"IOT Based Smart Cradle System"

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***Abstract*—A cradle is a tool used to put infants to sleep.The cradle's side to side rocking action calms the infant . It takes lof of efforts from parent to physically rock the cradle to generate swining motion .When baby is kept insise the cradle need a constant monitoring. The idea of the scenario is accomplished by using sensors and microprocessor.The temperature of the room are sensed by the sensors.Depending on the users implementation the system works accordingly by collecting data and notifying it .**

***Index Terms*—IOT, Wet detection sensors,Temperature sensors,Cry detection sensors , Fan.**

I. INTRODUCTION

Many parents are unable to devote sufficient time to infants on account of office work .
Additionally,there are also many first time parents who lack experience in raising children .Conversly,infants require greater attention and care.Simple methods to immediately calm the agigated infants need to be devised.Therefore,it is necessary to support parents in caring for their infants by giving them a single device that help watch their child .

Over the past few decades there has been significant rise to the numberof female participation in force to industrialization.Due to which large amount of female workers need to stay away from home on daily basis.

The first verbal communication of newborn baby with the world is the baby's cry .Infant crying Infant crying is the bilogical alarm system .An infant crying signal is the attention call fpr parents or caretakers and motivate them to alleviate the distress. The need to develop a new low cost electronic device is required.

II. LITERATURE SURVEY

In their study ,Jim Mathew Phillip,SathyaM Vishal S,and Naveen k proposes the idea of automated babycare room . The primary goal is to conserve energy , time in their busy schedules. The idea if this scenario is accomplished by using sensors .The sensors track activities and measures the temperature of baby.

Kaushyala , Mayur Gawade ,Vaishali , they have created a device that is outfitted with multiple sensors , including temperature , humidity ,motion ,and sensors such as temperature ,humidity ,motion and sound sensors that continuously monitor the baby's environment . These sensors collect data in real-time and forwarded to the cloud sensors.

The study conducted by Hina Alam,Muhamma Shafi , have designed for the necessary monitoring features like room temeperature and humidity and face detection were monitored by exploring different sensors. Using machine learning model,the device can identify the registered baby's facial expression and can monitor throgh a web camera.

The study by Alankrutha S N , Anusha S ,Sushmitha C P ,the authors describe how they use various sensors to identify a babie's every move.All datas are stored and in cloud and analysed at regular intervals and notifications about the events and the view image captured are uploaded to cloud server.This cradle can detect the baby cry, mattress wet ,temperature ,person detection and methane content of the baby.

In the study conducted by Me.A.Kumaravel,Ramesh ,Ramya ,the authors designed the system which considers all minute details required for the care and protection to infant.The design comes with user friendly applications

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III. PROPOSED SYSTEM

The microcontroller based solution is been built with the intention of assisting nurses and parentsWhen the infant's cries,the system plays mothers voics.The system in interfaced with the sound detector that,upon hearing the baby cry,detects sounds and triggers the controller via the signal output. All the sensors sends the signals to the inbuilt ADC of the Arduino controller.The reduction in the temperature indicates wetness. An LCD interfaced to the controller keeps displaying the status as messages and cradle swings.A wifi-interface sends an alarm to Andriod-based handsets to grab the parents attention.

IV. COMPONENTS

A. Hardware

- Arduino
- Motor Driver
- DC Motor
- Sound Sensor
- Temperature Sensor
- Wetness Sensor

B. Software

- Arduino Suite
- Embedded Sensor

1. Arduino Uno Microcontroller

Fig : Arduino Uno

A Rduino Uno is widely utilized piece of hardware.It is reasonably priced,readily accesible,and rather small

2. Motor Driver

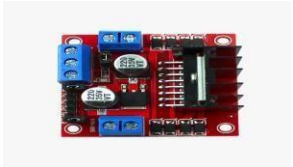

Fig : Motor Driver

Motor driver provides power needed to control the motors and other components within an apllication. It is essentially responsible for providing the voltage , cureent and directionality to operate

3. Sound Sensor

Fig : Sound Sensor

The sound detection sensor module is quite simple to use.The baby's cry will be recorded by the sensor.

4. Temperature Sensor

Fig : Temperature Sensor

This senses the surrouning's temperature . It updates regarding the temperature and it is easily affordable.

5. Wetness Sensor

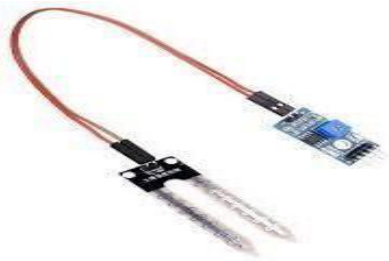

Fig : Wetness Sensors

It is employed to determine the moisture.It alerts if the infant wets the crad

V. METHEDOLOGY

Its goal is to keep an eye on the body's vital signs and provide additional comfort.A sound will detect the frequency of the baby's cries or noises and trigger the cradle swing .When the baby wets the cradle mattress,the dry wet sensor detects this and sends warning SMS to the parent .A temperature sensor detects variations in temperature,at which the fan is activated and soon as the baby cries ,the music begins.Later, the wifi modules allow the sensors to communicate with the parents.

