SMART CRADLE SYSTEM

EPICS report submitted in partial fulfillment of the Requirements for the Award of the Degree of

BACHELOR OF TECHNOLOGY

In

COMPUTER SCIENCE AND ENGINEERING

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2022

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CERTIFICATE

This is to certify that the EPICS Report entitled **"SMART CRADLE SYSTEM "** being submitted by P.HARIKA(208W5A0516),T.CHIHNITHA (208W5A0517),V. CHAITANYA (198W1A05I8) in partial fulfillment for the award of the Degree of Bachelor of Technology in Computer Science and Engineering to the Jawaharlal Nehru Technological University, Kakinada is a record of bonafide work carried out under my guidance and supervision.

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DECLARATION

We hereby declare that the EPICS project entitled **SMART CRADLE SYSTEM** submitted for the B. Tech Degree is our original work and the dissertation has not formed the basis for the award of any degree, associateship, fellowship or any other similar titles.

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Place: Vijayawada

Date:

Abstract

In the digital world of modern parents, duty of caring new born baby mostly on women which plays role of hurdle and also question marked on secure ness, health, comfort, etc. of baby. So, for these people who belief in technology for them this is an automated cradle system which will be connected to the parent's mobile for sending alert message. Sound sensor will be attached to cradle in such a way that it will take input sound of baby only, it will conclude the activity to be performed as per the range of sound in decibels, if the sound is more than certain amount then system will automatically start swinging the cradle, if baby still not sleepy or stop cry alert will send to the parents. Motion sensor that is IR sensor will detect the motion it is used for security purpose and in point of view of any danger, if there is too, much motion detected alert will send to the parents. Wet sensor is used for check that has baby done pee If any kind of wetness is detected it will send the alert message to the parents. There will be one temperature sensor used that are DHT11. DHT 11 will check the temperature of whole room and it will alert the parent if there is huge change. ES32 cam is used in this system to provide live streaming of the baby. Proposed system will decrease the difficulty of these hurdle, and release the stress of parent and the most importantly baby will safe, healthier and he will sleep without any discomfort.

Keywords: Wet Sensor, Sound sensor, Temperature Sensor, Smart Cradle, Motion Sensor, GSM Module, ESP32 cam ,message..

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Chapter 1

INTRODUCTION

1.1 Basic Concepts

Internet of Things, or IoT, refers to a whole network of physical devices around the world that are connected over the internet, capable of collecting and sharing data. These devices are usually called smart devices, as they can process data and use artificial intelligence to perform predetermined functions. These devices include simple machines like coffee makers that can self- start at a predetermined time or complex machines like self-driving cars that can sense obstacles and read road signs.
The Fig. 1.1 [10] describes the applications of IOT in various fields.

Figure 1.1: Internet of Things[10]

Working of IOT

Throughout the 1980s and 1990s, IoT devices were created by adding basic sensors to everyday appliances. Progress through these two decades was relatively slow simply because the technology wasn't ready. The only inexpensive and low-power way to connect millions of devices was to use Radio-Frequency Identification (RFID) tags. These low-power chips can communicate wirelessly; this, along with

the increased availability of broadband internet, cellular and wireless networking, led to a boost in the IoT market. The process of adding RFID tags to appliances to help track their location is still one of the most common applications of IoT. However, IoT initially was developed for business and manufacturing purposes, often referred to as machine-to-machine (M2M). With the turn of the century, the emphasis shifted to fitting our homes and offices with smart devices.

Benefits Of IOT

IoT devices are constantly recording and saving user data and performance data. This data can be used to detect patterns, issues and possible problems, and make recommendations in advance. With increased insight provided by advanced analytical algorithms, comes the power to make the product experience better and increase process efficiency. The Fig. 1.2 [11] describes the benefits of IOT

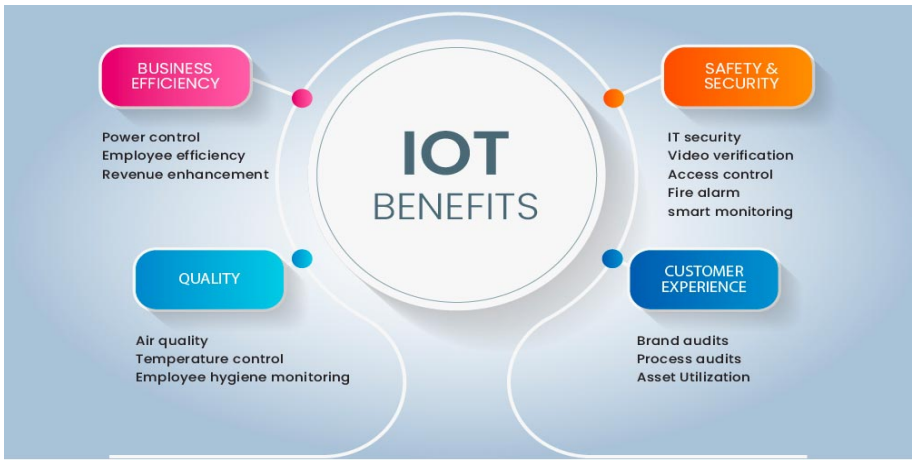


Figure 1.2: Benefits of IOT[11]

1.2 Motivation

- It is very hard for nurses to handle more babies at a time.
- 27 percent of mothers struggled more with baby cry.
- 71 percent of mothers said lack of sleep is the hardest of having a newborn.
- Stressed baby: Baby stress increased if instant taking care is not taken.

1.3 Areas Visited

- Poranki.
- Tadigadapa.

1.4 Photo With Client

Figure 1.3 shows about the Photo with client before completion of the project

Figure 1.3: Photo with Client 1

Figure 1.4 shows about the Photo with client after completion of the project

Figure 1.4: Photo with Client 2

1.5 Problem Statement

Taking care of the child is considered as the responsibility of mother solely. It is difficult for women to manage both work and home. More burden on women as a

mother. Most of the mothers struggled more with baby cry. Baby stress increased if instant taking care is not taken. Disturbance during cooking and office work.

1.6 Scope

The Scope of our project is:

- This project is limited only for monitoring babies using alert messages.
- This device is designed for house hold application.
- To use this system we need a proper network.

1.7 Objective

- To implement a cradle that help nurses to handle more than one baby at a time.
- To implement a cradle that help mothers personally to take care of the baby in their residence.
- This system will alert the mother/guardian through SMS.
- To provide proper safety for babies.

