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Smart Baby Cradle Using IOT

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ABSTRACT: Today's lifestyle is fast-paced. Most of the working parents find it slightly difficult to manage work along with babysitting. they can't keep a watch on their child all the time and is hard after long working hours. To assuage the baby by manually swinging the cradle might not be possible in such a case. If they have taken the help of a babysitter for it then also baby's safety-related thoughts keep getting in their minds. Hence there is a desire for a product that bridges this gap between parents and baby. This cradle system is proposed to help these parents so they'll take excellent care of their baby from remote locations. With this smart system now parents can keep a watch on their baby and simultaneously perform various functionalities like detection of baby's motion and sound, especially crying and video Live Streaming output of baby's present position will be displayed on website or Mobile Phones in order that the mother or another responsible person can watch the baby from remote locations. The website contains an entire guide for folks to require all the required nutrition's and what care should be taken in line with baby age. the smart cradle could be a complete system for a far better care of you and your baby.

KEYWORDS: Smart cradle, DC motor, web camera, swing motion, U.V light, android device, Temperature Sensor, Raspberry Pi.

I.INTRODUCTION

The Internet of things (IoT) may be a system of interrelated computing devices, mechanical and digital machines, objects, animals or folks that are supplied with unique identifiers and also the ability to transfer data over a network without requiring human-to-human or human-to-computer interactions. the web of Things thus promises a robust added value to every domain. By connecting objects, people and environments, it becomes possible to develop improvements that may only be beneficial • As we all know the term IOT that's internet of things which is meant to save lots of time and for creating work easy and accurate. As far as time and security is concern with the assistance of IOT we are going to build a cradle system which is able to make parents stress free and most vital it'll be safe and secure for the baby. So, managing the add time and taking care of baby is incredibly important factors. • Cradle system will give parents required time to parent for rest, as if the oldsters both mother and father goes for the task or perhaps if the mother is house wife. Being stress power definitely create the good atmosphere which can make great atmosphere round the baby. • So, it doesn't matter if there's nobody to swing cradle it'll do swing automatically if the baby is crying. It doesn't matter if baby has done pee and nobody knows about for very long time, but not must worry cradle system also will give the alert about the wetness in cradle. Also, if baby is getting fever or cold Cradle system even have the flexibility to detect it and send the alert. Our cradle also will able to detect if any motion within the cradle by motion sensor for security purpose of the baby

II.MOTIVATION

Under fast-paced life conditions, everyone seems to be busy in their professional life including parents. They leave the house early within the morning and are available back before time for dinner. Even the mothers are working. Thus, they are doing not have sufficient time to require care of their babies. Not all parents could afford a nanny to assist them with their children. Then, after working for long hours, the mothers still have to manage the house and be sure of their babies simultaneously. because of less featured cradle systems and parents busy schedule we are implementing modern-day cradle system.

III.PROBLEM STATEMENT

Most of the working parents find a bit difficult to manage work along with babysitting. We need to develop something unique that can help parents to have continue surveillance on their infants. Notify the parents via Web\Android



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IV.HARDWARE REQUIREMENTS

1. Raspberry Pi 3 :

The Raspberry Pi 3 module is used to make the total control system of the hardware, condenser Sound Sensor is used to detect baby's crying, PIR motion sensor is incorporated to detect baby's movement and USB camera is used to capture live baby's from cradle.



Figure 1: Raspberry Pi 3

2. Camera:

The camera is placed in the cradle so that parents will get to know about the baby's movement and what happenings instantly. This will help them to know when their baby needs their care. The camera placed in the cradle will record all the movements of the baby and transmits it to parents on a webpage. When the parents want to know about their baby then they can watch it on Webpage.



Figure 2: Camera

 Temperature Sensor(DHT11): We have to use a temperature sensor in our project for monitoring the temperature in the room in which we placed the cradle. If the temperature goes down the notification will be sent to the Web page.



Figure 3: Temperature Sensor

4. UV Light:

UV light can emit an ultraviolet ray with a wavelength of 253.7nm, which kills the bacterial viruses within a few seconds and efficiency is up to 99.99%. The two working together can make your home or Cradle a much healthier place.



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Figure 4: UV Light Sensor

5. Sound Sensor:

A sound sensor detects the audio intensity. The main component of the module is a sound sensor, which is LM386. It takes analog input. Here it takes the crying sound of the baby. The sound intensity level is measured in decibel (dB).



Figure 5: Sound Sensor

6. Servo Motor:

When the baby cries the cradle will start swinging with the help of DC motor.



Figure 6: Servo Motor

V.SYSTEM ARCHITECTURE

Our smart Baby cradle device can detect the baby's movements and sound, particularly crying, and video Live Streaming output of the infant's current position can be presented on a website or on mobile phones, allowing the mother or another responsible person to keep an eye on the infant from afar. The Raspberry Pi 3 module is used to create the hardware's whole control system, a condenser sound sensor is used to detect the baby's crying, and a USB camera is used to capture live baby's from the cradle. The constructed hardware is put to the test to see how well it can detect baby motion and cry, as well as output video. This system can be beneficial. Finally, the built hardware is put to the test to see how effectively it can detect infant movements and scream, as well as generate video. This system could make taking care of babies easier and more convenient for busy parents.



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Figure 7: System Architecture

Sequence Diagram:

Sequence diagrams show how objects interact over time in a graphical format. Typically, these depict a user or actor, as well as the objects and components with which they interact during the execution of a use case. One sequence diagram generally depicts a single Use Case 'scenario' or set of events. Sequence diagrams are a good technique of describing use scenarios and both collecting necessary objects early in analysis and validating object use later in design .The diagrams depict the flow of messages from one object to another, and so correlate to the methods and events that a class or object supports.



Figure 8: Sequence Diagram

Advantages:

- Easy for parents to monitor their baby.
- Provides security.
- Small in size.
- Lightweight.
- Easy to use.
- Cost efficient.
- Less power consumption.



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VI.RESULTS



Figure 9: Website Homepage

FEATURES Best Health Providers in Town		(2)
	Real Time Streaming Watch your baby live through web while you unwind after a tring day.	Automatic Swing Mechanism Swing is very confortable, your beby can easily sleep and enjoy this swing.
	© Sound Sensing & alert	User Friendly GUI
	Get Alerted when your baby cries or any other activity happens near the cradie.	Control every sensor connected to the cradie Easily through easy to use GUI.

Figure 10 : Features Page



Figure 11 : Login Page



Figure 12 : Live Stream

The various gadgets were installed and was seen to be operating efficiently at the time of baby's scream detected by the sound sensor and swing the cradle automatically.



Figure 13 : Assembled Devices



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VII.CONCLUSION

Baby care is tough problem worldwide. it's important duty as they're our future. Though mother's lap is best for baby, considering the necessity of present world and knowing the importance of baby care, this system . this system is economical and simple to work which helps working parents to manage their work. Video monitoring is created available through most typically used android smart phones. In future, more features like IR(Infrared) camera for twilight vision will be an extension of this system. Also other client applications i.e. applications for ios etc. will be designed for this system.

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