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AUTOMATION IN BABY CRADLE BED

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ABSTRACT

The customary Automatic child cradle frameworks are excessively lavish and they additionally don't offer much usefulness. Baby cuddle bed / cuddle nest is a concept originated in Sweden. Baby cuddle bed makes a cozy sleeping place for the baby and protects baby at night because of stable bumper. We intends to help those moms who are excessively occupied and don't have a cleaning specialist or sitter to deal with their infants. This paper portrays the configuration of a programmed cradle which fundamentally chips away at location of infant development with the assistance of a PIR sensor. PIR sensor detects the movement of infant. Another important feature is the automated swing of the bed by means of voice command which will work through an app. The cuddle will also swing when the baby will start crying inside the bed. The cradle additionally incorporates a wet sensor which will caution the folks or the Attendant/sitter for bunk wetting of the infant. It will help to keep the infant in a hygienic environment. The framework is kept negligible as far as fittings as greatest measure of usefulness of the cradle is performed through Arduino. The cradle is vitality productive and obliges no physical consideration.

Keywords:Automatic cradle, bed-wet sensor, PIR sensor, swinging of cradle, movement detection.

I.INTRODUCTION

Generally, the baby cradle is used for to make sleep and soothe to baby. For example guardian have to take care of their child till as they asleep. However, conventional cradle does not electronically equipped such like battery or adapter to automate the cradle automatically. In Addition to that, these kind of conventional cradle is used in villages areas or non-developed cities due to its low prices. But the problem of this kind of designated cradle is that you need manpower to take care of your child and your child may not be safe and feel comfortable in the conventional cradle. Thus, we need automatic cradle to take care of child which uses the battery or power source. Besides, there are extra features or function is provided by the newly automatic cradle that is beneficial for parents. Because in the present world people are very busy in their professional life so they do not get ample time to take care of their infants. It will be very difficult control the babies and if someone is hiring professional to take care of their infants. It may increase your expenses from monthly expenditure. Moreover, in today, life it is very hard to even for the homemakers (mummy) to sit nearby their babies and sooth them whenever they feel uncomfortable. Though, it is automatic this application is very useful for the nurses in maternity units of hospital.

1.1 Objective of the project

1.1.1 To design the development of an intelligent baby care, which has ability for automated swing, bed-wet condition and body temperature?

1.1.2 To make a baby cradle is safe and comfortable for baby with using PIR sensor to detect the movement of the baby body as well as bed-wet condition to keep away baby from hygienic environment.

1.1.3 Automated swing of cuddle when baby is crying.

1.1.4 To make cradle innovation that is more flexible and less expensive to market.

1.1.5 User friendly- simple and complete with instruction

1.2 Automated baby cradle bed

The requirement of automatic intelligent baby cradle is day by day increasing.Especially in metropolitan cities. The benefits of Automatic cradle are:

1.2.1 It is very easy to operate and it's reduces the manpower work. The user can adjust the cradle according to their comfort and use.

1.2.2 User can adjust the time as per need of the parent's the how long cradle will move and the parents can finish their household work in that period.

1.2.3 The one of the most benefit of this cradle is we can use cradle as a biomedical product in the hospital. Hospital have neonatal and maternity units. It will be helpful for the nurses to take care of infant and sooth whenever they need. They do not have to seat nearby.

II.METHODOLOGY

2.1 Hardware design and description

The following section describes the hardware that is being used in the project.

A. Hardware Requirements

1. PIR sensor
2. Motor shield
3. Arduino UNO
4. Bluetooth module
5. Surface temperature sensor
6. Wet sensor
7. Power source
8. MOTOR
9. Activated relay KYO38 MICROPHONE SOUND SENSOR/voice.

2.2 Procedure and purpose of material

(1) PIR Sensor- The PIR sensor has been used the model HC-SR501 in this project to detect the baby movement and procured from the local store[5].

(ii) Arduino UNO- Arduino UNO is the microcontroller board and the Arduino AT MEGA 328 model has been used in this project and procured from the local store. And arduino has been used for the quickly developed interactive objects, taking input from variety of switches or sensors and controlling a variety of outputs such as automate the motor and detect the temperature sounds and light this is called physical computing[6].

