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GSM BASED ANIMAL HEALTH MONITORING SYSTEM

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Abstract: Productive online cattle health monitoring can help those farmers who suffer on a regular basis due to the poor health condition of their cattle and unavailability of good veterinary doctors in their vicinity. In this paper, we present such a device which provides an opportunity to the farmers to monitor and compare the present health parameters of the cattle with the standard reference healthy parameters, by which they would be able to spot any deterioration in the cattle's health. To prepare such a device for real time application, MSP430 microcontroller module and different types of sensors for taking the cattle body parameters have been used. This paper focuses mainly on the parameters like heart rate, temperature, and body humidity of the cattle.

Index Terms – Cattle, GSM, Sensors, Monitor ,Temperature, Humidity, Heart Beat, GSM

I. INTRODUCTION

In earlier days the farmers and the skilled labours used to monitor their animal .The dairy cattles are homoeothermic and continuous monitoring is necessary. But now a days the farmer is busy with his own work and it is difficult to monitor the animal whole day. This will some time cause animal to suffer from diseases. To overcome this problem an author proposing a new model for continues health monitoring system for cattle. In the proposed system, the physiological parameters like heart rate, temperature and the humidity are measured. Here the data is obtained from heart rate sensor, temperature and humidity sensor, the proposed system recognize the real-time time input values and send to MSP430 microcontroller for controlling. The GSM module will send the alert message in case of any abnormal emergency and the LCD display is used to display the results.

II. Related work

Anuj Kumar et al proposed an A ZigBee based Animal Health Monitoring System to monitor physiological parameter like pulse rate, temperature and rumination a model has been created and the system can also study the strain level of animal. Here sensors, PIC microcontroller and the ZigBee device is used. By using graphical interface, the physiological and behavioral parameters output will be displayed and the result obtained is accurate to monitor the health of the animal.[1]. Anushka Patil et al proposed a Smart Health Monitoring System for Animals, In this paper, the developed hardware module has temperature, heart rate, humidity and rumination sensors, microcontroller and the ZigBee module. Here the sensor recognizes real-time values and it is sent to microcontroller [2] via ZigBee module, after receiving the data the

microcontroller will process the data and by using personal computer display the values recorded and sent to monitor the health of the animals. Panuwat Mekha [3] et al proposed a Web application for sick animals' health monitoring system. In this paper, the author created an module to monitoring the health of the animal. Here the web application is created to display the results of the system and the recorded data will be stored in the cloud. This system will recognize the heart pulse and temperature of the animal. Web application can access through mobile or personal computer. Prof. Joshi V[4] developed a Wildlife Animal Location Detection and Health Monitoring System, In this paper, the developed hardware model consists temperature sensor, microcontroller, GPS module and GSM modem. The hardware model is placed on the neck of the animal with the help of neck belt. The temperature sensor will recognize the body temperature and the GPS module will detect the location of the animal and send it to microcontroller, the microcontroller will take out the location details and send details to GSM modem. GSM modem will send the location message to the forest officer. By using this model officer can easily find the exact location with the assist of Google map. Rashika M E et al developed aA Wi-Fi Based Animal Health, In this paper, the hardware module has temperature, heart rate, humidity and rumination sensors, microcontroller and the Wi-Fi module (ESP8266). Here the sensor recognized real-time values are sent to microcontroller via Wi-Fi module (ESP8266), after receiving the data the microcontroller will process the data and using GUI (personal computer) for display the values recorded by the sensor and for the graphical representation of output.

III. OBJECTIVES

The objectives of the proposed work as stated as below

- The paper proposes a health monitoring model for animal which can monitor the heart rate, body temperature and humidity.
- To detect the unknown diseases or pathogens.
- To propose a GSM based model for cattle health monitoring in local and remote locations of the farms.
- Storing all the collected information and sending through GSM module to the doctor.

IV. RESEARCH METHODOLOGY

The working of the animal health monitoring system is shown in below .

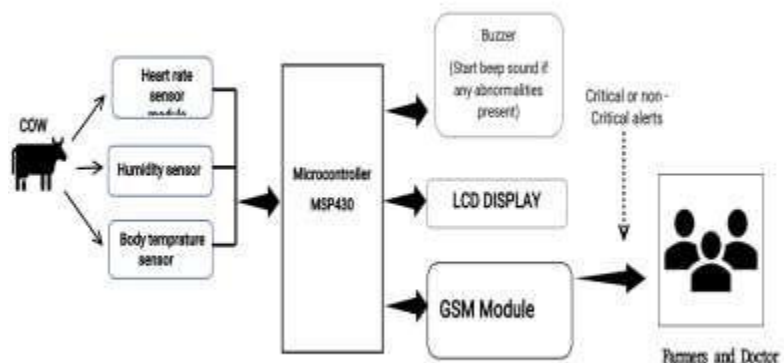
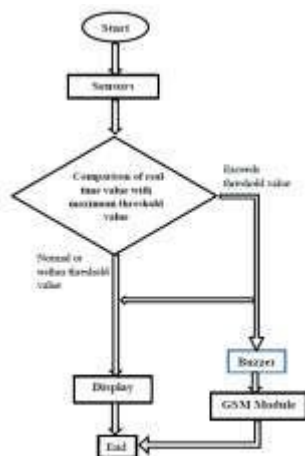


Fig 1: Flowchart of the proposed work

Fig2 :Proposed system block diagram

In this proposed system, the heart-rate sensor, temperature and humidity sensor will detect the input values, microcontroller will process the data and the LCD display and GSM module used for display the output. Temperature and humidity sensor is used to determine animal body temperature and the environmental temperature surrounding the cattle. The regular and irregular pulse rate of the cattle will be detected by using Heart rate sensor. The microcontroller will be the processing unit and it will be responsible for the processing the data values and taking of necessary actions based on sensor output.