1.8 Advantages

- It saves time as parent does not have to look after child all the time it sends timely alerts in form of SMS and calls.
- It is easy to use because it does not need any extra knowledge of hardware and software and also it does not need any interaction to rock the cradle.
- It has easy interface and the cradle can be operated by GSM messages.
- Due to smart cradle parents get free time and any unusual activity of the baby will send alert message to parents.
- Live streaming of the baby will be provided.

1.9 Applications

- Smart Home
- Wearables
- Smart City
- Smart Grid
- Industrial Internet
- and so on.

Chapter 2

LITERATURE REVIEW

This chapter contains the list of research papers that we have studied under literature survey. We focused on the approaches for maintaining accuracy in these papers. Our study included the techniques used for developing and training the model.

2.1 Internet of Things-Based Baby Monitoring System for Smart Cradle [1]

In this paper, a baby monitoring system consisting of a video camera and microphone without limitations of coverage.it can send data and immediately notify the parents about urgent situations. This monitor packs a lot of the same features as expected from top-notch home cameras, such as big screen, Zooming capabilities, a rechargeable handheld monitor. This camera sends real-time notifications to your phone when notion or sound is detected.

Advantages:

- Its accurate motion and sound detection feature lets you check in your home anytime with 24/7 live streaming.

Disadvantages:

- Need to replace the soft plastic material in place of wood.

2.2 Development of IOT Based Smart Baby Cradle[2]

This paper proposes the use of "Smart Cradle" an E-Cradle which involves the use of Internet of Things. The proposed solution involves live monitoring of a child through a mobile application remotely. The smart cradle incorporates the use of PIR sensor for monitoring the movement of the child, Noise sensor for the detection of the child's crying activity and automatically swings the cradle to soothe the child. The proposed system uses the cloud service for remotely monitoring the child.

Advantages:

- The advantage of this device is its low initial cost, and has allowed operating cost.

Disadvantages:

- It must include feature that can resolve apnea without interrupting the patient's sleep

2.3 Smart Cradle System for Child Monitoring using IOT[3]

In this Innovation, Cradle structure consequently swings when it detects noise of cry made by a kid. The noise of cry is detected by the sensor when the noise level goes beyond the threshold value. In addition, the proposed framework utilizes PIR sensor that estimates infrared lighting emanating from articles in its field of view and consequently identifies the movement of the infant. The noise sensor distinguishes the sound of cry and sends the information to cloud. The information from the cloud can be monitoring the activities which include conditions like movements of infants, Care taking through recorded voice, Automatic Cradle swing and Alerts to parents.

Advantages:

- The proposed provides live monitoring of the child and included a toy to sooth the child and provides rotatory motion using DC motor.
- It also utilizes a Bluetooth service which provides wireless transmission and receiving of the information within a confined region. The information can then be accessed using the android application through smartphones.

Disadvantages:

- It can detect even a small sound also , so it may give some wrong information.

2.4 An Automatic Monitoring and Swing the Baby cradle for Infant care [4]

This System uses eco-friendly electronic sensors for detecting the various movements and activities of the child. A child cry recognizer was included which

consisted an intensifier circuit for intensifying the sound signal received. A self-regulating baby rocker containing noise sensor for determining the cry of the baby is proposed. Audio or noise sensor contains electronic MIC having a pre-amplifier that amplifies the input sound signal which is in turn passed to Arduino atmega328 microprogrammed control unit to supervise dc motor for swinging.

Advantages:

- • The proposed system detects the body temperature, moisture content in the bedding structure.

Disadvantages:

- Not always handy because cannot give continuous monitoring

2.5 Development of an intelligent Cradle for Home and Hospital Use[5]

If the baby is making noise or baby is crying then sound sensor will hear that frequency and it will start swinging. Also, SMS alert will send to parent through the GSM module. If the baby had wetted the matrices of the cradle then alert SMS will send to the parent through the GSM module. If the body temperature of the baby changes rapidly with comparing atmosphere then alert SMS will send to the parent through the GSM module. If baby is moving in cradle or any kind of movement detected by the PIR sensor then alert SMS will send to the parent through the GSM module.

Advantages:

- Cradle which is less expensive and more secure and have more features.

Disadvantages:

- Sometimes alert messages cannot give attention to the parents towards the child.

2.6 Smart Baby Cradle[6]

Smart Cradle Systems are based on the Internet of Things (IOT) which encompasses sensors and actuators that are connected over the Internet and provided with the ability to interact with each other and exchange data without human intervention. The cradle is designed to manage baby cry by providing an analysis

for baby cry which enhances the quality of baby care. Since each reason behind baby cry needs to be managed in a different way, the cry reason should be identified first before taking any action. This module first invoke the cry classification sub-modules and based on its results the suitable device will be initiated by the Device control sub-module.

Advantages:

- It is economical and user-friendly and very useful for working mothers and nurses so that they can manage their work efficiently.

Disadvantages:

- This system cannot give immediate notification for the parent

2.7 Baby Monitoring Smart Cradle using Raspberry Pi and IOT sensors[7]

The system consists of 3 main parts i) Sensors ii) Raspberry Pi and iii) Web server. Raspberry Pi periodically captures data from sensors and sends a POST rest API call over http. Pi also makes call and sends SMS when it detects baby crying for more than 5 minutes. The website and the android app fetch the data from the server using GET API call and display it. All the data sent to the server gets stored in an excel sheet.

Advantages:

- This module can be used for security, switch, and monitoring applications

Disadvantages:

- As the system can detect even a wet diper also it may cause the baby discomfort as sensor is kept in diper.

2.8 Design of Smart Cradle for Infant Health Monitoring System using IOT[8]

There are 4 modules within the cradle system and various sensors like sound sensor, wet sensor, DHT sensor and camera module are executed to monitor the varied activities of the infant. The sound sensor is employed to detect the sound

level of the baby's cry and contrasts it with the threshold limit. A hygienic environment is crucial for the infant's wellness. DHT11 is used to guage the temperature and humidity of the cradle.

Advantages:

- Its accurate motion and sound detection feature lets you check in your home anytime with 24/7 live streaming.
- It can help to keep an eye on the baby from a distance .

Disadvantages:

- This system does not send notifications to the parent

2.9 Survey on IOT based baby monitoring system using Raspberry Pi Journal[9]

This monitor packs a lot of the same features as expected from top-notch home cameras, such as big screen, Zooming capabilities, a rechargeable handheld monitor. . Pi also makes call and sends SMS when it detects baby crying for more than 5 minutes. The noise of cry is detected by the sensor when the noise level goes beyond the threshold value. In addition, the proposed framework utilizes PIR sensor that estimates infrared lighting emanating from articles in its field of view and consequently identifies the movement of the infant.

