SMART E-CARDEL SYSTEM

R. Bhawana[1], Sneha Sonkusare[2], Dr. Dhananjay Upasani[3]

[1,2]Student Final Year ECE, MIT School Of Engineering, Pune, Maharashtra, India
[3]Associate Professor, Dept. Of Electronics & Communication Engineering MIT SOE, Pune, Maharashtra, India

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Abstract: *Smart Cradle System the use of IoT enables the discern to screen their baby even though they're far far from the residence and stumble on the toddler from everywhere they want. It is an innovative, clever, and defensive cradle machine to nurture an little one efficiently. This machine includes all of the care and safety info of the toddler with inside the cradle. The layout of smartness and innovation comes with the usage of technology that encompass Internet of Things (IoT) modules like Raspberry Pi, Humidity and Temperature sensing, cry detecting mechanism, stay video surveillance, Cloud Computing, and android application.*

Key Words: *Raspberry pi, D.C Motor, Camera, DHT11 Temperature & Humidity Sensor, Sound sensor, Motor driver.*

1.INTRODUCTION

Generally, the e- cradle is used to make sleep and soothe a toddler. For example, guardians should contend with their youngsters until as they asleep. However, a traditional cradle does now no longer electronically equip including a battery or adapter to automate the cradle automatically. In addition to that, those varieties of traditional cradles are utilized in villages regions or non-evolved towns because of their low prices. But the trouble with this type of cradle is which you want manpower to attend to your baby and your baby might not be secure and sense cushy with inside the traditional cradle. Thus, we want the automated cradle to attend to the kid which makes use of the battery or strength source. The clever toddler cradle enables operating ladies' stability their paintings and home chores. It creates a fine effect on society as ladies can preserve their research or process without traumatic approximately their youngsters and might participate with inside the improvement of the nation. Besides, there are greater capabilities or characteristic is supplied via way of means of the newly computerized cradle it is useful for the population. Because with inside the gift international human beings are very busy of their expert lifestyles so that they do now no longer get enough time to attend to their infants. It can be very hard to manipulate the infants and if a person is hiring a expert to attend to their infants. It may also boom your fees from the month-to-month expenditure. Moreover, today, lifestyles could be very hard, even for the homemakers (mummy) to take a seat down close by their infants and soothe them every time they sense uncomfortable. Hence, the usage of the Internet of Things enables in handling this trouble. Smart cradle machine for baby tracking the use of IoT lets in the discern to screen the kid through the Mobile application.
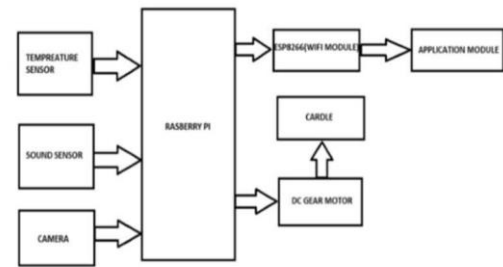
Block Diagram

Fig-1: Block Diagram

2. LITERATURE SURVEY

For taking care of the baby some nannies were getting purchased taking care of the baby. There are some baby health care centers also which take the cash and monitor the baby or soothe the baby. As far as time passes there had been tons of fraud detected in these sorts of centers from newspaper and news channels, we get the notice about it. There are some cradles also designed, but they typically have just one or two features. From that one or two features, they themselves were making trouble for taking care of the baby.

This project is that the personification of a sensible Baby Cradle, caused by integrating distinctive features i.e. automatic cradle swing (using cry detection system), interactive toys, and communication module (for monitoring purposes), during a single unit. the present era of digitization provides a large-scale availability of knowledge also as computing capability which may be wont to bridge the gap between a toddler and a working mother. This paper proposes the utilization of "Smart Cradle" an E-Cradle that involves the utilization of the web of Things. The proposed solution involves live monitoring of the kid through a mobile application remotely. The smart cradle incorporates the utilization of a PIR sensor for monitoring the movement of the kid; a Noise sensor for the detection of the child's crying activity and automatically swings the cradle to appease the child. The DHT sensor notifies the parent about the blood heat of the kid via text message, when the temperature goes above the set threshold. the answer also includes a

moisture sensor to take care of the hygiene of the kid. The proposed system uses the cloud service for remotely monitoring thekid.

The system consists of a baby cradle that mechanically swings employing a motor once the baby cries keep with the sound device signal. Additionally, a mini fan mechanically opens to provide a cool temperature encompassing to the baby supported the temperature device. the parents will observe the normal information recorded within the MQTT server cloud, like close temperature and remote switches, through the online victimization MQTT server, whereas the abnormal conditions are sent to the parents with triggering an alarm to need acceptable actions. the parents can also monitor the baby's condition through Associate within the nursing external net camera and placed on the lullaby toy settled on the baby's cradle remotely via the MQTT server to entertain the baby.

