

Poultry Environment System Using IoT

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Abstract- The Chicken poultry industry is an important industry for sustainable food supply in our country. In the existing system to feed the chickens and clean the place we need more manpower so to over-come this. Our proposed system based on Internet of Things Technology (IoT) to protection and monitoring of environment of a poultry house. The proposed software-based hardware can monitor the environment related parameters such as air temperature, air humidity, O₂, CO₂ level of concentration and NH₃ concentration. And NH₃ may cause serious health disease like heart damage, coma, and even death also. The sensor is responsible for the effective data collection and they are transferred to the Arduino board and raspberry pi. The hardware is implemented successfully at different sites within the poultry shed. The experimental setup was found very effective and accurate. This system mainly works on the solar panels (ecofriendly) to reduce the current. This project may keep a safe environment and profit to the poultry industry

Keywords- Poultry, Arduino, Sensors, IoT, Food Feeder, Water Sprinkler

I. INTRODUCTION

Nowadays, 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, the Soil mixture for healthy environment and water sprinkler for control the temperature is most important task and labor-intensive task. These manual processes are needed in normal poultry farm. To replace manual Activities and poultry work easier with making smart poultry farm.

For implementation of smart poultry farm to use one kind of smart system for Automatic Food Feeder in container and water sprinkler for control the temperature of environment and use the soil mixture for reducing the Gas in poultry environment. System is designed in such way that user can remotely control to the system through android mobile application. Using this prototype Human work is also reducible and smart work will be done.

In this paper, the parameters like ammonia gas, water level, humidity and temperature range are monitored using Arduino and by this the poultry environment gets maintained.

The transmitted data should be received and transmitted to Arduino. Each data can be saved on cloud for future analysis.



Fig.1 POULTRY ENVIRONMENT

II. LITERATURE SURVEY

The poultry board framework utilizes equipment and open-source programming. It also includes temperature, humidity, light intensity, and quality of air. System focuses to provide the setup like IOT, low-cost hardware and open-source software. System detects many problems faced by poultry industry. The energy is provided externally to the system without battery backup. It saves time, reliance of work's and improve sound climate, additionally expands poultry creation.

To build up an IOT based framework with making Smart Poultry ranch. System supports food feeder to the chickens; system can maintain the temperature to provide the mechanism of water sprinkler and system will reduce the unwanted Gases from poultry by soil mixture. System checks humidity, temperature, and presence of gases at poultry farm.

The system replaces the human labour to feeding food into container. It overcomes the labour problems in the poultry industry and it also involves mainly two sections first to feed the food into particular container and the second one is to control the temperature sensor to the freshness of chicken's food. It improves poultry's climate and reduce labour cost.

In this study, a wireless sensor network technology is designed which monitor and control the climate of poultry farm and humidity. A computer network technology is useful to the farmers for human work. The automation system improves quality of meat production.

Moroccan poultry contributes to the national food security. It focuses on facing obstacles to climate conditions it includes heat in summer and cold waves in winter. The heat losses in the summer in terms of mortality and the cold waves increase the efficiency of the food

The author has suggested the real-time monitoring requirement of poultry farms on the environment, an online monitoring system is designed for poultry farms on the environment based on the ZigBee module.

III. BLOCK DIAGRAM

Fig. 2 which represents the block diagram of the project with the working flow. The main aim of project is to reduce the manpower and make the poultry environment as automatic with the help of IoT. To overcome the existing system, we have used advanced sensors to develop the kit. We have designed the system using sensors like temperature and gas sensors which are used to sense temperature and poisonous gases inside the poultry form. Every module's functions are monitored in the pc itself and the data can be stored by using memory. An Arduino pro mini is based fully on a microcontroller board has 14 digital pins 6 for input and 6 for output. In the starting section, all the information you need to configure is your board, so we want to use an Arduino Software (IDE) and start tinker with the coding and electronics functionalities.

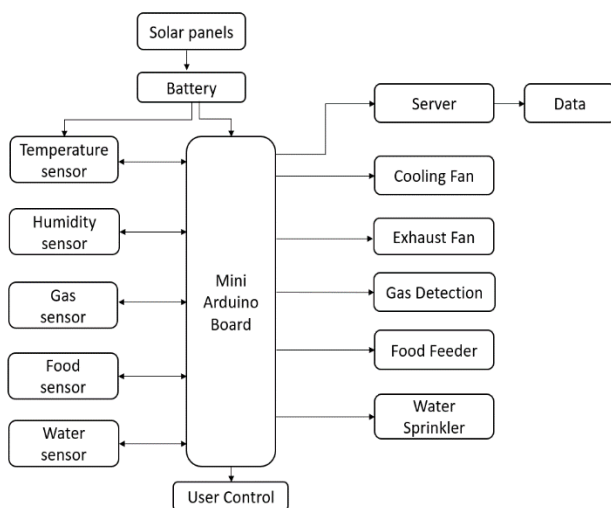


Fig.2 Block Diagram

The sensors like (temperature, Gas sensor, Humidity sensor, Food, Water level) are connected and the data are passed to the wired network to the mini-Arduino. Each data is stored in server for later access we can use that data. The external power supply is provided for its functions.