Advantages:

- The proposed provides live monitoring of the child and included a toy to sooth the child and provides rotatory motion using DC motor.

Disadvantages:

- This is expensive.

Chapter 3

ANALYSIS AND DESIGN

This chapter includes the analysis of requirements for the proposed project. This chapter contains

- Functional and Non-Functional Requirements.
- Design diagrams.

3.1 Functional and Non-Functional Requirements

Functional requirements and non-functional analysis entails a thorough examination, analysis, and description of software requirements and hardware requirements in order to meet actual and also necessary criteria in order to solve an issue. Analyzing functional Requirements and non-functional includes a number of processes. The Functional Requirements include:

Functional and Non-Functional Requirements

- Hardware Requirements
- Software Requirements
- Input Requirements
- Output Requirements

Hardware Requirements
NodeMCU:
NodeMCU is an open-source LUA based firmware developed for the ESP8266 wifi chip. By exploring functionality with the ESP8266 chip, NodeMCU firmware comes with the ESP8266 Development board/kit i.e. NodeMCU Development board. NodeMCU is a low-cost open source IoT platform. It initially included firmware which runs on the ESP8266 Wi-Fi SoC from Espress if Systems, and hardware which was based on the ESP-12 module. Later, support for the ESP32 32-bit MCU was added. The term "NodeMCU" strictly speaking refers to the firmware rather than the associated development kits. Both the firmware and prototyping board designs are open source. The firmware uses the Lua scripting language. The firmware is based on the eLua project, and built on the Espressif

Non-OS SDK for ESP8266. It uses many open source projects, such as lua-cjson and SPIFFS.

Figure 3.1 shows about the NodeMCU Due to resource constraints, users need

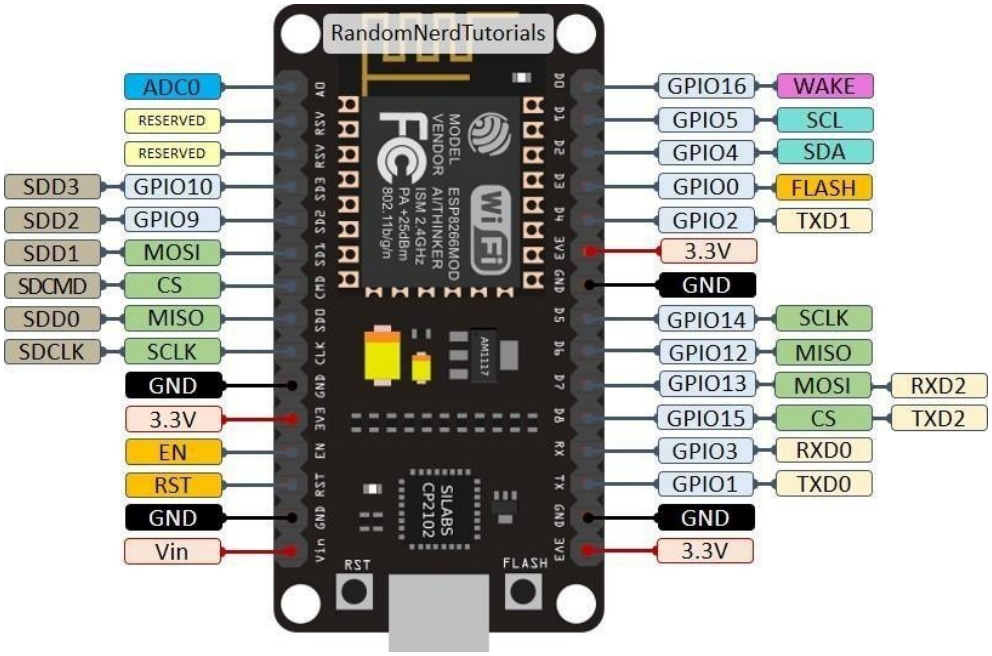


Figure 3.1: NodeMcu[12]

to select the modules relevant for their project and build a firmware tailored to their needs. Support for the 32- bit ESP32 has also been implemented. The prototyping hardware typically used is a circuit board functioning as a dual in-line package (DIP) which integrates a USB controller with a smaller surface-mounted board containing the MCU and antenna. The choice of the DIP format allows for easy prototyping on breadboards. The design was initially based on the ESP-12 module of the ESP8266, which is a Wi-Fi SoC integrated with a Tensilica Xtensa LX106 core, widely used in IoT applications. There are two available versions of NodeMCU as version 0.9 1.0 where the version 0.9 contains ESP-12 and version 1.0 contains ESP-12E where E stands for "Enhanced".

DHT11 sensor:

DHT11 is a Humidity and Temperature Sensor, which generates calibrated digital output. DHT11 can be interface with any microcontroller like Arduino, Raspberry Pi, etc. and get instantaneous results. DHT11 is a low cost humidity and temperature sensor which provides high reliability and long term stability.It uses a capacitive humidity sensor and a thermistor to measure the surrounding air, and outputs a digital signal on the data pin (no analog input pins needed). Its very simple to use, and libraries and sample codes are available for Arduino and Raspberry Pi.This module makes is easy to connect the DHT11 sensor to an Ar-

duino or microcontroller as includes the pull up resistor required to use the sensor. Only three connections are required to be made to use the sensor - Vcc, Gnd and Output.

Figure 3.2 shows about the DHT11 sensor

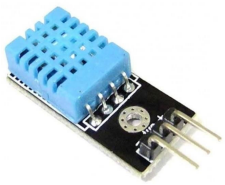


Figure 3.2: DHT11 Sensor[13]

IR sensor:

An infrared sensor is an electronic device, that emits in order to sense some aspects of the surroundings. An IR sensor can measure the heat of an object as well as detects motion. These types of sensors measure only infrared radiation, rather than emitting it which is called a passive IR sensor. Usually, in the infrared spectrum, all the objects radiate some form of thermal radiation. These types of radiations are invisible to our eyes, which can be detected by an infrared sensor. The emitter is simply an IR LED (Light Emitting Diode) and the detector is simply an IR photodiode that is sensitive to IR light of the same wavelength as that emitted by the IR LED. When IR light falls on the photodiode, the resistances and the output voltages will change in proportion to the magnitude of the IR light received.

