



IoT BASED SMART BABY CRADLE

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ABSTRACT:

The globe has seen significant change in the twenty-first century, and not only men but also women's proportions have changed significantly. Married women carry on working even after giving birth to their children. It is quite challenging to raise children while working. This is the driving force behind the expansion of child care facilities. Nonetheless, it is exceedingly challenging to keep an eye on how the infants are being cared for in baby care facilities or any other type of facility. As a result, this paper proposes an IoT-based baby monitoring system that is very effective and requires little upkeep. Use the innovative Smart Cradle System concept to help all the mothers who are dropping off their kids at creche.

KEYWORDS:

Sound Sensor, Node MCU, DHT 11, Mobile.

I. INTRODUCTION:

In recent years, it has become

customary in India for both parents to work. The hardest task for working parents right now will be baby monitoring. Given the difficulties parents confront raising their children, especially when both parents are employed, it is almost inconceivable to provide them 24 hours of time in these situations. Along these lines, we should develop something unique that can help parents maintain a constant observation/watch over the Baby/Infant and can provide advice regarding the same. As a result, we devised a plan to design an IOT-based Smart Cradle System.

II. IMPLEMENTATION:

This implementation needs the following components:

- Node MCU
- Sound Sensor
- DHT 11
- Mobile

III. HARDWARE DESCRIPTION:

Sound Sensor:

The esp8266 sound detection sensor module determines if sound levels



have risen above a certain level. A microphone picks up sound, which is then sent into an LM393 op amp. A potentiometer on board is used to change the sound volume set point. An LED on the module illuminates and the output is sent low when the sound level exceeds the set point. One form of module used to pick up on sound is the sound sensor. This module is typically used to measure sound intensity. This module is mostly used for switch, security, and monitoring purposes. For convenience of use, the precision of this sensor can be altered.

FEATURES:

- Supply voltage: 5V (DC).
- Supply current: 15mA.
- Modulation frequency: 3kHz to 6kHz.
- Output: 0 – 5V (Output high when obstacle detected in range).

DHT 11 SENSOR:

A cheap digital sensor for detecting humidity and temperature is the DHT11. To instantly detect humidity and temperature, this sensor may be simply interfaced with any micro-controller, including the Esp8266, Raspberry Pi, and others.

Both a sensor and a module are available for the DHT11 humidity and temperature sensor. The pull-up resistor and a power-on LED distinguish this sensor from the module. A relative humidity sensor is the DHT11. This sensor utilises a capacitive humidity sensor and a thermistor to measure the ambient air..

The DHT11 sensor comprises of a thermistor for measuring temperature and a capacitive humidity sensing device. The humidity detecting capacitor consists of two electrodes separated by a substrate that can hold moisture as a dielectric. The capacitance value changes as the humidity levels fluctuate. The IC calculates, interprets, and converts the modified resistance values into digital form.

FEATURES:

- The operating voltage is 5V

NodeMCU:

A low-cost System-on-a-Chip (SoC) called the ESP8266 serves as the foundation of the open-source NodeMCU software and hardware development environment. The Espressif Systems-designed and -produced ESP8266 has all of the essential components of a computer, including CPU, RAM, networking (WiFi), and even a contemporary operating system and SDK. This makes it a fantastic option for all types of Internet of Things (IoT) projects.

The ESP8266 is difficult to access and use as a chip, though. For the simplest operations, like turning it on or sending a keystroke to the "computer" on the chip, you must solder wires with the necessary analogue voltage to its pins. Additionally, you need to programme it in low-level machine instructions that the chip hardware can understand.



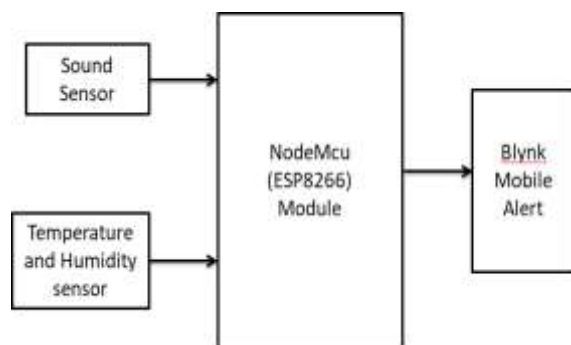
Fig: ESP8266 Module

embedded system is one that is built to carry out one or a small number of specific tasks, frequently under real-time computing restrictions. It is integrated as a component of a finished product, frequently with physical and mechanical components. Contrarily, a general-purpose computer, such a personal computer (PC), is made to be adaptable and to satisfy a variety of user needs.

FEATURES:

- Microcontroller: ESP-8266 32-bit.
- Operating Voltage: 3.3V.
- Input Voltage (recommended): 4.5-10V.
- Input Voltage (limits): 6-20V.
- Digital I/O Pins: 11
- Analog Input Pins: 1
- Clock Speed: 80MHz
- ADC: 0-3.3V

BLOCK DIAGRAM



IV.SOFTWARE TOOLS:

- Embedded C

Embedded C

A computer system called an

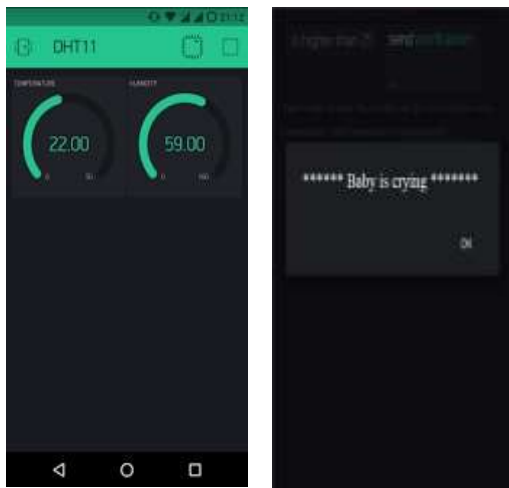
V.WORKING PRINCIPLE:

The system that is being proposed is one in which various kits will be put together to create a kit that contains a temperature sensor, sound sensor, and Wi-Fi module.

The baby's temperature is frequently checked by the temperature sensor, which updates the parents via the kit's Wi-Fi module. The mobile app on the parent's phone will receive a quick update about the infant in the app itself as soon as the sound sensor detects the baby's scream and delivers an immediate update to the parents via the Wi-Fi module.

VI.RESULTS:

As the infant cried, we successfully received a smartphone alert. We can also use the Blynk mobile application to check the temperature and humidity.



CONCLUSION:

Therefore, we can draw the conclusion that with this system, we are receiving updates about the baby. For example, if the baby's temperature rises, we receive a quick update and can then take the necessary quick action to take good care of the baby. Likewise, if the baby cries, the parents will receive an update within seconds so that they can respond and stabilise the baby.

FUTURE SCOPE:

The upcoming capabilities of this system include the ability to set different melodies and songs in the kit to make the baby listen and play, as well as the ability to connect a camera module to continuously monitor the infant via video.

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