3. DESIGN AND DRAWING

Sensors

Sensors are one of the main entities in this project. They are responsible for detecting the required changes in the environment and report to the microcontroller for further actions

3.1 SOUND SENSOR

Fig -3: Sound Sensor

This sound sensor module gives an easy way to identify the sound and is commonly used for detecting the intensity of the sound. The module is founded on an electret microphone and the LM393 comparator IC notices whether the sound has beaten a threshold value. the setpoint of sound level is set through an onboard potentiometer. . It detects the sound via a microphone and feeds into an LM393 comparator IC. The device is very modest to use and quite suitable to interface with Raspberry pi, which makes it flawless to use in meek project.

3.2 RASBERRY PI CAMERA V2

The Camera v2 is that the new authorized camera board released by the Raspberry Pi footing. The Raspberry Pi Camera Module v2 may be a superior 8-megapixel Sony IMX219 image sensor custom designed add-on board for Raspberry Pi, featuring a hard and fast attention lens. It's

capable of 3280 x 2464-pixel motionless images, and provisions 1080p30, 720p60 and 640x480p60/90 video. It ascribes to Pi by way of 1 of the tiny hollows on the board side and uses the keen CSi interface, designed particularly for interfacing to cameras. · 8-megapixel native determination sensor accomplished of 3280 x 2464-pixel static images · Supports 1080p30, 720p60 and 640x480p90 video. The camera is maintained within the latest version of Raspbian, Raspberry Pi's preferred OS the board itself is minor, at around 25mm x 23mm x 9mm. It also weighs just over 3g, making it faultless for mobile or other claims where size and heaviness are important. It attaches to Raspberry Pi by way of a brief ribbon cable. The high-quality Sony IMX219 image sensor itself topographies a native resolve of 8 megapixels and features an immovable focus lens onboard. In terms of still images, the camera is talented of 3280 x 2464-pixel static images, and chains 1080p30, 720p60 and 640x480p90

**Fig -4:** Raspberry Pi Camera V2

3.3 DC Gear Motor
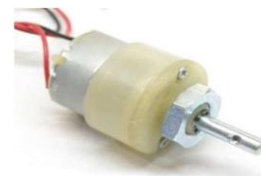
Fig -5 : DC Gear Motor

This 12 Volt DC Motor – 100 RPM can be cast-off in all-terrain robots and a variation of robotic applications. These motors have a 3 mm negotiated drill hole in the middle of the shaft thus creation it simple to attach it to the wheels or any extra mechanical get-together. These motors are simple DC Motors including gears for the shaft for gaining the optimal presentation features. They are known as Center Shaft DC Geared Motors since their shaft spreads through the center of their gearbox gathering. These standard-size DC Motors are very peaceful to usage. Also, you don't have to apply a lot of money to controller motors with a Raspberry pi otherwise compatible board. The L298N H-bridge module with an onboard voltage watchdog motor driver can be used with this motor that has a voltage of between 5 and 35V DC. Nut and threads on the shaft to simply attach and inside threaded shaft for effortlessly connecting it to the wheels. These DC Geared motors with robust metal/Plastic gearbox

for heavy-duty bids, obtainable in the wide RPM range and ideally suited for robotics and industrial bids.

3.5 L293D MOTOR DRIVER
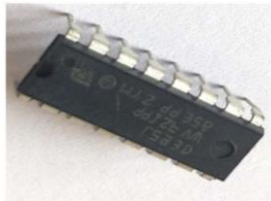
Fig -6: L293D MOTOR DRIVER

Mutual DC gear head motors essential a present above 250mA. There are many integrated circuits like the ATmega16 Micro controller, 555 timer IC. But, IC 74 sequence cannot stock this quantity of current. When the motor is directly related to the o/p of the above ICs then, they might be scratched. To overwhelm this problem, a motor regulator circuit is essential, which can act as a bridge between the above motors and integrated circuits (ICs). There are many ways of making an H-bridge motor control circuit such as by means of transistors, relays, and using L293D/L298.