Figure 3.3 shows about the IR sensor

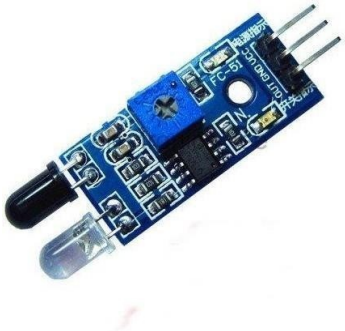


Figure 3.3: IR Sensor[14]

Wetness Sensor:

A rain sensor is one kind of switching device which is used to detect the rainfall. It works like a switch and the working principle of this sensor is, whenever there is rain, the switch will be normally closed. The rain sensor module/board is shown below. Basically, this board includes nickel coated lines and it works on the resistance principle. This sensor module permits to gauge moisture through analog output pins it gives a digital output while moisture threshold surpasses. This module is similar to the LM393 IC because it includes the electronic module as well as a PCB. Here PCB is used to collect the raindrops. When the rain falls on the board, then it creates a parallel resistance path to calculate through the operational amplifier.This sensor is a resistive dipole, and based on the moisture only it shows the resistance. For example, it shows more resistance when it is dry and shows less resistance when it is wet. Figure 3.4 shows about the Wetness sensor

Figure 3.4: Wetness Sensor[15]

ESP32 Camera:

The ESP32-CAM is a small size, low power consumption camera module based on ESP32. It comes with an OV2640 camera and provides onboard TF card slot.The ESP32-CAM can be widely used in intelligent IoT applications such as wireless video monitoring, WiFi image upload, QR identification, and so on.
Features:

- Onboard ESP32-S module, supports WiFi + Bluetooth
- OV2640 camera with flash
- Onboard TF card slot, supports up to 4G TF card for data storage Supports WiFi
- video monitoring and WiFi image upload

- Control interface is accessible via pinheader, easy to be integrated and embedded into user products

Figure 3.5 shows about the esp32 camera

Figure 3.5: Esp32 camera[16]

Software Requirements

Arduino IDE:

Arduino is an open-source electronics platform based on easy-to-use hardware and software. It's intended for anyone making interactive projects. IMPORTANT: This app performs with core functionality on Windows 10 S but some limited plugins do not work. We are working with Microsoft on a fix.

The open-source Arduino Software (IDE) makes it easy to write code and upload it to the board. This software can be used with any Arduino board.

Programs written using Arduino Software (IDE) are called sketches. These sketches are written in the text editor and are saved with the file extension .ino. The editor has features for cutting/pasting and for searching/replacing text. The message area gives feedback while saving and exporting and also displays errors. The console displays text output by the Arduino Software (IDE), including complete error messages and other information.

Input Requirements

Power Supply

The Power Supply is a Primary requirement for the project work. The required DC power supply for the base unit as well as for the recharging unit is derived from the mains line. For this purpose, center tapped secondary of 12V-012V transformer is used. From this transformer we getting 5V power supply. In this +5V output is a

regulated output and it is designed using 7805 positive voltage regulator. This is a 3 Pin voltage regulator, can deliver current up to 800 milliamps.
Rectification is a process of rendering an alternating current or voltage into a unidirectional one. The component used for rectification is called 'Rectifier'. A rectifier permits current to flow only during positive half cycles of the applied AC voltage.
A diode can be used as rectifier. There are various types of diodes. However, semiconductor diodes are very popularly used as rectifiers. A semiconductor diode is a solid-state device consisting of two elements is being an electron emitter or cathode, the other an electron collector or anode. Since electrons in a semiconductor diode can flow in one direction only-form emitter to collector-the diode provides the unilateral conduction necessary for rectification.

Output Requirements

Liquid Crystal Display

In 1968, RCA Laboratories developed the first liquid crystal display (LCD). Since then, LCD's have been implemented on almost all types of digital devices, from watches to computer to projection TVs. LCDs operate as a light "valve", blocking light or allowing it to pass through. An image in an LCD is formed by applying an electric field to alter the chemical properties of each LCC (Liquid Crystal Cell) in the display in order to change a pixel's light absorption properties. These LCC's modify the image produced by the backlight into the screen output requested by the controller. Through the end output may be in color, the LCC's are monochrome, and the color is added later through a filtering process. Modern laptop computer displays can produce 65,536 simultaneous colors at resolution of 800 X 600.
Figure 3.6 shows about the LCD Diagram

Figure 3.6: LCD Diagram

To understand the operation of an LCD, it is easiest to trace the path of a light ray from the backlight to the user. The light source is usually located directly behind the LCD, and can use either LED or conventional fluorescent technology.

From this source, the light ray will pass through a light polarizer to uniformly polarize the light so it can be acted upon by the liquid crystal (LC) matrix. The light beam will then pass through the LC matrix, which will determine whether this pixel should be “on” or “off”. If the pixel is “on”, the liquid crystal cell is electrically activated, and the molecules in the liquid will align in a single direction. This will allow the light to pass through unchanged. If the pixel is “off”, the electric field is removed from the liquid, and the molecules with in scatter. This dramatically reduces the light that will pass through the display at that pixel. In a color display, after the light passes through the liquid crystal matrix, it passes through a color filter (usually glass). This filter blocks all wavelengths of light except those within the range of that pixel. In a typical RGB display, the color filter is integrated into the upper glass colored microscopically to render each individual pixel red, green or blue.

Blynk

Blynk is an Internet of things (IoT) company which provides a platform for building mobile (IOS and Android) applications that can connect electronic devices to the Internet and remotely monitor and control these devices.

