact over the Internet, and they can be remotely monitored and controlled. With the arrival of driverless vehicles, a branch of IoT, i.e. the Internet of Vehicle starts to gain more attention

2.3 XU, B., XU, L.D., CAI, H., XIE, C., HU, J., BU, F: "UBIQUITOUS DATA ACCESSING METHOD IN IoT-BASED INFORMATION SYSTEM FOR EMERGENCY MEDICAL SERVICES". IEEE TRANS.Ind.Inf.10(2),1578-1586(2014)

A Remote health monitoring system is an extension of a hospital medical system where a patient's vital body state can be monitored remotely. Traditionally the detection systems were only found in hospitals and were characterized by huge and complex circuitry which required high power consumption. Continuous advances in the semiconductor technology industry have led to sensors and microcontrollers that are smaller in size, faster in operation, low in power consumption and affordable in cost

2.4 KOLICI, V., SPAHO, E., MATSUO, K., CABALLE, S., BAROLLI, L., XHAFA, F.: "IMPLIMENTATION OF A MEDICAL SUPPORT SYSTEM CONSIDERING P2P AND IoT TECHNOLOGIES. IN: EIGHTTH INTERNATIONAL CONFERENCE ON COMPLEX, INTELLIGENT AND SOFTWARE INTENSIV SYSTEMS", Birmingham, pp. 101-106(2014)

In recent times, several systems have come up to address the issue of remote health monitoring. The systems have a wireless detection system that sends the sensor information wirelessly to a remote server. Some even adopted a service model that requires one to pay a subscription fee. In developing countries, this is a hindrance/ as some people cannot use them due to cost issue involved. There is also the issue of

internet connectivity where some systems to operate, good quality internet for a real-time remote connection is required. Internet penetration is still a problem in developing countries.

3. WORKING PRINCIPLE

This paper proposes smart home with health monitoring for physically disabled persons. It is built around an Arduino UNO. It is connected to a Heart beat sensor, a buzzer, Temperature sensor, and a pair of external terminals. The whole system is battery powered so that it is easily portable. It is also convenient for physically disabled person to access all the home appliances from the sitting place. Once you have the code, you can connect all the external parts. This will let you make temporary connections to test everything out. High blood pressure is the biggest cause of strokes especially when it is lower or higher. Monitoring of high blood pressure (hypertension) is one of the most important things we can do to reduce the risk of stroke. If a person had a previous stroke, it is possible to have the risk of stroke recurrence, if blood pressure is constantly monitored. In our to continuously measure the blood pressure and communicate it to a mobile phone which send alerts to relatives or blood pressure measures for a certain period for further check and analysis. The home appliances can also be self controlled by the physically challengers using IoT technology.
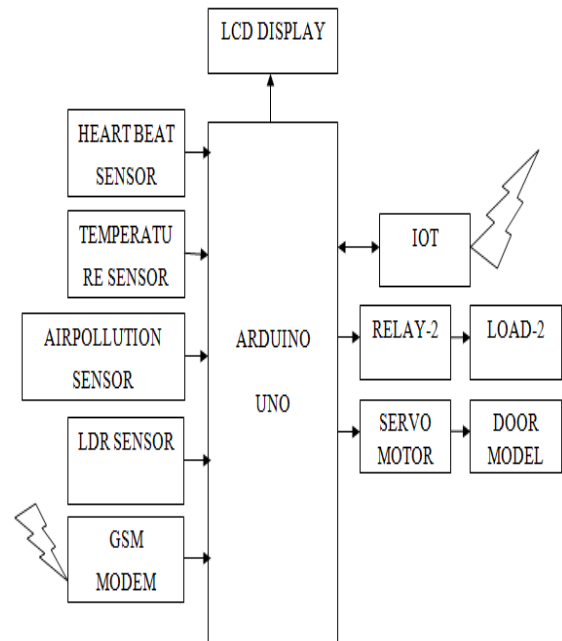

Fig No:1 Block Diagram

4. MAJOR COMPONENTS

- ➢ ARDUINO UNO
- ➢ LCD DISPLAY
- ➢ TEMPERATURE SENSOR
- ➢ HEART BEAT SENSOR
- ➢ LDR SENSOR
- ➢ AIR POLLUTION SENSOR
- ➢ RELAY
- ➢ SERVO MOTOR
- ➢ GSM MODEM
- ➢ IOT

1. ARDIUNO UNO

Arduino is an open-source electronics platform based on easy-to-use hardware and software. Arduino boards are able to read inputs - light on a sensor, a finger on a button, or a Twitter message -

and turn it into an output - activating a motor, turning on an LED, publishing something online. You can tell your board what to do by sending a set of instructions to the microcontroller on the board. To do so you use the Arduino programming language (based on Wiring), and the Arduino Software (IDE), based on Process

2.GSM MODIULE

GSM (Global System for Mobile Communications, originally Groupe Spécial Mobile), is a standard developed by the European Telecommunications Standards Institute (ETSI).It was created to describe the protocols for second-generation (2G) digital cellular networks used by mobile phones and is now the default global standard for mobile communications – with over 90% market share, operating in over 219 countries and territories

3.TEMPERATURE SENSOR

Temperature sensor is a device which is designed specifically to measure the hotness or coldness of an object. LM35 is a precision IC temperature sensor with its output proportional to the temperature (in °C). With LM35, the temperature can be measured more accurately than with a thermistor. It also possesses low self-heating and does not cause more than 0.1 °C temperature rise in still air. The operating temperature range is from -55°C to 150°C.The LM35's low output impedance, linear output, and precise inherent calibration make interfacing to readout or control circuitry especially easy.

4.HEARTBEAT SENSOR

A device for holding a heartbeat sensor in a relatively fixed relationship with respect to the end of a user's fingertip. More particularly, a device is disclosed wherein a single sheet of resilient material is formed into a base portion for holding the heartbeat sensor and three resilient bands that extend upwardly therefrom

5.RELAY MODIULE

A relay is an electromagnetic switch that is used to turn on and turn off a circuit by a low power signal, Or where several circuits must be controlled by one signal

6. CONCLUSION

In this paper, we have presented a low-power wearable IoT system for active and assisted living healthcare applications. We have outline the main components of the proposed system and explained their implementation details. We have built a prototype to illustrate the different performance aspects of the proposed system. The preliminary performance evaluation results have demonstrated the efficiency of the proposed system despite being a low-cost one. This makes the proposed system a good candidate for implementing a wide set of wearable healthcare systems. Our future work will include how to secure the access of the data and will develop a mobile application that allows access of the data on handheld devices.

7. REFERENCE

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