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Intelligent Baby Monitoring System

Prof. S. V. Malewar[1], Manasi Naik[2], Rutuja Shinde[3], Ashwini Chavan[4]
JSPM's Jaywantrao Sawant College of Engineering, Pune, India

Abstract: IOT leads to a wide use a mobile phones with with broadband internet. One important concept of the same is the use of mobile phones by working parents to watch the activities of baby while babysitting. This paper presents the design of intelligent baby monitoring which supports such video monitoring. This system automatically on detection of baby cry sound. It switch on buzzer and sends a notification if baby any continues till specific time. That means system cannot handle baby and require personal attention and also if the bed in the cradle is damp.

I. INTRODUCTION

Today's lifestyle is fast paced. Parents cannot take care of the child all the while working. To modify baby by swinging cradle manually is unfeasible. If they assist any nannie for it then also baby's safety conception will keep going in their mind. Hence there is need of product which bridges this gap between parents and baby. This system offers a great help to parent so that they can look after baby. This cradle system consists of following points. 1.Sends image and text when detection of baby cry sound. 2. Sends a text while moisture is detected. 3. Sounds an alarm while motion is detected. This information can be transmitted to Android smartphone. The benefit of such alert is that the parent can get to know baby status anywhere, anytime because of internet.

II. LITERATURE SURVEY

Paper Name 1:- IOT Baby Monitoring System .This paper is stand on a plan to evolve a intelligent baby monitoring system that helps parents with monitoring on their babies whether they are around baby or at office and can observe activities from any remote corner of the world. This frame work considers all the moment subtleties that are needed for the consideration and insurance of the Baby in the support.The plan of eagerness and evolution accompanies the proper of advancement which contain IOT,module like raspberry pi, MQ9 sensor sound sensor ,PIR sensor. Detecting Mechanism, camera surveillance, and much more. To perceive each and easily gesture of baby many sensors are connected to system.MQ9 sensor senses harmful gases around baby,soil moisture sensor detect moisture around baby bed. Camera is fitted in this system if baby cries continuously till specific time then system sends image ans text to parents. Using all those data and images, parents can be sure about the safety and wellbeing of their babies at any time in any given place. This system work efficiently in observing the baby's situation and nearby conditions according to model.

III. PROBLEM STATEMENT

Parents or caregivers of young infants often need to keep a close watch on the baby's safety and well-being. However, it can be challenging to monitor the baby's activity and health constantly, especially when the parent or caregiver needs to engage in other activities. This can lead to situations where the baby's safety is compromised due to a lack of constant monitoring. Therefore, there is a need for a baby monitoring system that can provide real-time monitoring of the baby's activity and health, alert the caregiver when necessary, and ensure the baby's safety and well-being even when the caregiver is engaged in other activities.

IV. MOTIVATION OF THE PROJECT

The IT sector is continuously developing new IoT devices, including cradles that integrate IoT technology. However, some of these cradles still lack features that could pose a threat to the health of babies. In countries like India, where both parents often have to work and care for their child simultaneously, the workload can be overwhelming and can affect both their professional and personal lives, as well as their child's well-being. In response to the limitations of current cradle systems and busy schedules of parents, we are creating a modern cradle system that addresses these challenges.

V. METHODOLOGY AND ARCHITECTURE

To address the problem of lack of safety measures in trucks and trollies used for agricultural goods transportation, a solution is proposed that involves the installation of sensors in the vehicles.

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These sensors will be able to detect overloading and tilting in real-time, and the sensor data will be transmitted to a central system for analysis. The central system will generate alerts for the driver in case of potential danger and will also provide real-time monitoring and analysis of the vehicle's condition to prevent accidents caused by vehicle malfunction and overloading.