3.2 Design Diagram

Figure 3.7 shows about the Design Diagram

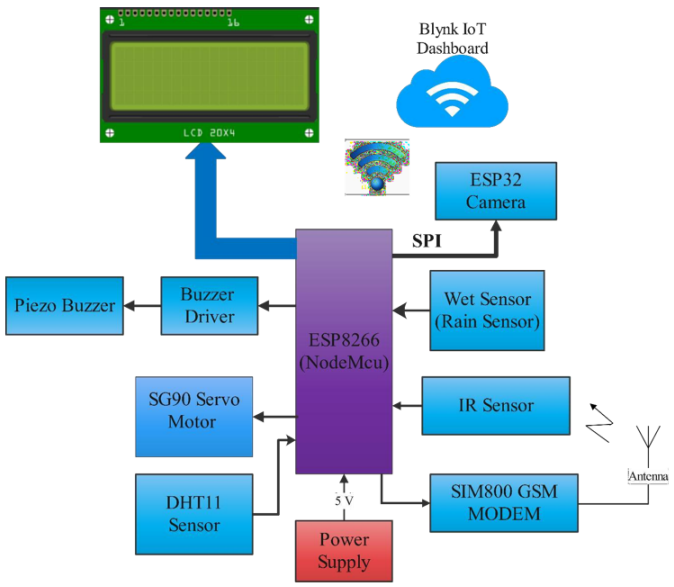


Figure 3.7: Design Diagram

Chapter 4

PROPOSED SYSTEM

This chapter includes the proposed system architecture along with the modules of methodology

