Animal Welfare Assessment and Conservation of Animals

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ABSTRACT:-

BACKGROUND AND OBJECTIVE: In present scenario, due to the dependency of human life on animals, it is mandatory to monitor animal health, environment and protection of animals on regular basis. Also, regular health check-ups of an animal costs too much which some people will not be able to afford. In addition to it, if the health of the animal is not taken care properly and diagnosed in time, it can be life threatening to animals.

METHODOLOGY: we have proposed and developed a prototype of smart animal health monitoring system which can continuously monitor physiological parameters such as body temperature, environmental humidity, heart rate and position of the animal using LM35, DHT11, Heart rate sensor and accelerometer respectively. These sensors are mounted on animal body and data is obtained and displayed with the help of Wi-Fi module ESP8266 through IOT and LCD display. This system will contribute in the novelty and viability of health care of animals.

KEYWORDS: Monitoring, IOT and LCD display, Sensor and Accelerometer

1. INTRODUCTION:

The main objective of this research article is that to provide monitoring the animal health by using IOT technology in animal

welfare. Smart Farming relays on basic needs of farmers, such as helping farmers to make farming. Instead of Farmer visiting the cattle Smart Farming relays on basic needs of farmers or Poultry farms again and again for observing their health condition, we are using a computing and sensor based methods controlled by arduino module. To Achieve this, we have installed our system in the Poultry farms and cattle sheds through sensors.

The measured data is stored at the consumers database , the consumer is allowed to extract this data through an android application installed in his/her mobile. It includes another feature of alarming i.e., if temperature of poultry farm exceeds or increases, sensor senses the temperature and Arduino compares it with the prescribed safe range and if not in range signals an alarm, further the cloud pushes it to the consumers mobile and notifies him by a notification. Smart computing and sensing technologies, have become common terms to describe next generation computing, communication, and sensing technologies and systems. With rise in population, the requirements of the individuals have increased. Several farmers depend on cattle for milk production. Similarly, the pet adopters and trainers depend on emotional state of the pet for human-canine interaction to achieve effective pet training. Since the animals cannot convey their emotions to the owners, it is the responsibility of every pet adopter or a farmer to monitor the physiological and behavioral parameters of the animals. This paper presents the prototype of the smart animal health monitoring system to continuously monitor the physiological parameters such as body temperature, heart rate, humidity and movements of the animals with the help of sensors.

2. IMPLEMENTATION OF THE MONITORING SYSTEM:

This research article is that the system in order to monitor the health of cattle we measure two of the major health parameters which are body temperature and heart beat. The arduino UNO microcontroller is used to gather data from the sensors. The body temperature and heart beat of the cattle increases when it is affected by any disease. When the temperature increases the GSM is used to notify the farmer with SMS. The environment condition of the farm also plays a major role in maintain the cattle's health. So when there is increase in the environment temperature or humidity it is being sent as SMS to the farmer. In huge farms or when the cattle are affected by disease it is difficult to track the location of the cow. GPS is used to track the location of animals in the farm. The data from the temperature and heart beat sensor is transferred by the ESP8266 Wi-Fi module to the internet where it can be viewed graphically from outside the farm. The proposed system can also

be used for industrial purposes where there are huge numbers of animals and it may be difficult to monitor the movement of each individual animal. In those cases the system proposed here can be designed as a small IoT device which consists of all the sensors and may be fixed to the animals. This reduces the cost and makes it feasible forthe industries.

In the present situation, agriculturist visiting the steers or poultry cultivates over and over for watching their well-being condition. It's anything but a legitimate method to check animal welfare physically. In the proposed framework we are utilizing two sorts of sensors like ecological sensors and wearable sensors.

