July 2012

Automatic Cradle Movement For Infant Care

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Recommended Citation

Ebenezer, Anritha and Anupreethi, S. (2012) "Automatic Cradle Movement For Infant Care," *Undergraduate Academic Research Journal*: Vol. 1 : Iss. 1 , Article 16.

DOI: 10.47893/UARJ.2012.1015

Available at: <https://www.interscience.in/uarj/vol1/iss1/16>

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Automatic Cradle Movement For Infant Care

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Abstract - Our project is a novel approach in designing an automatic cradle swinging system for assisting infant care. This equipment can be mainly used in the hospitals to provide an aid to the nurse in taking care of the infant or at home to monitor the baby while the parent is at work and the baby is under the care of baby sitters. It has a cry analyzing system which detects the babies cry pitch and accordingly the cradle rocks. At the maximum it could have six rocks per minute. If the baby doesn't stop crying within a particular instant of time a call or a message will be delivered to the nurse or to the parent's mobile number via GSM , thus intimating them that the baby has to be taken care of. In addition to this it has a wet sensor, temperature sensor and a respiration sensor. If the baby wets an alarm or a display will be intimating in the case of wet sensor and for temperature sensor, if the baby's temperature rises above the normal body temperature then an alarm and a display message would intimate that the baby has to be taken care of. We use respiration sensor here to detect the apnea condition and to wake up the baby by giving a vibration.

Keywords - *swinging, GSM*

I. INTRODUCTION

In the current scenario where both the parents of a family go for job, it has become very difficult for them to take care of their kids. This finally results in giving their child to a nanny who is assumed to take care of the baby but at times things turn the other way round. Hence here we have designed a system which would help the parents in the child care. This design aims at 2 main things in assisting parents.

- Automatic cradle movement while the baby cries.
- Call or sms sent to their number.

II. BLOCK DIAGRAM

Fig. 1 : Block diagram

III. WORKING

When the baby in the cradle cries, the cry will be detected by the microphone where, sound signal will be converted to electrical signals. The signals are then amplified by the amplifier then it is sent to the peak detector where cry peaks will be detected and further the signal is sent to microcontroller. Microcontroller controls the signals to be sent, then the output of the microcontroller is sent to the drivers which drives the DC motor and makes the cradle to swing according to the sound intensity(baby's cry). The wet sensor, which is attached with the cradle sends signal to the signal conditioning unit. There will be change in the resistance when sensor detects wetness then this output is given to the microcontroller and an alarm is set to alert the parents . Respiratory sensor is used to check apnea condition. On continuous movement of the cradle , after a particular time microcontroller sends an indication to the GSM modem via RS232 interface, the modem will send a message or a call to the mobile number stored in the modem as an alert. This number may be parents number or nurse number

A. Wet sensor

The wet sensor which we have designed is a PCB design where copper cables are embedded on it , hence whenever the wetness is detected the resistance would change and corresponding signals will be passed to the microcontroller. Which in turn sends the signal to the display. Thus it helps to keep the baby in a hygienic environment.

B. Respiration sensor

The respiration sensor which we have used is capacitive based sensor. During normalbreathing process the dielectric field which is created between the capacitive plates changes thus electric signal will be passed to the microcontroller for every breath. Whereas during apnea condition (when there is no breath) the microcontroller would send a signal to the vibrator to alert the baby . Here the respiration sensor is in the baby belt which the baby wears it on the chest.

C. GSM

The purpose of the GSM here is to alert the parents or the nurse if the baby does not stop crying after the set instant of time. Here the microcontroller would be programmed in such a way that if the baby does not stop crying and the cradle keeps swinging after the set instant of time then the signal would be passed to the GSM to make a call or send a message to the parents number and alerting the parents that the baby is not being taken care of. An RS232 interface is connected between the controller and GSM for level conversion.

D. Temperature sensor

We have a system to continuously display the temperature of the baby.and in case the temperature goes beyond or below the normal temperature, this will be known via the display.

IV. CONCLUSION

Thus the above designed system would be of great use to the parents who go for job and to the present development in the technology, the parents can have a video interface and watch their baby LIVE via 3G! Though we have designed such a system , we insist the importance of baby care through our project.

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