4.1 Process Flow Diagram

Figure 4.1 shows about the Process Flow Diagram

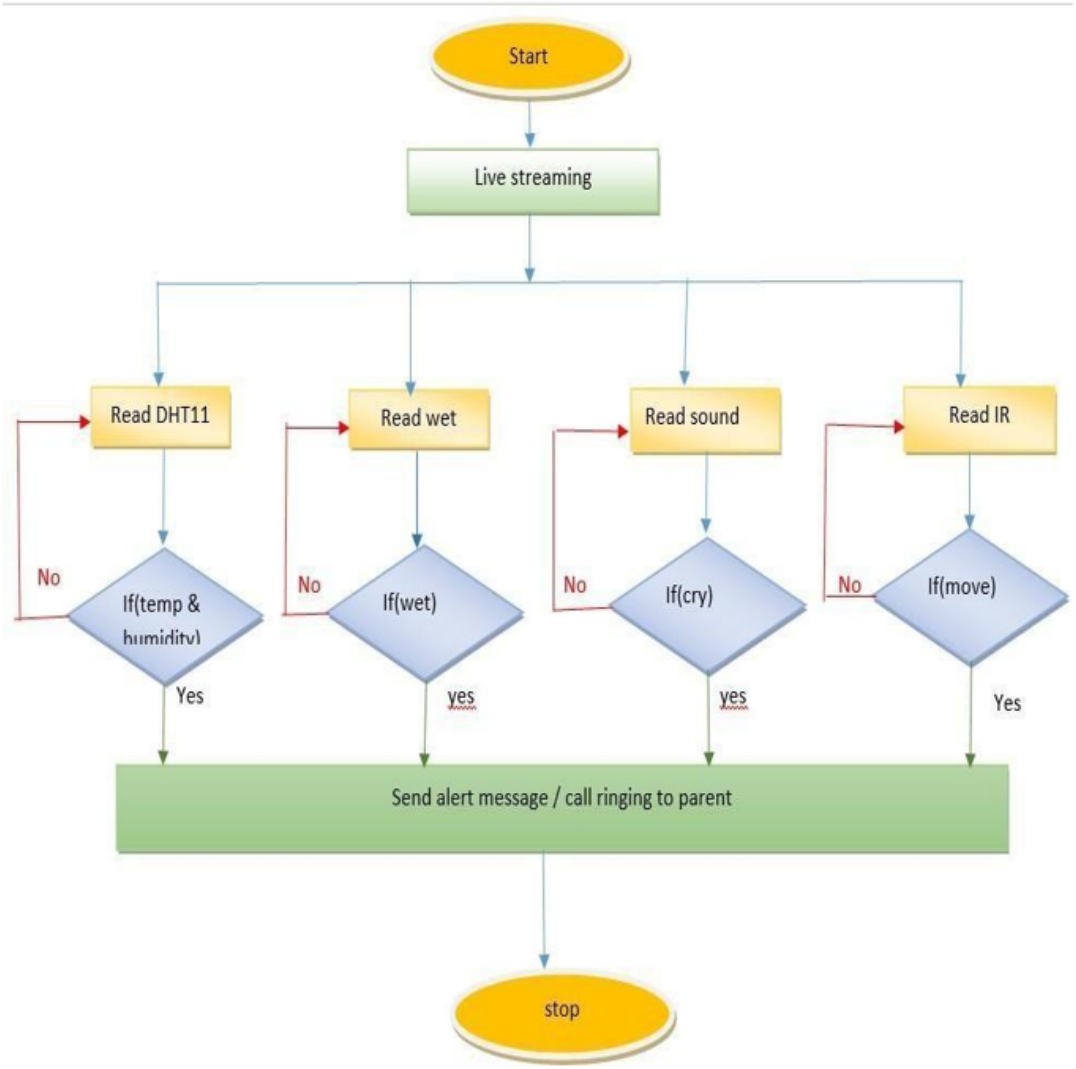


Figure 4.1: Process Flow Diagram

4.2 Usecase Diagrams

Figure 4.2 shows about the Usecase Diagram

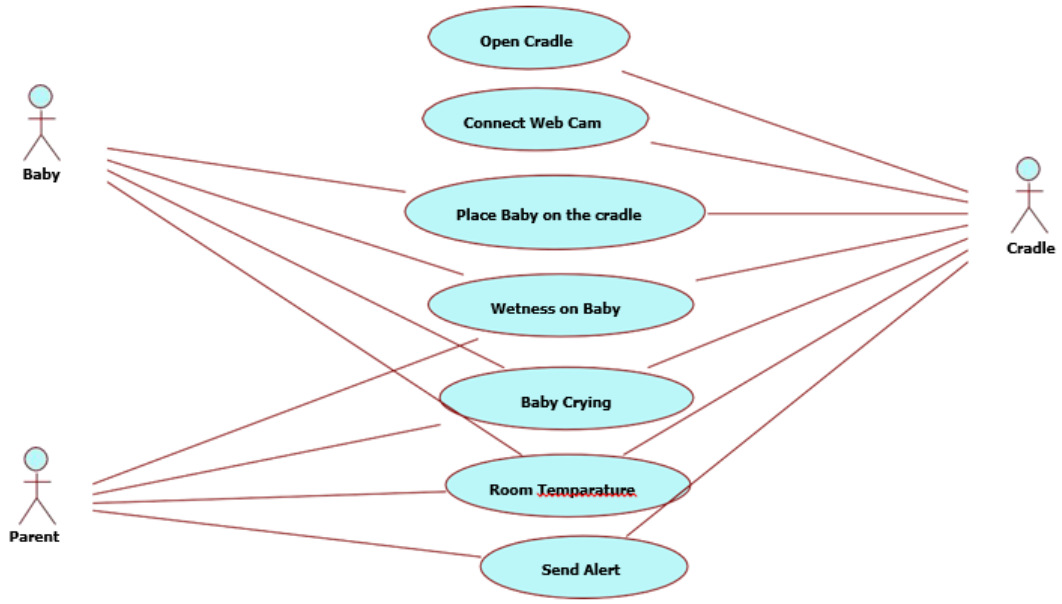


Figure 4.2: Usecase Diagram

Figure 4.3 shows the activity diagram

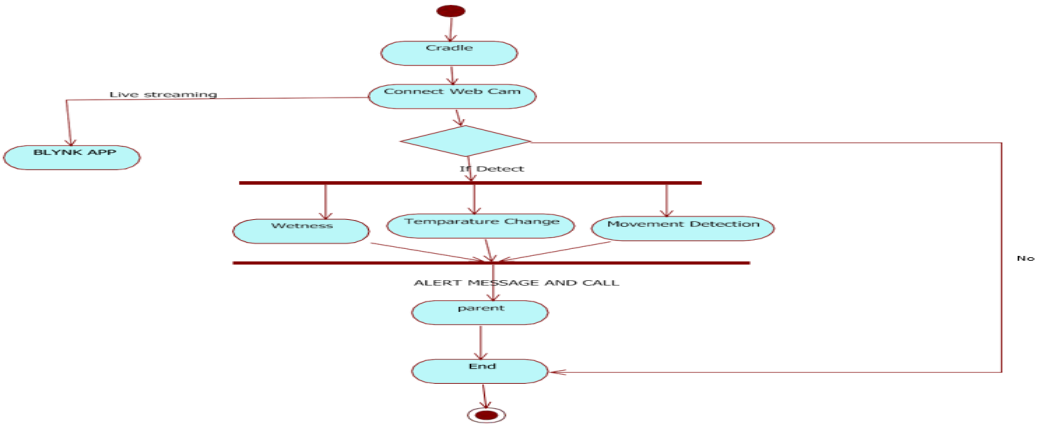


Figure 4.3: Activity diagram

4.3 Hardware Circuit

Figure 4.4 shows about the Hardware Circuit

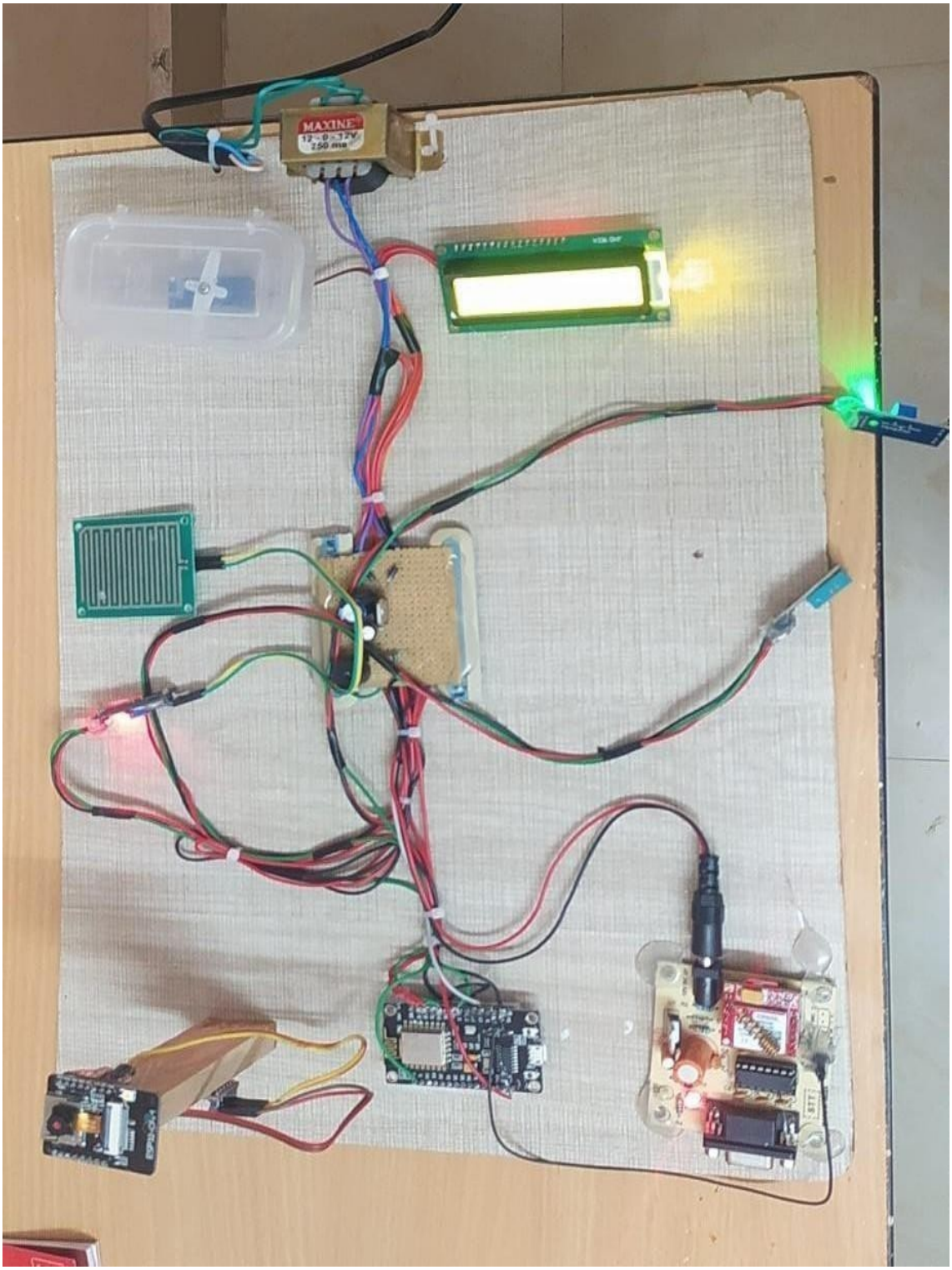


Figure 4.4: Hardware Circuit

4.4 Algorithms

Module 1
Automatic cradle swing Algorithm

As the cradle is connected to the internet, if any movement is detected then the alert message or call will be sent to the parents indicating that their baby is crying.
Step 1: Start
Step 2: Check if the baby is crying in the cradle
Step 3: If movementis detected then send an SMS alert, call the parent, and swing the cradle.
Step 4: If not continue checking

Module 2
Wetness detection Algorithm
A wetness sensor is used to detect if there is any wetness on the bed. If any wetness is detected then this system will send an alert message to the parents. If not then continue checking.
Step 1: Start
Step 2: Check if a bed is wet in the cradle
Step 3: If wetness is detected then send an SMS alert to the parent.
Step 4: If not continue checking

Module 3
Temperature and Humidity Algorithm
DHT11 sensor is used for detecting the temperature. If any increase in temperature then the notification will be sent to the parents and also call will be sent.
Step 1: Start
Step 2: Check if room temperature increases
Step 3: If the temperature change is detected then send an SMS alert, and call the parent.
Step 4: If no continue checking.