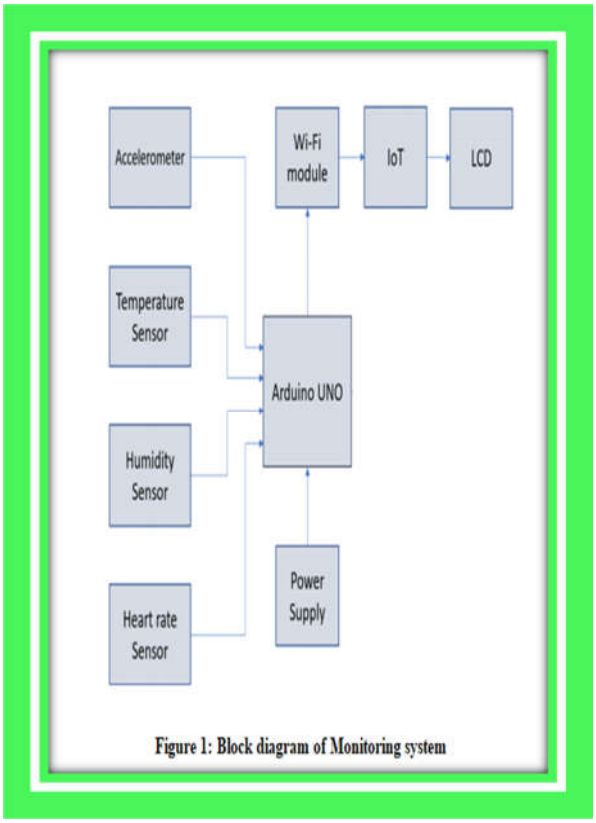

Figure 1: Block diagram of Monitoring system

- Cowshed administration (Environmental sensor):-The natural sensor measure the few qualities like control byre temperature, measure humidity, open/close gate, create live camera sustains the creature.
- Health Monitor (Wearable sensor) :- Wearable sensors are settled on the creature body,it measures the body temperature, follow the development and movement of the creature and screen gadget battery status. These sensors are associated with theworkstation.
- Homestead control :- Homestead control deal with the database of dairy animals shed control, animal wellbeing status, cultivate status, live camera feed, information sources of info and framework setup .The homestead control is associated with the cloud (framework backup, long term statistics, vet interface)

Program structure:

A minimal Arduino C/C++ program consist of only two functions:

setup (): This function is called once when a sketch starts after power-up or reset. It is used to initialize variables, input and output pin modes, and other libraries needed in the sketch.

loop (): After *setup ()* has been called, function *loop()* is executed repeatedly in the main program. It controls the board until the board is powered off or is reset.

This program uses the functions, *digitalWrite ()*, and *delay ()*, which are provided by the internal libraries included in the IDE environment. The program is usually loaded in the Arduino by the manufacturer. A program for Arduino may be written in any programming language for a compiler that produces binary machine code for the target processor. Atmel provides a development environment for their microcontrollers, AVR Studio and the newer Atmel Studio. The Arduino project provides the Arduino integrated development environment (IDE), which is a cross-platform application written in the programming language Java. It originated from the IDE for the languages *Processing* and *Wiring*. It includes a code editor with features such as text cutting and pasting, searching andreplacing text, automatic indenting, brace matching, and syntax highlighting, and provides simple *one- click* mechanisms to compile and upload programs to an Arduino board. It also contains a message area, a text console, a toolbar with buttons for common functions and a hierarchy of operation menus. A program written with the IDE for Arduino is called a *sketch*. Sketches are saved on the development computer as text files with the file extension .*Uno*. Arduino Software (IDE) pre- 1.0 saved sketches with the extension. pde. The Arduino IDE supports the languages C and C++using special rules of code structuring. The Arduino IDE supplies a software library from the Wiring project, which provides many common input and output procedures. User-written code only requires two basic functions, for starting the sketch and the main program loop, that are compiled and linked with a program sub *main()* into an executable cyclic executive program with the GNU tool chain, also included with the IDE distribution. The Arduino IDE employs the program *avrdude* to convert the executable code into a text file in hexadecimal encoding that is loaded into the Arduino board by a loader program in the board's firmware.

3. CONCLUSION AND DISCUSSION:

- When heart beat sensor detects the pulse rate in the animal body.

- Animal welfare assessment result is shown in below figure.



Applications:

- Medical improvement for the animal health
- Veterinary hospital
- Homes
- zoo

Advantages :

- Easy access to information
- Comminication
- Cost Effective
- Automation

This paper reviews health and environmental monitoring of cattle and to track location of the cattle. We propose that IOT based Cattle health and environment monitoring system should be installed on farms to gather ecological parameters which shall then facilitate farmers in monitoring the animals from outside the farm. If any abnormalities found in the cattle, it will be notified to the farmer via SMS. The values got from the various sensors are been continuously monitored in the internet. Hence it is time consuming and is also difficult to track the location of animals. In the proposed system, without human involvement health status of the animals can be monitored. If there is any abnormality in the health condition of cattle remedies can be taken quickly. Hence it is more effective and helps in increase of production of milk. For project demo concern, we have developed a prototype module. In future, this project can be taken to the product level. To make this project as user friendly and durable, we need to make it compact and cost effective. Going further, most of the units can be embedded along with the controller on a single board with change in technology, thereby reducing the size of the system.

4. REFERENCES:

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