

HEARTBEAT AND BODY TEMPERATURE MONITORING USING ARDUINO

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Abstract

Heart Beat and Body Temperature Monitoring using Arduino will detect the heart beat using the Pulse Sensor and body temperature using LM-35 sensor. Sensor and will show the readings in BPM (Beat per Minute) on the LCD connected to it. The body Temperature will be displayed on serial monitor along with BPM readings. With the development of technology, in this project we can digitally sensing body temperature and heart rate using arduino. Mainly arduino is used because it can sense the environment by receiving input from variety of sensors and can affect its surroundings by controlling lights, motors, and other actuators. The microcontroller on the board is programmed using the Arduino programming language. LM35 is used for the sense body temperature. Body temperature is a basic parameter for monitoring and diagnosing human health. Heart beat sensor was used for sensing heart rate. This device will allow one to measure their mean arterial pressure (MAP) in about one minute and the accurate body temperature will be displayed on the Android.

Keywords

ARDUINO, LM-35 .sensor, ATmega328

1. INTRODUCTION

Heart Beat and Body Temperature Monitoring using Arduino will detect the heart beat using the Pulse Sensor and body temperature sensor. Sensor and will show the readings in BPM on the LCD connected to it. In this project we can digitally sensing body temperature and heart rate using arduino. Mainly arduino is used because it can sense the environment by receiving input from variety of sensors and can affect its surroundings by controlling lights, motors, and other actuators. The microcontroller on the board is programmed using the Arduino programming language. LM35 is used for the sense body temperature. Heart beat sensor was used for sensing heart rate. This device will allow one to measure their mean arterial pressure (MAP) in about one minute and the accurate body temperature will be displayed on the Android. The system can be used to measure physiological parameters such as Heart rate, Pulse rate. In rural hospitals, the facilities for health caring are restrained. Everyone must get the knowledge of own fitness as easy and early as possible. Also it needs to be worth for each. In growing nations there is lack of resources and control to reach out the problems of individuals. A common man cannot find the money for the steeply priced and day by

day check-up for his health. For this cause, a diverse system which provides clean and assured being concerned unit has been developed. This machine reduces time with adequately handled system.

2. LITERATUREREVIEW

Tyagi presented the various applications of IOT and also mentioned some important functionalities of each of the applications in IOT. They mainly concentrated on the roles and features of IOT in healthcare & also discussed on the technologies that make this IOT possible in healthcare. In this paper, they have even proposed how cloud is also used for healthcare industry. Darshan, K. R addressed the various uses of IOT in the healthcare system and also explained the challenges faced by IOT in the healthcare. They have also performed a review on various works done in the research area of this field. They have explained how to detect any disorders at the early stage and the necessary medical aid to be taken before hand. They have provided the status of IOT in some of the various well-known technology firms like how Google, Microsoft, Intel, IBM, cisco and the government sector are using IOT for healthcare.

3. BLOCK DIAGRAM

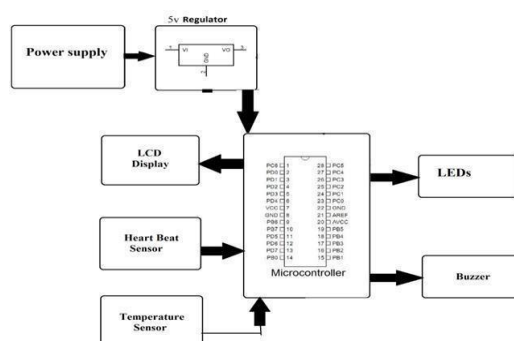


Figure1: Block diagram of heartbeat and

body temperature monitoring using Arduino.

Sensor and will show the readings in BPM (Beat per Minute) on the LCD connected to it. The body Temperature will be displayed on serial monitor along with BPM readings. With the development of technology, in this project we can digitally sensing body temperature and heart rate using arduino. Mainly arduino is used because it can sense the environment by receiving input from variety of sensors and can affect its surroundings by controlling lights, motors, and other actuators. The microcontroller on the board is programmed using the Arduino programming language. LM35 is used for the sense body temperature. Body temperature is a basic parameter for monitoring and diagnosing human health. Heart beat sensor was used for sensing heart rate. This device will allow one to measure their mean arterial pressure (MAP) in about one minute and the accurate body temperature will be displayed on the Android. The system can be used to measure physiological parameters, such as Heart rate (Systolic and Diastolic), Pulse rate. The block diagram consists of fixed size. Using these individual characters then we can form a text. If we take a closer look at the display we can notice that there are small rectangular areas composed of 5×8 pixels grid. Each pixel can light up individually, and so we can generate characters within each grid.

5. CIRCUIT DIAGRAM

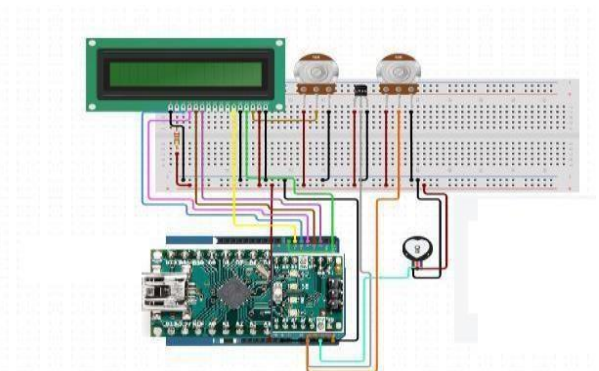


Figure2: circuit diagram of monitoring system using Arduino.

It consists of Pulse sensor, LM-35 sensor, Arduino nano, 16*2 LCD, bread board, 10Kpotentiometer, connecting wires, buzzer

6 RESULTS AND APPLICATIONS



Figure3: practical implementation of monitoring system using Arduino.

Heart rate and body temperature monitoring using Arduino has a wide range of applications, including:

Fitness tracking

Arduino-based heart rate monitors and body temperature sensors can be used to monitor and track fitness-related metrics, such as heart rate variability (HRV) and core body temperature. This information can be used to optimize workouts and track progress.

I. Health monitoring

Arduino-based heart rate and body temperature sensors can be used to monitor health conditions such as hypertension, fever, and hypothermia. This can allow for prompt intervention in case of any abnormalities.

II. Wearables

Arduino can be used to develop wearable devices, such as smart watches or fitness trackers, that monitor heart rate and body temperature in real-time.

III. Remote patient monitoring

Arduino-based heart rate and body temperature sensors can be used to

remotely monitor patients' physiological parameters, allowing for timely interventions if necessary. This can be especially useful for patients with chronic conditions or those in remote locations.

IV. Biometric authentication

Arduino-based heart rate sensors can be used for biometric authentication, where an individual's heart rate is used as a unique identifier for access control systems or other applications.

7. CONCLUSION

Through this project our knowledge regarding embedded systems and circuit designing. We learned about real world applications of microcontrollers and embedded systems. This system can be used for heartbeat monitoring and body temperature monitoring using arduino. The primary objective of this project is to develop an arduino based health monitoring system that able to provide real-time health data monitoring of the user. The proposed system is send the health data to the visualization platform in real time. Experiments are conducted to prove the functionality of the sensors and the system.

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