Module 4
Movement detection Algorithm
IR sensor is used for detecting the movement of the baby. If any movement is detected then an alert message and call will be sent to the parents.

Step 1: Start

Step 2: Check if any movement of the baby in the cradle.

Step 3: If movement is detected then send an SMS alert, and call the parent.

Step 4: If no motion detection then continues checking.

Module 5

Live streaming Algorithm

The live streaming is provided to the parents through blynk application using esp32 cam.

Step 1: Start

Step 2: live streaming of the baby is provided.

Step 3: end.

Chapter 5

RESULTS

This chapter includes the results of the proposed system

5.1 Output Screenshots

At first, the initial system displays a smart cradle system. Sometimes it may delay or can't respond correctly. In such cases try to restart the system until the system works correctly. After the system responds correctly, the system gives continuous temperature and wetness values on the LCD. Here Liquid Crystal Display (LCD) is the main output component. The system remains idle and gives only LCD outputs of temperature and wetness values until it finds any uncertain conditions occur. Here are uncertain conditions in the sense if any sudden change in temperature, any wetness detection i.e value increases more than 50, and any movement by the baby in the cradle is detected. In such cases, alert messages will be sent to the parents. In necessary conditions, a call alert will also be sent.
Figure 5.1: shows about the final smart cradle system

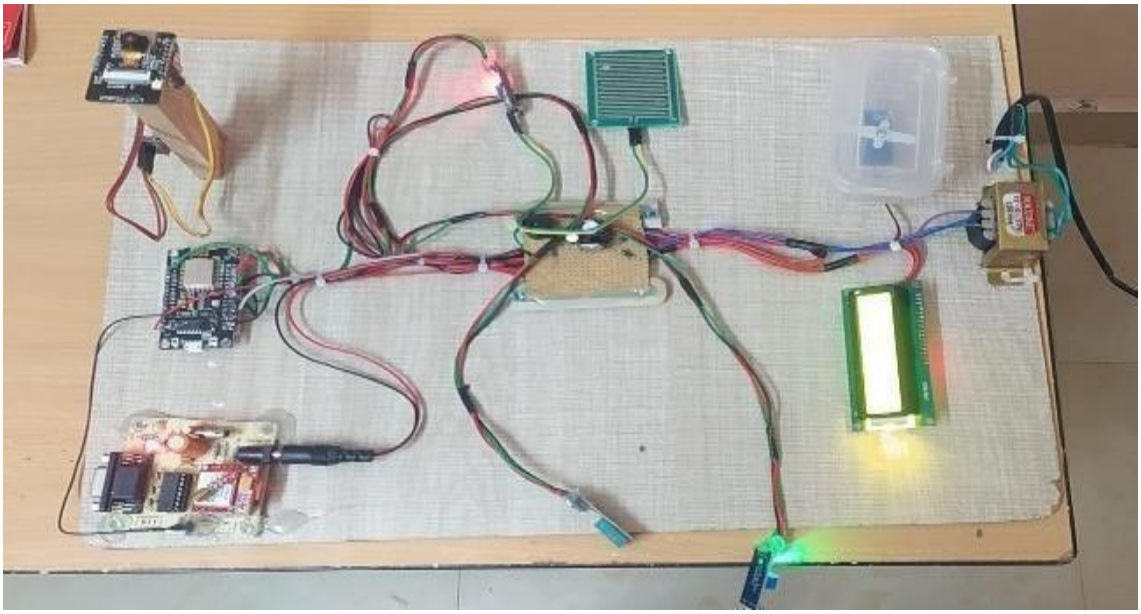


Figure 5.1: smart cradle system

Figure 5.2: shows about the initial smart cradle system

Figure 5.2: intial system

Now let us consider the wetness sensor, the wetness sensor is connected to Node MCU and the GSM module. If suddenly the wetness is detected, then the system responds and sends the alert message to the parents. As the babies feel discomfort if their bed is wet which may lead to the baby waking. So this system makes the parents respond fast when they get the alert message.
Figure 5.3: shows about the wetness sensor result

Figure 5.3: wetness detection

Figure 5.4: shows the message when wetness detected

Figure 5.4: results of wetness detection

The DHT11 sensor is used for temperature and humidity detection. This sensor gives the continuous monitoring of the baby's room temperature. Infants need to be survived at a minimum temperature. So if the temperature reaches greater than 35 degrees then an alert message and call will be sent to the parents.

Figure 5.5 shows the dht11 sensor output

Figure 5.5: dht11 output

fig 5.6 shows the output whet dht11 activated

Figure 5.6: dht11 output

In the third case, an IR sensor is used to detect the movement of the baby. IR sensor is always active. If the IR sensor detects any movement in the cradle then the cradle starts swinging and sends the alert message and call to the parents. The system also responds by the automatic swinging of the cradle indicating that the movement detected in the cradle is that the baby is crying.

