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AN ANIMAL FARM AUTOMATION USING IOT

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Abstract –Farming plays an important role in today's world and it requires proper environmentaland diet care. A smart system is needed to operate and monitor animal farm remotely. Our project aims at providing basic needs such as feed and water whenever required, maintaining the humidity and temperature of the farm, andalso alerts the user/owner when there is any intruder in the farm and detects the smoke in the farm. The overall surveillance of the farm can be done by the IP camera installed in the farm. Therefore, our project is an approach in which the farmers in the rural areas will be benefitted by automatic monitoring and control of animal farmhouse environment. This kind of intelligent system can be designed cost effectively by using microcontrollers and various kinds of sensors such as ultrasonic sensors, DHT sensors, water level sensors and gas sensors with help of internet connectivity.Hence it is the technical approach in which the farmers in the rural areas will be benefitted by automatic monitoring and control of farm house environment which replaces the human intervention at times.

Key Words:Internet of Things, Smart farm, Sensors, Surveillance.

1.INTRODUCTION

Animal farming plays an important role in today's world and it requires proper environmental and diet care. A smart system is needed to operate and monitor animal farm remotely. This system will provide feed and water as required when it is being exhausted, Fire alarms will be set in the farm for emergency purposes. Moreover, this intelligent system should also do surveillance of the entire animal farming. This kind of intelligent system can be designed cost effectively by using microcontrollers, water level sensor, ultrasonic sensor, gas sensor, temperature, humidity sensor, and an IP Camera along with Internet connectivity with the devices i.e. smart phones or computer.

IoT based Automated Animal farming system will make use of the sensors and microcontroller unit to perform the said operations of feeding, water supply and temperature- humidity observation and intruder detection which are the main surveillance of the farm. Introducing IoT in the system will benefit in providing ease of operation as well as real time data observation through internet to the user.

The term Internet of Things (IoT) was first defined by Kevin Ashton in 1999. IoT refers to a technology that tells that in near future billions of devices will have intent connectivity and can be accessed from anywhere in the world. We in this project design a complete system which is comprised of feed filling system, water filling system, intruder detection system, Smoke detection system and a camera for the overall surveillance. The data from the system is transmitted and received by a certain IP address and port address using a WIFI router to the GUI of the system. The system can be controlled and monitored using the GUI of the system. Our designed system considers almost all parameters which are important for an animal farm compared to the readily available systems which only consider a few parameters

2. RELATED WORK

Our main contribution here is in attempting to build fully automated animal farming, with anopen architecture that can enable experimentation and data sharing an effective method of cloud computing. The system designed to be applicable to various animal species, we mainly focus
On the "cattle". For small livestocks farms, farmers usually handle all management. This approach hasseveral limitations such as high labour cost,inefficiency and time consuming.

With emerge ofsmart technology such as smart phones,sensors and IOT,these equipments become moreaccessible to farmers. This system provides automated supply of food and water animals and can additionally detect fire and intruder control in the farm by placing camera and alarms.Here we use sensor to monitorchanges in behavior like feeding,drinking and social behavior.These research mainly focus on automated farm management combining the sensors and IOTtechnologies.

3. METHODOLOGY

Our motive is to build an automated system for animals for overall surveillance of the cattle. Farm house automation system is the technical approach in which the farmers in the rural areas will be benefitted by automatic monitoring and control of farm house environment. The project Monitor and Control of the system includes the measure of various parameters like Temperature, Humidity, water level and feed control it also detects Intruder and smoke.Micro-controller controls these parameters and stores the values in the cloud through WIFI module.Monitoring the farm can be done 24x7 with the help of the camera.

The whole project is majorly divided into four modules, they are as follows

1.Feed filling module.

2.Water filling module.

3.Intruder alert and smoke detection module.

4.Temperature and humidity module.

4. SYSTEM ARCHITECTURE

The designed steps are divided into four modules namely, feed, water, temperature and humidity and Intruder and smoke detection module. The system will provide feed and water as required, and maintain the temperature of the farm and also detects intruder in the farm.

In the feed control module, ultrasonic sensor sends the sensor value of feed level to the microcontroller where these data are sent and stored at the cloud server. And also retrieved by the user using Wi-Fi module. User will get to know about the requirement and condition of the farm and he will decide what operation has to perform. Then the data is sent to the cloud and it is evaluated. Once the data is evaluated microcontroller acknowledges to the motor driver to turn on/off the gear motor. If it turns to on then feed tank gets filled, if not it turns to off.

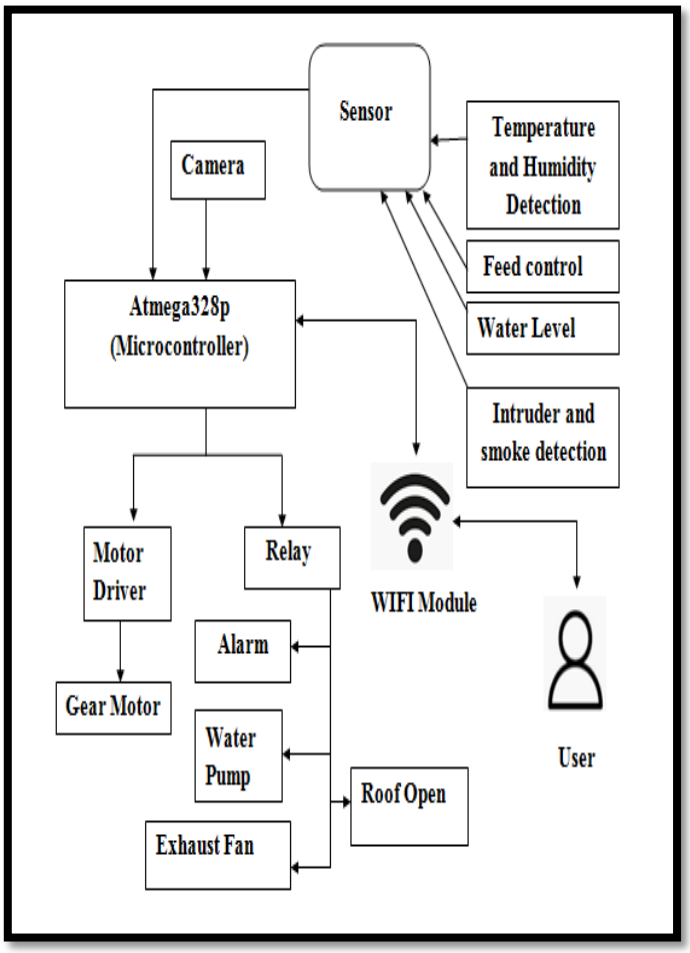

Fig.1 System Architecture of the proposed system.

In the water control module, temperature and humidity detection module and Intruder and smoke detection module, sensors sends the value to the microcontroller and stores at cloud. Using Wi-Fi connectivity user will access the information about the requirement, then the data is sent back to the cloud and gets evaluated. Microcontroller acknowledges to the relay to turn on/off the water pump, exhaust fan, alarm and open/close the Roof. And the camera monitoring system monitors the farm and the user can view the farm whenever required.

5. CONCLUSIONS

The monitoring of real time conditions is the need of the hour for the animal farming culture. It is necessary as it hugely influences the animals as well as the products generated. In this paper one such method is defined. It proposes a solution for the feeding and water supply to animals without the use of manpower/ manual control. Also, the remote monitoring of temperature and humidity in the farm is done which is useful for

providing necessary changes in the environment of the animals. In addition, the system could work on the android mobile application helping the owner to monitor the farm such as food feeding function, intruder detection, water sprinkling, and unwanted gas reduction.

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