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Neonatal incubator monitoring system using IoT

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ABSTRACT

There are much innovations occurring in the medical field like needle-free diabetes, robotic check-up, etc. But still, medical accidents are happening in today world due to improper care which even leading to death. Weare aware that many infants were dead in recent times due to both human error and machine error. Hence we discuss the advancements that can be brought to the present machines such that the newborn babies would be safe and thus leading to the prevention of accidents that occur in the incubator. Tocontrol the accident, need to monitor continuously with better involvement, it is done only through automation. The medical staff can monitor anytime, anywhere. Prevent the infant from the fire and also keep them safe. We must maintain various parameters such as temperature, humidity, the intensity of light, gases that are present, pulse level with accurate values. Therefore the doctor can monitor the condition of the baby all the time from any part of the world.

Keywords— *Health, Monitoring system, Nenotel patients, Incubator alert messages*

1. OBJECTIVES

- The number of premature babies is increasing in the world. With Internet connection accessibility and the development of smartphones are playing an essential role in monitoring biomedical data.
- The hospital management continuously monitors the INFANT condition if any variations occur in below or above to the normal range immediately alert message occurs on the display and the management protect the baby easily from a dangerous situation.
- The function was used to monitor and control the system such as heated air circulation, humidity and temperature inside the incubator

2. EXISTING SYSTEM

The existing methodology mainly consists of sensors, hardware unit. They only monitor baby's health condition and displays it in the unit, the major disadvantage of this system is that one person must be present to monitor data from sensors and hardware units

They only monitor the temperature of the baby and notifies to the doctor.

3. PROPOSED SYSTEM

The proposed methodology tries to overcome the limitations of the earlier system. The system will take the parameters like temperature, pulse rate, Gases present in the incubator (MQ6 Gas sensor), Light sensor (OPT3001), and the wet condition of the baby's bed using moisture sensor(DHT11 Sensor).

So our project detects a leakage inside the incubator by also sending the alert and current situation to hospital management, Doctors and Infants guardian to take a necessary action to prevent the child away from danger.

4. HARDWARE COMPONENTS

- Pulse Sensor
- MQ-6 Gas Sensor
- DHT11 (temperature and humidity)
- Light Sensor
- GSM Module
- PIC Microcontroller

5. SOFTWARE COMPONENTS

PIC Microcontroller Program (Embedded C Program)

Cloud: UBIDOTS

6. BLOCK DIAGRAM

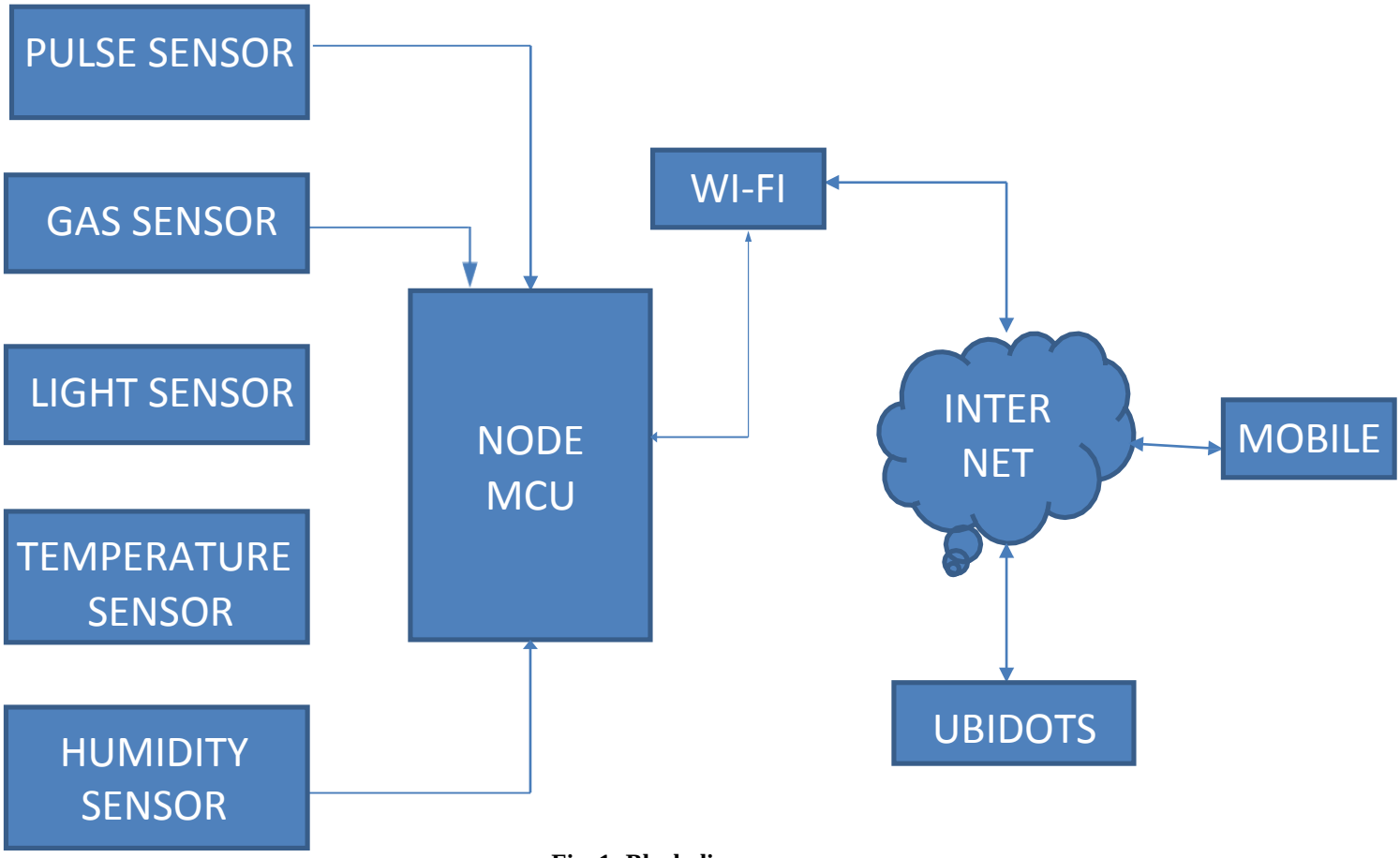

Fig. 1: Block diagram

7. CONCLUSION

- It can be a lifesaving machine for low birth weight infants. The components can be easily fixed. The chamber is sufficient enough to accommodate the baby comfortably. As the electronic part is separated from Baby's compartment baby can be assured safe.
- The temperature of the system can be understood. This is simple and efficient in maintaining the temperature of the chamber irrespective of the outside temperature and is designed at a low cost.
- Where doctors can monitor the condition from the place where they are sitting and hence proper and timely care to the baby

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