Figure 5.7, 5.8 shows outputs of the IR sensor outputs

Figure 5.7: IR sensor output

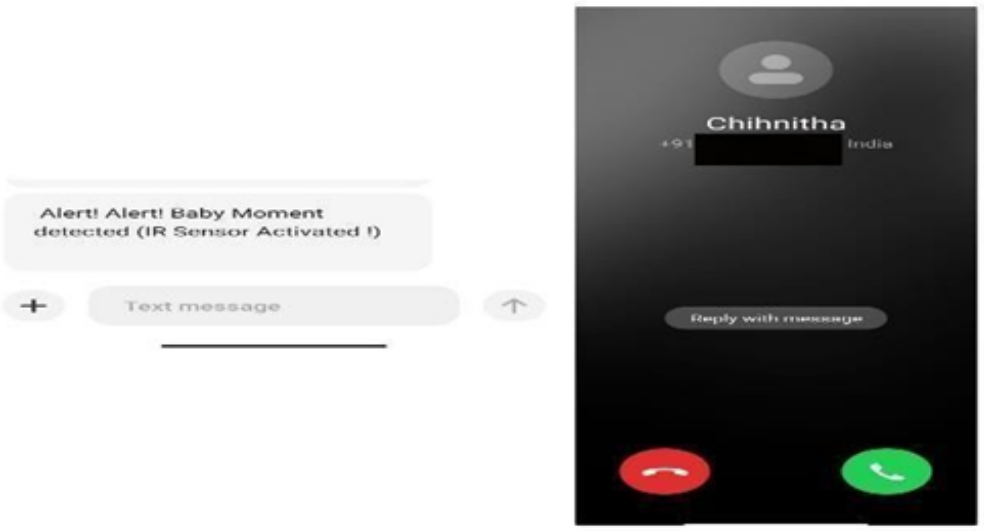
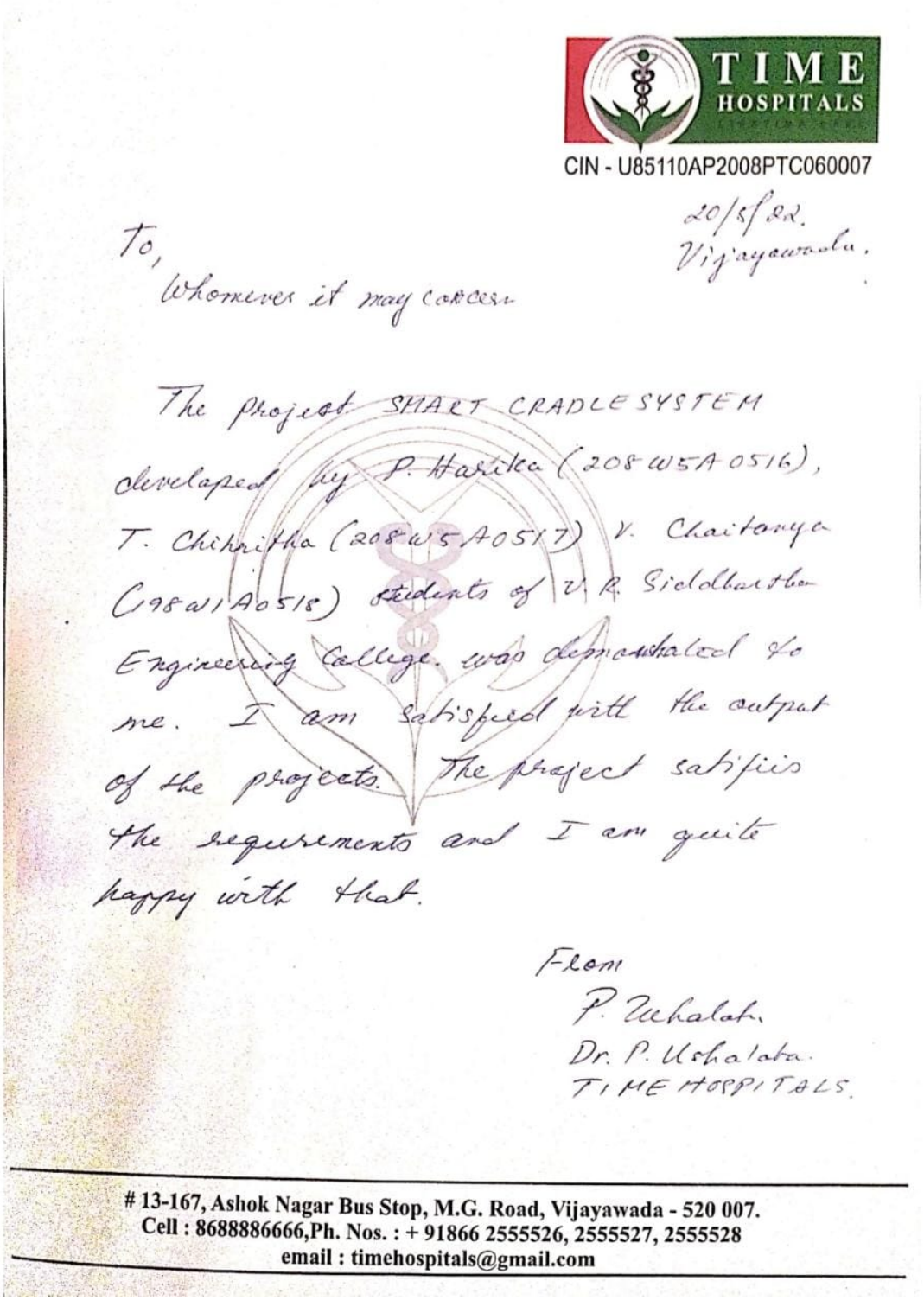


Figure 5.8: IR sensor output when movement detected

The other feature is that camera live streaming. The live streaming of the baby is given using ESP32 camera. The ESP32 camera is connected to desktop/ laptop using USB cable and then open the arduino IDE and select the port and open serial monitor and reset the GSM module. When ever the wifi is connected with specific username and password then the serial monitor tries to detect the ip and then it shows the ip address. Now open the Blynk IOT in your desktop/laptop and signup and login. Now create new project and setup the vedio streaming ESP32 camera. Then click on the vedio streaming window enter the ip address that is displayed in the serial monitor, return back to the previous window then click on play button.The vedio streaming will be displayed.

5.2 Client Satisfaction Report



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Vijayawada.

To,
Whomever it may concern

The project SMART CRADLE SYSTEM developed by P. Harika (208W5A0516), T. Chithritha (208W5A0517) V. Chaitanya (208W1A0518) students of V. R. Siddhartha Engineering College. was demonstrated to me. I am satisfied with the output of the projects. The project satisfies the requirements and I am quite happy with that.

From
P. Ushalata.
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Chapter 6

CONCLUSION AND FUTURE WORK

Growth of technology has been rapidly increased. Since technology has been developed greatly it can contribute to the society in various way. Automated cradle is the best example where working parents have lot of workload already and they have to care of baby as well. Cradle system assures them that their baby is safe and secure inside the cradle. Cradle which is less expensive and more secure and have more features. As health of small baby is always factor for which parents are always worried. So that cradle system is built for that purpose that baby will be healthier. This automatic baby cradle would let the working mother to do household works besides taking care of baby at the same time This system can be enhanced by developing an android application with a best interface, with which user can remotely operate the cradle and can be able to connect with cloud.

Chapter 7

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