IV. SCOPE OF WORKING

1. The initially set is framed of different sensors devoted to estimating the ecological boundaries in the homestead working as temperature, mugginess, warmth, and others.
2. The sensors are associated with a nearby control unit like transfer module and that empowers to control of the homestead climate just as SMS notice permitted to the client if in the event that there is web network issue for the client, he can follow by SMS notice.
3. Chicken subtleties are put away by the timetable and this way we can screen the chicken's wellbeing.
4. The fundamental regulator gets all the data, measures it, and reacts as per predefined calculations.

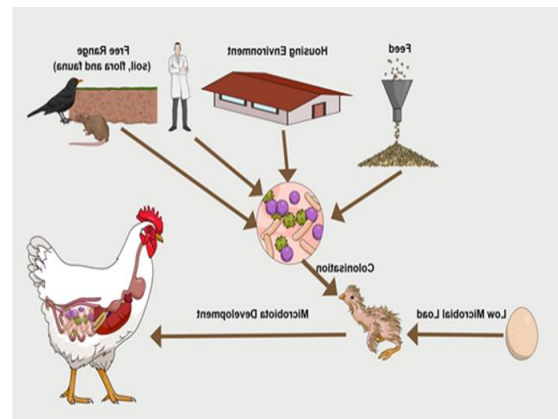


Fig.3 MICROBIOTIC DEVELOPMENT

V. HARDWARE COMPONENTS

A. BME280 SENSOR:



Fig.4 Temperature Sensor

The BME280 sensor is a humidity sensor especially developed for mobile application and wearables. The humidity sensor offers fast response time and the support requirement for all the emergency application such as context awareness, and higher amount of accuracy over a wide temperature range.

The BME280 sensor module reads barometric Pressure, Humidity, and Temperature reading, and can also be used for estimating ambient temperature.

B. GAS SENSOR:



Fig.5 MQ-5 Gas Sensor

The concentration of gas can determine by using measuring the current discharge in the device. The MQ5 gas sensor detects the presence of different gases such as hydrogen, carbon monoxide, methane, LPG and, all-natural gases underground. It can distinguish a wide range of gases in the focus range 200 to 10000ppm. And the measurement can be taken as soon as possible, due to its high sensitivity and fast response time.

C. ARDUINO:

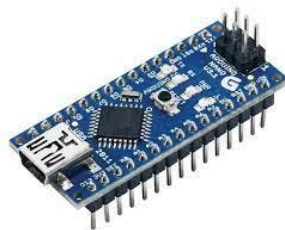


Fig.6 Nano Arduino

Arduino is an open-source prototyping stage dependent on simple to-utilize equipment and programming. In this work UNO variation of Arduino is utilized. Arduino UNO is a microcontroller based developmental prototyping board, uses an ATMEGA328P controller chips having operating voltage of 5V, and has a clock speed of 10 MHz. Arduino Uno can be customized with Arduino IDE, as ATmega328 accompanies pre-ignited with a boot loader, which wipes out the need of utilizing an outer equipment developer. Here each modified is known as sketch.

VI. WORKING MECHANISM

- The food and water are monitored continuously using sensors
- Surrounding Environmental are checked using (Gas Sensor, Temperature Sensor).

- Surrounding Environmental and Humidity level can be viewed in pc itself.
- The system is designed mainly for user control.
- The cloud data is present to store the data for future use.
- The power supply is continuously provided for the working of sensors.
- For each sensor the representative sensor are done their work.

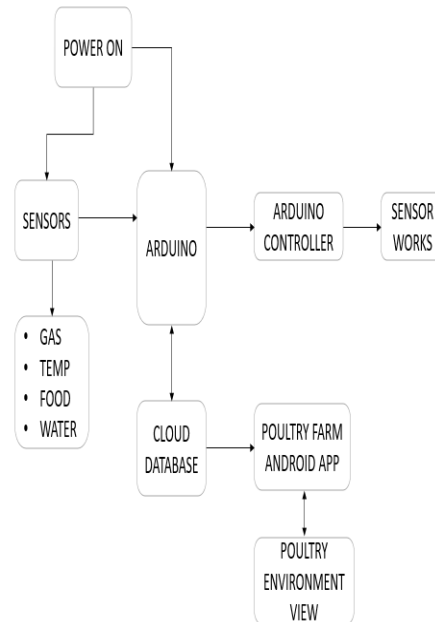


Fig.7 Flow of working

VII. CONCLUSION

This smart system can effectively manage the farm from any location and reduce waste of time and personnel. This will improve the productivity and quality of chickens in poultry farming. In the long run, advanced IOT primarily based technologies must be implemented to be used for observation and dominant health-related parameters of chicken to improve the quality and productivity of chicken farming, which is able to result in profits for farmers and quality food for men. The proposed framework can reduce labor and feed the food to chickens, reduce undesirable gas, maintain temperature in the ranch, which is completely programmed. Hence, this system will reduce cost, time, manpower, and decrease environmental pollution.

VIII. FUTURE ENHANCEMENT

In the future, we can develop the kit with advanced sensors for total control of poultry farm from anywhere with a PC or mobile. By this, we can provide a healthy chicken.

to the world and the chicken are developed using bio metric method.

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