Auto maintenance of poultry farm

Oviya M.
oviyamurugesan1@gmail.com
JEPPIAAR SRR Engineering College, Chennai, Tamil Nadu

Susan Mano Derry V.
susanmano103@gmail.com
JEPPIAAR SRR Engineering College, Chennai, Tamil Nadu

Pavithira B.
pavikrishnan299@gmail.com
JEPPIAAR SRR Engineering College, Chennai, Tamil Nadu

Nesavi S.
nesavisugumarg2016@gmail.com
JEPPIAAR SRR Engineering College, Chennai, Tamil Nadu

ABSTRACT

The main idea of our project is to find the poultry farm parameters like Moisture, Temperature, water and feeding the chicks using temperature and humidity sensor, level sensor and timer. Moreover, we just update these values to the farmer using GSM, so that the users can get to know about the parameters of their farm from any distinct points away from their farm. The user can also manipulate and control the device which will be placed in the farm like turning OFF and ON through the mobile itself. Thus, the user can get details about their farm and also control the whole hardware device being in any part of the world away from their farm. Thus, our solution turns out to be a cost effective one and also promotes a healthy and efficient monitoring of poultry farm.

Keywords— Arduino UNO, Sensors, Relay, GSM Module

1. INTRODUCTION

Poultry farming is one of the fastest growing industry in India. China ranks highest in egg production. By the year 2020 China's egg production will reach up to 34.2 million metric tons of eggs. India ranks 17th in the world poultry production. India ranks world's third largest egg producer behind China and US. Per capita consumption of eggs is 7.7 per annum in rural areas compared to urban areas. The production of eggs and broilers has been rising at a rate of 8 to 10% and 15 to 20% per annum. Moreover, in India the poultry farming is one of the massive increasing agricultural sectors. Therefore, there is an increasing of population and the demand for meat eaters are also increasing. There are more benefits in poultry farming. The investment for the farming is very high. The main benefit is increasing the chickens and egg production. The USA is the world's largest poultry meat producer of about 18 percent throughout the world followed by China, Brazil, Russia. India is developing the poultry farming in commercially, and invest more money on it. According to recent years survey, the egg production in India is 75 billion and the broiler production is 4.2 million tons per annum.

2. RELATED WORKS

In Sakshi Mishra, Mr. Aamir Sheikh, Ms. Snehal Chore, Ms. Sonam Kshirsagar "IOT based Automatic Poultry Feeding and Smart Poultry Farm System" IoT based Smart Poultry Farm will give a hassle free and better observation experience to the user of the Poultry Farm. This system will make use of the sensors and microcontroller unit to perform the said operations of feeding, water supply and temperature- humidity observation which are the main causes for any kind of epidemic or diseases for poultry birds. Introducing IoT in the system will benefit in providing ease of operation as well as real time data observation through internet to the user.

Shubham Mitkari, Ashwini Pingle, Yogita Sonawane, Sandip Walunj, Anand Shirsath "IOT Based Smart Poultry Farm" The Chicken poultry industry is an important industry for sustainable food supply in our country. The development of an automatic chicken feeding machine can be very useful to the growth of the poultry industry. In existing system, the chickens need a presence of manpower to manually give the food to the chickens. The use of proposed system can replace the worker for feeding the chicken thus overcome the labor problems in the industry and introduce a semi-automatic process in the poultry industry. The Proposed system can be applicable in Poultry Farm and agriculture sector. In poultry farm, it is use to feed the food in container, maintain the temperature using water sprinkler, remove the gas using soil mixture and in Agriculture it is use to Preparation of soil , Spraying to plants, Fertilizer to plants. Through this proposed system it will be helpful to the user.

Eric Hitimana, Gaurav Bajpai, Richard Musabe, Louis Sibomana "Remote Monitoring and Control of Poultry Farm using IOT Techinques" The environmental conditions monitoring and control's ability is crucial and demands a good level of research in fields ranging from the change in climatic conditions in agriculture and zoology. According to world's agricultural produce survey, chicken is among the most favorite produce, since it is a nutrient rich food providing high protein,

low fat, low cholesterol, and low energy than other kinds of poultries. From last few years worldwide, there has been an increased level of awareness regarding the safety of food products like chickens and there has been a high demand for good quality and quantity chicken food. This research focuses on the integration of wireless sensors and mobile network with a well-known sensor's integration platform using remote sensing. System initiates the action automatically to control the environmental parameters such as humidity, temperature, ammonia gas (NH3) then, the control will be based on the set threshold value when there is a sudden change in climate. The proposed solution will decrease the environmental diseases affecting chicken and increase the productivity and eliminate a lot of manpower who can make some human errors. The method can care also about the data analysis.