3.6 RASBERRY PI PICO

Fig -7: RASBERRY PI PICO

Raspberry Pi Pico is the latest product in the popular Raspberry Pi range of computers. It offers innovative increases in processor speed, multimedia presentation, memory, and connectivity associated to the prior-generation Raspberry Pi 3 Model B+, while retaining regressive compatibility and comparable power consumption. For the end-user, Raspberry Pi Pico delivers desktop presentation comparable to entry-level x86 PC systems. This product's key structures include a high-performance 64-bit quad-core processor, dual-display support at determinations up to 4K.The dual-band wireless LAN and Bluetooth have linked acquiescence guarantee, allowing the board to be intended into end goods with meaningfully reduced obedience testing, educating both cost and time to market.
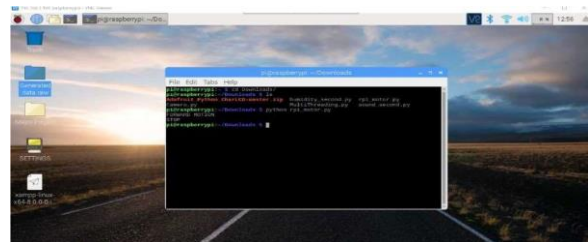
4. RESULTS

4.1 Music played depending on the mood
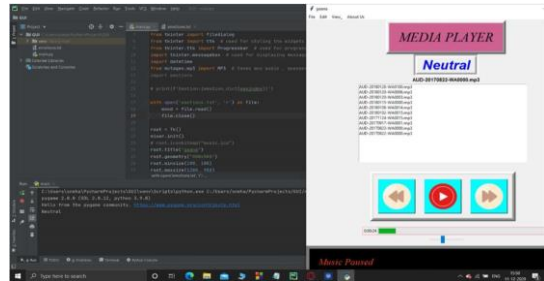
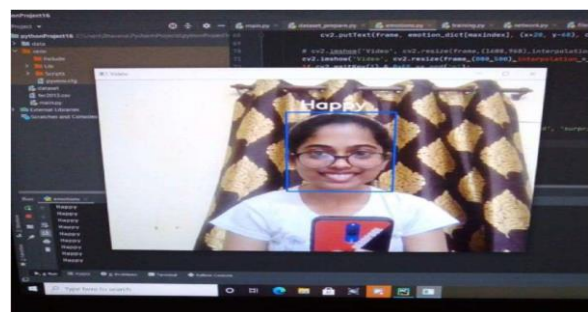Fig- 8: Music played depending on the mood

In the above figure, we can observe the simulation result of the GUI, where music is played depending on emotions.

4.2 Motor output

Fig -9: Motor Output

4.3 Facial Recognition

Fig-10: Facial Recognition

In the above figure, we can observe the simulation result of facial recognition, where it tells the expression of the baby (sad, angry, neutral, happy) to their parents.
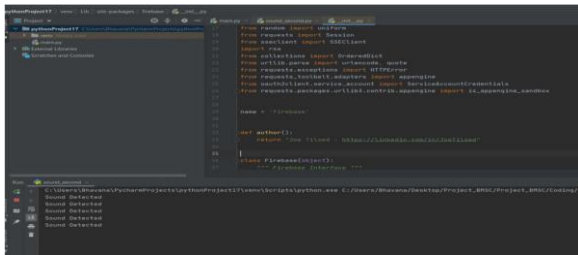
4.3 Sound Detection

Fig-11: sound detection

In the above figure, we can observe the simulation result of the sound detection sensor, where it detects whether the baby is crying, and it notifies the parents. In the above figure, we can observe the simulation result of the sound detection sensor, where it detects whether the baby is crying, and it notifies to the parents.
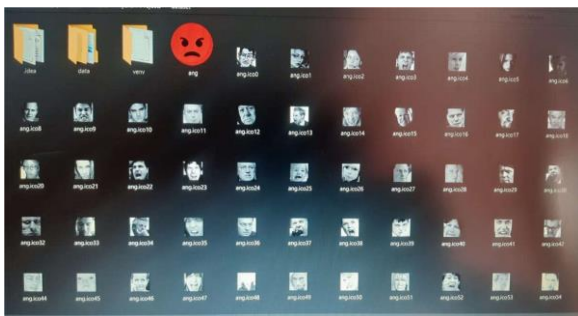
4.4 Data base of expression

Fig-12: Data base of expression

In the above figure, we can observe the database result for a different emotion, where it detects the expression of the face by taking the data from here.

5. CONCLUSIONS

In this project, a software construction for a smart baby cradle IoT-based system was planned. The planned solution aims to improve the excellence of the existing baby care systems by thoughtful the reason behind baby cry which is very important to satisfy the baby's need. The projected solution affords a new module for handling baby cry with few actions using two sub-modules. First, providing study for baby cry to detect and know the reason behind baby cry, therefore and based on the cry cause the module calms the baby by activating the suitable device attached to the cradle. This module also delivers a notification to the users about the cry of the baby in addition to the detected reason. This research has also provided significant attention on detecting baby cry more precisely by integrating four-sub modules in the cry organization process including voice analysis, face image analysis, body gesture analysis, and finally choice fusion.

6. REFRENCES

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