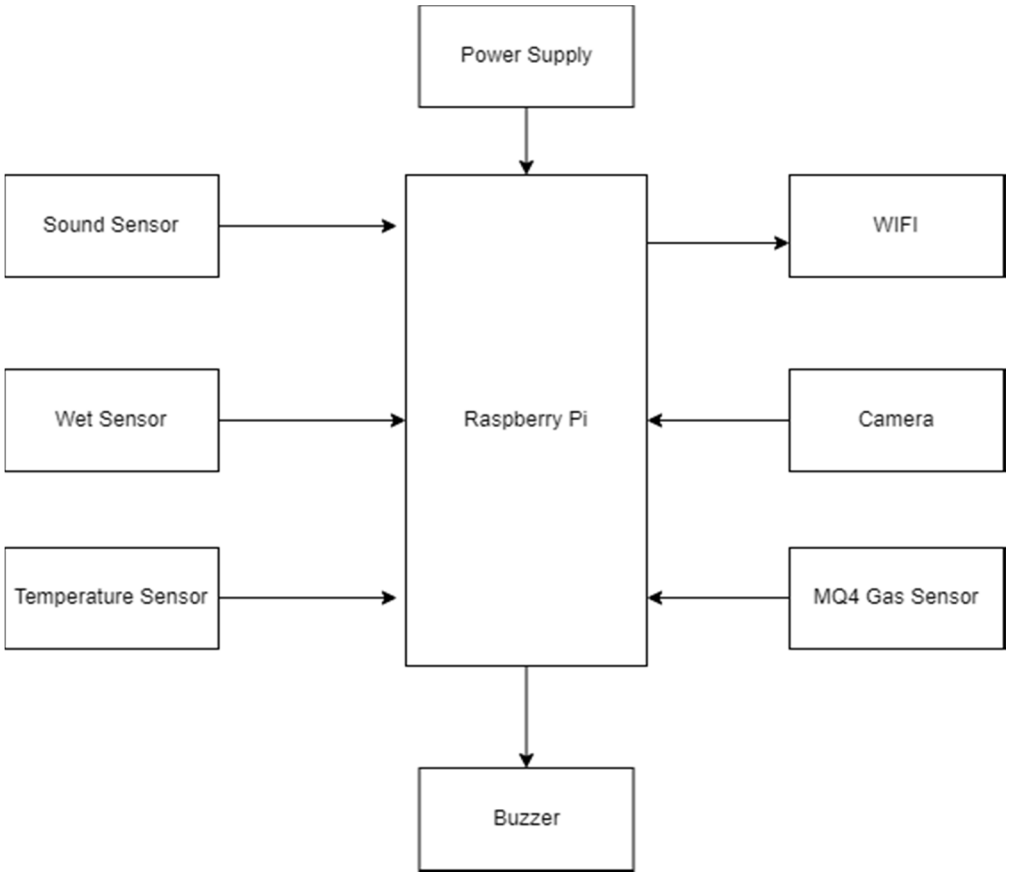
The proposed system will be integrated with a user-friendly dashboard that will allow the driver to monitor the vehicle's condition and receive alerts on their mobile phone. The use of this system is expected to improve safety in agricultural goods transportation, reduce the risk of accidents and injuries to the driver and other road users, and reduce the loss of materials and goods being transported.

The methodology for implementing this solution would involve several stages. The first stage would be to identify the requirements and specifications for the sensors and the central system. This would involve conducting research on existing sensor technology and identifying the most suitable sensors for this application. The second stage would be to design the sensor installation and the central system architecture, including the dashboard and the communication protocols between the sensors and the central system.

The third stage would involve testing the system in a controlled environment to ensure that it meets the specified requirements and performs as expected. This would involve testing the sensors and the central system under various conditions and scenarios to ensure that they can detect overloading and tilting accurately and generate alerts in real-time.

The fourth stage would involve field testing the system in actual trucks and trollies used for agricultural goods transportation. This would involve working with logistics companies and farmers to install the sensors and central system in their vehicles and collecting data on the system's performance in real-world conditions.

Block Diagram



The system includes the modules listed below:

The Raspberry Pi is a credit-card sized mini-computer that can be connected to various input and output hardware devices, such as a monitor, keyboard, and mouse, effectively transforming it into a fully functional PC. This low-cost device offers flexibility and interoperability with a wide range of hardware devices.

VI. FUTURE SCOPE

1) *Central Processing Unit (CPU):* This is the computer's brain that carries out instructions using logical and mathematical operations. The Raspberry Pi uses the ARM11 series processor on its boards.
2) *HDMI Port:* The Raspberry Pi has an HDMI port that allows for video output to be displayed on an HDTV. It also comes with an RCA port for other display options.
3) *Graphic Processing Unit (GPU):* The GPU hastens the speed of image calculations.
4) *Memory (RAM):* Random Access Memory stores real-time information for easy access. Different Raspberry Pi models come with varying capacities, with the Raspberry Pi 4 having the maximum capacity of 8GB RAM.
5) *Ethernet Port:* The Ethernet port enables wired internet access to the minicomputer and uses the RJ45 Ethernet jack.
6) *SD Card Slot:* The Raspberry Pi board has an SD card slot where users must insert SD cards for the computer to function. The SD card contains the operating system necessary for turning the system on and storing data.
7) *General Purpose Input and Output (GPIO) pins:* GPIO pins are used to interact with other electronic circuits and can read and control electric signals from other boards or devices based on how the user programs them.
8) *LEDs:* The Raspberry Pi has a group of five LEDs that signal the user on the present status of the unit, including power status, SD card activity, Ethernet connectivity, and data speed.
9)

VII. APPLICATION

1) *Keeping track of the baby's Safety:* Baby monitors can help parents or caregivers keep a watchful eye on their baby, even from a distance. With video and audio capabilities, parents can check on their baby's safety and well-being without having to be physically present in the same room.
2) *Sleep Monitoring:* Some baby monitors can track the baby's sleeping patterns and provide insights into their sleep quality. This information can help parents adjust their baby's sleeping arrangements and routines to ensure better sleep and overall health.
3) *Health Monitoring:* Baby monitors can also track the baby's vital signs, such as their heart rate, breathing rate, and oxygen levels. This information can be especially helpful for parents of premature babies or babies with health conditions that require monitoring.

