

A Review on Child Incubators System

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Abstract

According to a survey four million babies die in the first month of their birth, one million die on their first day. The premature babies are protected with the use of incubators at hospitals. These babies are those who have increased risk of getting infected. It also helps premature babies to maintain skin integrity. Such Incubators are too expensive. So the hospitals located at rural areas cannot afford to have such facilities. Therefore there is a need for cost effective monitoring system for babies. So all economically backward classes will be benefitted. We carry on a review on various incubators systems which have been developed over the year and on the basis of the review carried out we propose to develop an android based child incubator system which is cost effective too.

Keywords –

Arduino UNO, Temperature Sensor, Humidity Sensor, Bluetooth Module

1.INTRODUCTION

In today's world the development of technology, home healthcare and remote monitoring of physiological data are playing the major role. Implementation of home healthcare for patients is more important, particularly for premature babies. In hospitals premature babies which have high risk of getting infected are protected with the use of incubators. This incubator or baby monitoring system can be developed with the help of sensors and microcontroller. To monitor infant fever the body temperature of the infant is monitored which is very important. A Rapid increase in body temperature may cause a vital damage. So there is need to continuously monitor the body temperature of the infant. 36-38°C is the maximum body temperature range for infants. Pulse rate is also a crucial factor

for infants, so the pulse rate of the infants also needs to be continuously monitored. The number of heart beats per minute is called as a pulse. 70 to 190 beats per minute is the maximum pulse range for newborn babies and 80 to 160 beats per minute is the pulse range for infants. The condition of the baby's bed should be monitor to check if it is in wet condition or not. So the moisture level of the bed should be continuously monitored. In this proposed system we will implement a control unit and a monitor application on android. The control unit will be composed of DHT11 these sensors used for measuring environment temperature and humidity, HC-05 is Bluetooth module that will allow to connect any device and send, receive the data, The Humidity and Temperature value will be transmitted to android application via Bluetooth. Android application also used for turning heater ON/ OFF.

II. LITERATURE SURVEY

Mrudula Borkar, Neha Kenkre, Harshada Patke [1] stated that the heat is the important parameter for the baby in an incubator. The system is mainly focused on the monitoring of the temperature of the infant incubator. Mohit Kumar, Ms. Suryakala [2] suggested that infants can be monitored using the web camera, a nurse for the baby or the audio surveillance. But, this system provided the peace of mind to parents when they were away from their child how can I get updates on the health of children. The key element is that the communication has been made using the GSM interface in which service of short messages (SMS).

Luke, s. Suma [3], implemented by monitoring the temperature and heart rate by using the appropriate sensors. Accelerometer has been used as the motion detector. The GSM Modem interfaced with the MCU sends an SMS alert to mobile phones. Joseph Mathew, s. Mathur, s. Vaishnodevi [4] implement single-chip microcontroller to read the surrounding temperature, humidity and breathing, as well as the sensor. All values have been displayed on the LCD. Single microcontroller was used to analyze all the data from three sensors and any change has occurred, a notification is automatically sent to their parents.

N.A.A Hadi, M.H.C. Hasan, N.M.Z. Hashim, N.R.Mohamad, A.S.Rahimi, K.A.M. Annuar [5] stated that the current recommended method for regulating a child's temperature in a resource is the KMC method, which involves placing babies directly in the mother's breast. KMC has shown benefits in terms of improving weight gain in premature babies. Prof. Kranti Dive and Prof. Gitanjali Kulkarani [6] used a Leonardo Arduino board in the design of the system, as well as a body temperature sensor, a sound detection sensor, a heart rate monitor and a humidity sensor. The notification of alarm situations has been successfully transmitted via an intelligent vibration clock, SMS and light-emitting diode using an Arduino board and Android-based applications.