(iii) Motor shield- The arduino motor shield has been used and it is based on the H-bridge chip L 298 driver integrated circuit .this motor shield mount with arduino and enable the geared motor which help in swing of cradle. This is procured from the local store[8].

(v) As the name implies, a "gear motor" or "geared motor" is a motor having an attached "gear assembly" (or gear train) which enables the gear motor to provide greater torque at a lower rpm than the motor alone would be capable of providing. In our experiments however, we didn't need the gear assembly. We used a 300 rpm, 12V motor to control the speed and direction and it is also procured from the local market or store.

III. EXPERIMENTATION

3.1 Implementation of the PIR sensor monitoring device

Pyro electric infrared (PIR) sensor is a strong state sensor which is fit for catching infrared radiation emanating from the objects[11]. The sensor fundamentally measures the adjustments in the infrared radiation amid development of the items, set with in the field of perspective of the sensor. Since the sensor is equipped for distinguishing articles while they are in movement, they are regularly viewed as movement finders. In this study, PIR sensor was appended on the pole of the support in order to identify the development of the child. Once, the development of the infant is recognized, a control sign was created to swing the support for the 5 minutes. In the event that the sensor recognized the development of the infant after the progression of the swing stage, the swing was rehashed for an additional five minutes.

3.3 Implementation of the bed-wet sensing system

A mesh like structure was produced on to a copper clad board the cross section was comprised of two leads with extended structures. The expanded structures of the leads don't cover one another. In other vicinity of Bed-wet condition, the leads was associated with a 5V force supply through the resistance of 55 kilo-ohm. The second lead was joined with the ground. The yield of the framework was taken from the 55kilo-ohm resistance and the lattice lead. The yield was associated with the AIO information of the Arduino UNO board. Under typical circumstances the lattice surface will carry on as open circuit and the yield of the sensor will be 5V. On account of Bed-wet condition, there will a drop in the yield voltage. A not as much as rationale was connected to produce a control signal for the actuation of the GSM module.

3.2 Implementation through mobile app

We will connect Arduino UNO board through a Bluetooth module, the Bluetooth module will be connected to the phone Bluetooth. And then after connecting to the Bluetooth module, we will give the voice command through an app from the phone, which will control the swing of the cradle. The diagram is shown in fig-1

3.4 Implementation through noise sensor

When the baby will start crying the noise sensor will detect the sound and gives the signal to the Arduino UNO for the implementation of the motor and thus causing the swing of the bed.The diagram is shown in fig-2

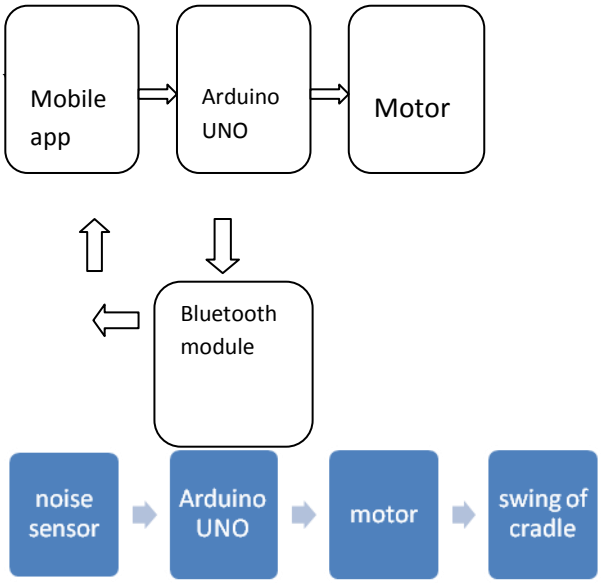

Fig1- Block diagram of control through mobile app

Fig2- Block diagram of working of noise sensor

IV. RESULT ANALYSIS

We are successful in swing the cradle bed automatically by using the motor and power supply/battery. Now we are controlling the swing of the bed by means of voice command by using ArduinoUNO, noise sensor, Bluetooth module and motor controller.

V. CONCLUSION

In the present study, an intelligent baby cradle system was developed. The cradle was capable of detecting the movement of the baby and initiate cradle swing. This project emphasis on providing ease for caring & safety of the infants and reducing the pressure on the parents.

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