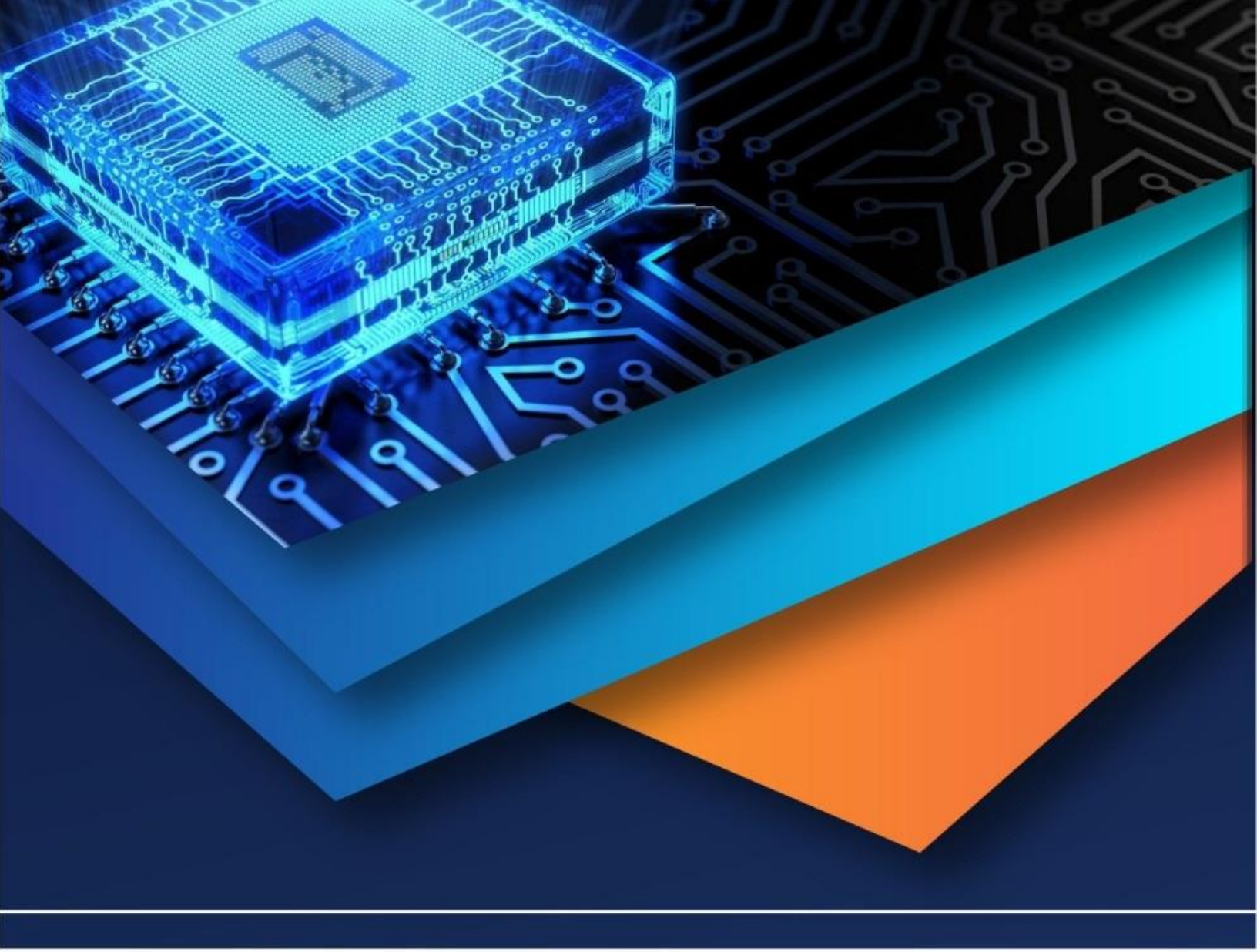
VIII. CONCLUSION

The design and fabrication of a smart cradle with a baby monitoring system over IoT was undertaken to address the need for monitoring a baby's vital parameters such as crying condition, humidity, and ambient temperature. NodeMCU was selected as the main controller board for the project's circuit design due to its built-in Wi-Fi module, which facilitated the implementation of IoT concept in the developed system. Red meranti wood was chosen as the material for building the baby's cradle due to its general use in woodworks and workability. During the enhancement phases, improvements were made to ensure that the research objectives were achieved. The finished prototype was tested by using a mobile phone with a baby crying ringtone placed in the cradle. The project aims to provide a solution for parents to monitor their baby's vital parameters remotely, enabling them to respond promptly to any emergencies

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