The recognized input data values of the sensor will be given as input to the microcontroller and microcontroller will compare real-time data with the given maximum threshold value, after comparison the microcontroller will display the results on LCD display, if any abnormality is present the GSM module will send the message to farmer.

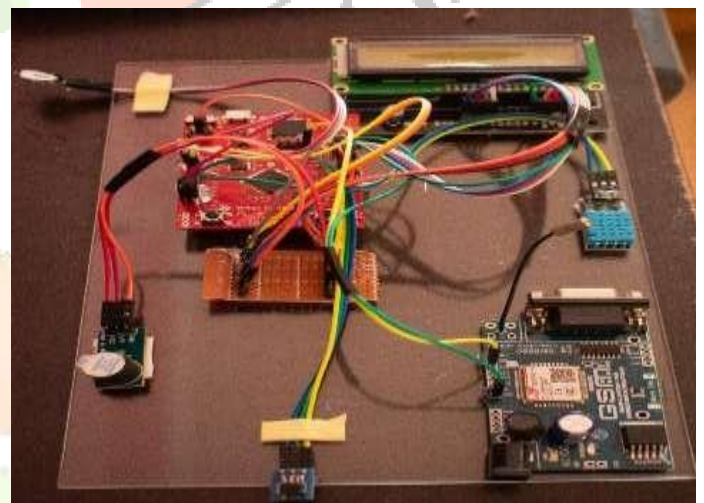
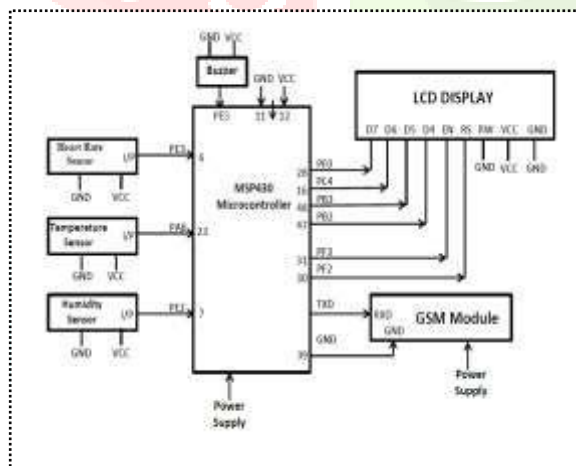


Fig 3:Pin details of the Proposed system

Fig 4:Working model of the Proposed system

IV. RESULTS

The main goal of this proposed work is to monitor health issues of cattle using specific sensor technologies. Under varies condition, the high demand and supply of dairy products can be achieved only by continuous monitoring of their health condition and ensure their fitness as it directly impacts on the

health of the consumers. Several diseases of cattle can be studied to take appropriate measures. The activity of sensors makes it easy to map the symptoms of diseases. This is to integrate two existing modules developed in different platform and technology to a single platform. Along with the GSM module four different type of sensors are compatible to perform in embedded system. The accuracy of the values relies on the microcontroller which use explicit ADC to give an accurate detail in case of health monitoring. This model will work as backbone in case of analysing any health-related issues for an animal.

Table 5.1: Output recorded in various condition

HB: (Heart Beat) in BPM	T:(Temperature)in Celsius	H:(Humidity)in percentage
69	32	71
71	34.7	74
77	32.42	69
96	42.37	65
75	32.67	82



Fig 5: Output display of LCD for varied health parameters

The figure 5 shows that the recorded heartbeat, temperature and the humidity is 77,32.42,69 respectively. All the above values are the normal condition of the animal. If there is any variation in these values the LCD display following message and an alarm signal is sent to the farmer through GSM to his mobile for further action.



Fig 6: Alert message on LCD

V. Conclusion and Future scope

Animal health issue is a serious global matter that requires quick scientific techniques. Biosensors have gained their way into the practical use and application in the animal health domain. To find and overcome the animal health related issues and problem, the authors proposed an Animal health monitoring that can be worn by the animal, cattle in this case. The system consists of different modules which are capable of detecting temperature, heartbeat and humidity. GSM technology is used for the transmission of data to the owner or doctor's cell phone. Population of the world is about to reach 9.8 billion people by 2050. There will be pressure built on farmers to feed more people with less land and water which is limited. The future of this paper lies in developing the hardware further to a wearable device, so using internet of things it can be connected to any device. But the wearable device can be subjected to a serious security threat i.e., the device can be taken away from the animal's body; it might be also the case of theft. Hence smart theft detection system or burglar alarm or transmitter can be placed in the device in case of damaged belt detached from the cattle, it can be placed on the hardware to alert the user or send a notification to their device.

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