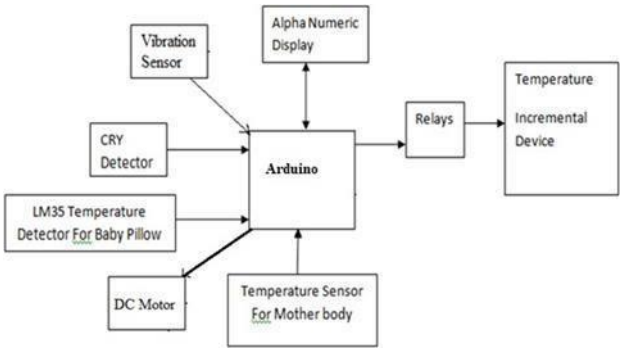

Fig : Block Diagram

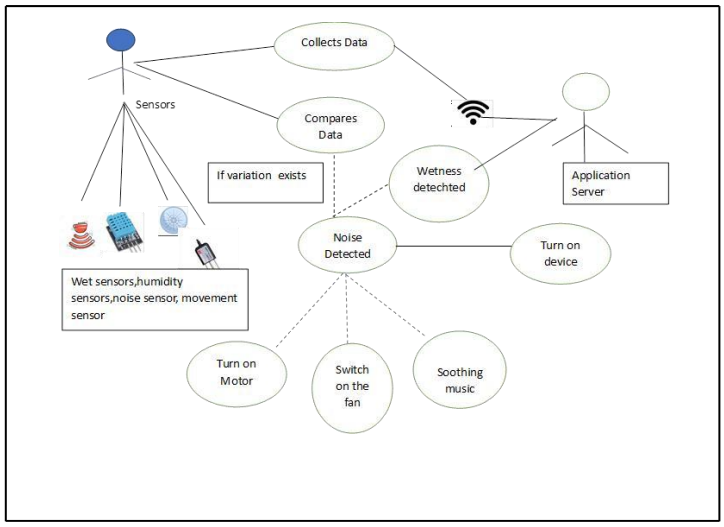

Fig : Use-Case Diagram

VI. RESULTS AND DISCUSIIONS

The overall goal of the system is to give parents much more needed respite while still providing comfort to the infant.Parents are alerted when notifications are given to them through wifi and sensors.

VII. SNAPSHOTS

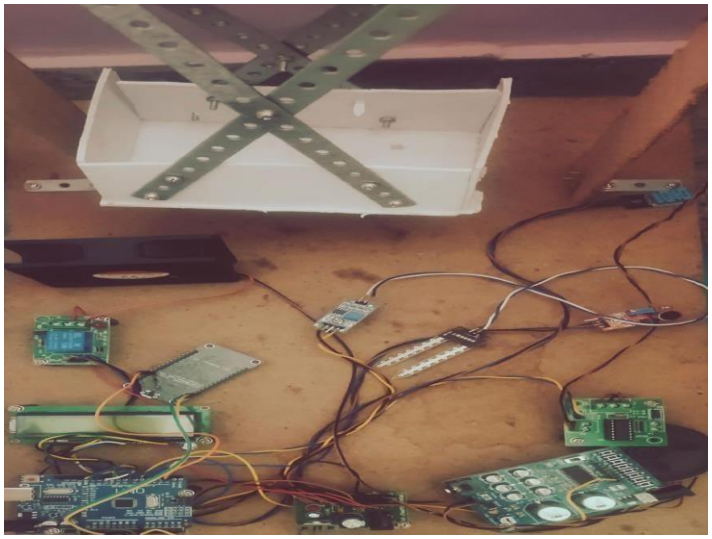

Fig : Top View of the Model

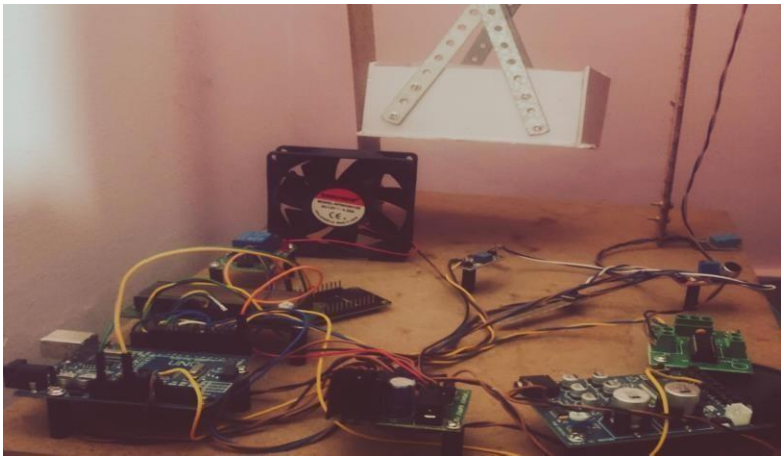

Fig : Front View of the Model

VIII. CONCLUSION

The feature has been created with an initiative to help parents monitoring their newborn infant with the touch of the screen .Parents can use the system more easily by providing all the aspects . Along with it ,parents will get notificationsof the child cry,sleeping etc. This methos is created to meet the needs of the modern world . The Cradle System with simple to use hardware as well as software which makes it more convincing for the busy or working parents

IX. FUTURE SCOPE

In future, our idea can be integrated with the Artificial Intelligence and Machine Learning which will aloow to read comprehend a baby's expression,daily activities and health.

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