Faruk AKTAS, Emre KAVUS, Yunus KAVUS [7] discussed temperature and pulse, and also describes the design of a low-cost baby monitor that measures the baby's heart rate and body temperature, sends the data to a remote end, where the data is stored, and can be reviewed by parents or guardians. Sujal Rane, Kajal Sutar, Vaidehi Temghare, Rahul Patil and Sandip Chavan [8] said that the system should monitor parameters such as light, breathing, audio / baby voice, that it was good or weeping. The door parameter rings the intruder so that an alarm / LED indicator is displayed when people enter the baby's room and break the sensor. Based on the review, we found that the majority of infant incubators with the existing technology displays a temperature value and other key parameters in the local display in digital format and these parameters can be defined based on our requirements, but in general the computer can use these Do not send settings to the remote site and control them from there. Some machines are available with remote monitoring capabilities, but their estimated cost is around Rs 30,000 / piece. With the increasing daily use of incubators, it is now necessary to develop a cost-effective project and work from a remote location

III PROPOSED SYSTEM

The system which we propose is as below

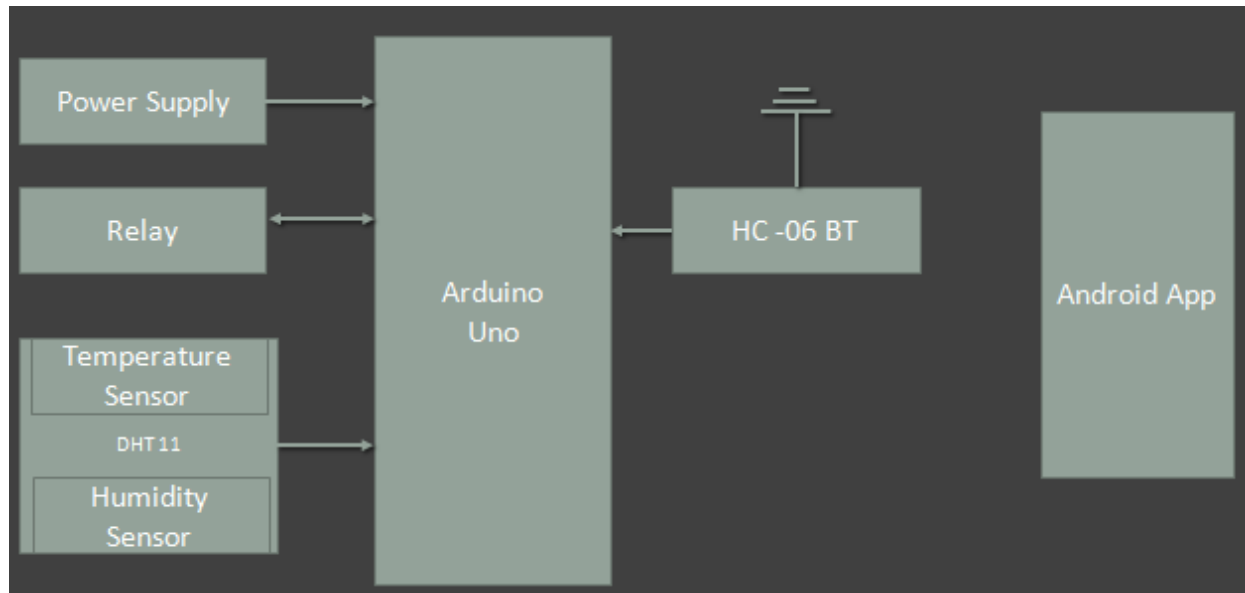


Figure 1 Block diagram of the proposed system

In the proposed system we will implement a control unit and a monitor application on android. The control unit will be mainly composed of DHT11. This sensor is used for measuring environment temperature and humidity, HC-05 is Bluetooth module that will allow connecting any device and sending, receiving the data, Relay and Arduino Uno. The Humidity and Temperature value will be transmitted to android application via Bluetooth. Android application will also be employed for turning heater ON/ OFF.

CONCLUSION

Thus we conclude that we have been able to carry on a review on various techniques which have been used over the years for child incubators and on the basis of the review carried out we propose a system which will consist of a control unit and a monitor application on android. The control unit will be mainly composed of DHT11. This sensor is used for measuring environment temperature and humidity, HC-05 is Bluetooth module that will allow connecting any device and send/receive the data. The Humidity and Temperature

value will be transmitted to android application via Bluetooth. Android application will also be employed for turning heater ON/ OFF

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