3. PROPOSED SYSTEM

This model is designed to monitor and control the temperature, humidity, feeder system. Also, it regulates the temperature by turning ON and OFF the coolant and fan according to farm temperature. Nipplers are used for watering the chicks which could save water and also it prevents the farm from being nasty. It checks the air quality of the farm regularly and gives alerts when something goes wrong. This system also controls the feeder of chickens remotely without human interference.
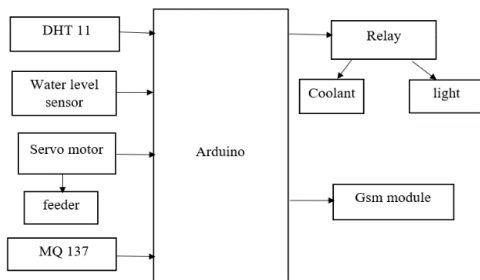

Fig. 1: Block Diagram

This block diagram represents the sensors like Temperature and Humidity sensor, Water level sensor, MQ137 sensor and servomotors are all interfaced with the Arduino as inputs. The relay will work based on input values of temperature and humidity sensor. And the feeder will be automatically operated by the value sense by the load sensor. These are updated to the user's mobile through GSM module.

4. ARCHITECTURE

The architecture explains the working model of the system. The system monitors and controls the parameters by Arduino. The temperature and humidity sensor sense the threshold value and it is used to measure the surrounding temperature of the farm. The temperature range is from 0 to 50 degree Celsius and the humidity range is from 20 to 80%. The ideal farm temperature is 65-75-degree Fahrenheit. If the temperature exceeds the value, the sensor sense to turn ON the coolant. When the temperature goes below the particular temperature, sensor sense to turn ON the light. As well as the humidity is also maintained in the farm.
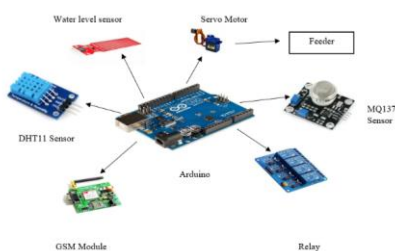

Fig. 2: Architecture of system

The chicks can drink water a lot, so we are using the water level sensor to sense the water level of the tank. Nipples are used in watering the chicks. It also prevents the field from being nasty. If the water level goes to the minimum it would be intimated to the owner. Servo motor is used to refill the feeder tray based on the owners wish. The owner could automatically control by his commands through his mobile itself. When the GSM module detect the command to be 1 it opens up to refill the trays and also when 0 is detected it would close it.

MQ137 sensor is used to detect the level of ammonia content in the farm and its environment. The sensor is used to detect the smoke, alcohol, NH_3, CO_2, etc. Increase of ammonia content can kill chickens. It is commanded in such a way that when the ammonia content exceeds the expected value, the user could get to know it.

All the details of the farm could be known to the user through the GSM module and also it is used to control some of the operation in the farm. GSM module is much useful in such fields since all small-scale owners couldn't afford for IOT.
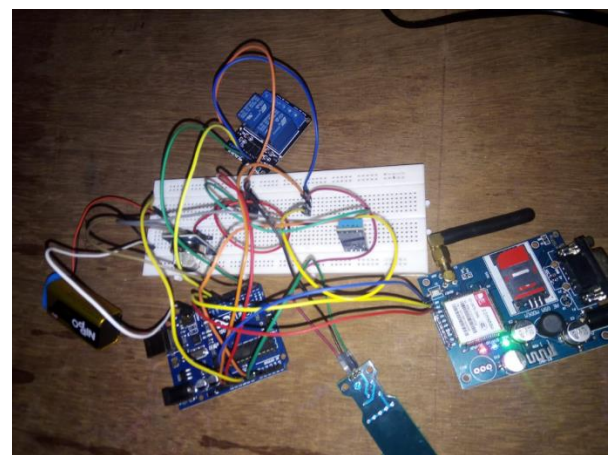

Fig. 3: Proposed system

Moreover, these are all connected to the Arduino board. All the environmental parameters are interfaced with the board and it helps the farmer to be updated about the field. The data will be sent to the users mobile as SMS. There is no need for the internet connection and it will not for the smart devices only. It will be used in the basic devices also.
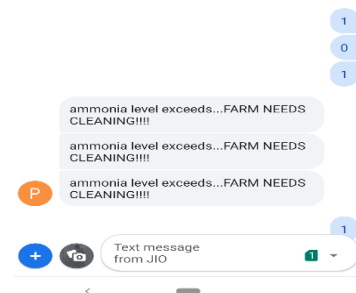

Fig. 4: Output

5. CONCLUSION

The poultry farming is one of the major increasing industry in the world. So, this automatic system is very useful to the farmer. All are controlled and monitored by environmental parameters. It will help to improve the health and quality of the chicks. The details of the farm can send to the user from anywhere in the world.

6. FUTURE ENHANCEMENT

In this project, the poultry farm is fully automated by using the environmental parameters using some sensors. But in future it is

also used to enhance the project by detecting the diseases of the chicks and growth.

7. REFERENCES

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