

IOT BASED SMALL AND TRENDY HENNERY FARM SYSTEM

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ABSTRACT

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.

Keywords: Arduino ,WiFi module, Dht11, Ldr, Relay, mq135&IOT.

I.INTRODUCTION

With the tremendous growth in population, the demand for high quality poultry products will continue to increase. In order to meet this demand and increase the yield, monitoring the environment of the farm to keep a check on the health of poultry birds is of paramount importance. The aim of this paper is to design an embedded system for a smart poultry farm with the implementation of IoT. By monitoring different environmental parameters of a poultry farm and taking suitable actions with the help of actuators, we are able to convert a ‘traditional poultry farm’ into a ‘smart poultry farm’. The main objective is to increase the production and make it more profitable for the farm owners by providing a clean and hygienic environment for the poultry-birds, ensuring better management of the farm through automation and sending real-time updates about the status of the farm to the operator.

II. LITERATURE SURVEY

Chakchai So-In, Sarayut Poolsanguan and Kanokmon Rujirakul have developed the global architecture of hybrid systems for mobile and wireless network management systems for

intelligent poultry sensors. One of the ideas is to distinguish the electronic and mechanical parts of the farm in terms of mobility and flexibility.

Drishti Kanjilal, Divyata Singh, Rakhi Reddy and Jimmy Mathew,” Smart Farm: Extending Automation To The Farm Level,” Proc IJSTR, Vol. 3, no. 7,pp. 2277-8616, July.2014.

H. Okada¹, H. Nogami¹, T. Kobayashi, T. Masuda and T. Itoh⁴ have been developed with a wireless sensor button with very low power to continuously monitor the activity of animal health care. The interrupted effect of measuring body temperature is sufficient for health care and effective to reduce energy consumption.

EXISTING METHOD

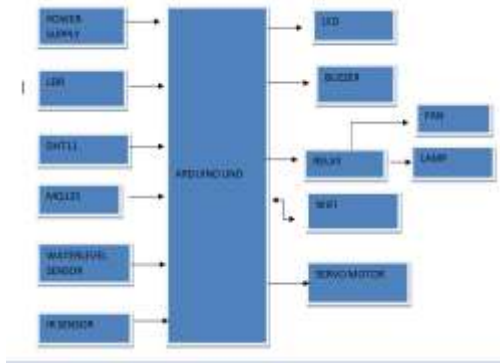
The basic principle behind this technique is that the automation of poultry farm is associated with the sensor networks and GSM module. Using the different sensors like temperature sensor, gas sensor it will detecting the problems in the farm and it was sending an SMS to the owner by saying that these problems has been occurred in the farm. When any smoke or gas detected in the farm, SMS is sent to the owner saying that gas has been detected. Similarly, when someone tries to enter the farm without the knowledge of the owner an SMS is sent to the farmer.

PROPOSED METHOD

From the last few decades, around the globe, there has been an increased level of awareness regarding the food safety and there has been a high demand for better quality food. This has forced many countries to adopt new protocols to change all manual farms into automated farm. In this way smart poultry farm has a great impact on increasing growth of chicken. This paper focused on modern technologies for a poultry farming to control all environmental parameters like temperature, humidity, ammonia gas which affects on the growth of the chickens. If the environmental condition is not up to the mark then there may be harmful for digestive, respiratory and behavioral change in the chickens. If chickens may get suitable atmosphere and proper water then it may grow rapidly and health of chickens will be good so the weight of the chickens will be increases.

In the growth of the chicken climate plays a vital role. Smart poultry farm is designed in such a way that the climate can be changed by ventilation, cooling fan and exhaust fan. The parameters temperature, humidity, ammonia gas and water level are monitored and controlled with the help of Arduino microcontroller. Monitored sensor values are uploaded on the webpage then the person in-charge can know the internal environment of poultry farm through mobile or personal computer using internet.

BLOCKDIAGRAM



HARDWARE MODULES USED

ARDUINO UNO



The **Arduino Uno R3** is a microcontroller board based on the ATmega328 . It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz crystal oscillator, a USB connection, a power jack, an ICSP header, and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started.

The Uno differs from all preceding boards in that it does not use the FTDI USB-to-serial driver chip. Instead, it features the Atmega16U2 (Atmega8U2 up to version R2) programmed as a USB-to-serial converter.

HUMIDITY SENSOR



DHT11 sensor consists of a capacitive humidity sensing element and a thermistor for sensing temperature. The humidity sensing capacitor has two electrodes with a moisture holding substrate as a dielectric between them. Change in the capacitance value occurs with the change in humidity levels. The IC measure, process this changed resistance values and change them into digital form.

WIFI MODULE (ESP8266)



The ESP8266 WiFi Module is a self contained SOC with integrated TCP/IP protocol stack that can give any microcontroller access to your WiFi network. The ESP8266 is capable of either hosting an application or offloading all Wi-Fi networking functions from another application processor. Each ESP8266 module comes pre-programmed with an AT command set firmware, meaning, you can simply hook this up to your Arduino device and get about as much WiFi-ability as a WiFi Shield offers (and that's just out of the box)! The ESP8266 module is an extremely cost effective board with a huge, and ever growing, community.

This module has a powerful enough on-board processing and storage capability that allows it to be integrated with the sensors and other application specific devices through its GPIOs with minimal development up-front and minimal loading during runtime. Its high degree of on-chip integration allows for minimal external circuitry, including the front-end module, is designed to occupy minimal PCB area. The ESP8266 supports APSD for VoIP applications and Bluetooth co-existence interfaces; it contains a self-calibrated RF allowing it to work under all operating conditions, and requires no external RF part.

MQ135 SENSOR



The **MQ-135 Gas sensor** can detect or measure gasses like ammonia, benzene and even methane. The module version of this sensor comes with a Digital Pin which makes this sensor to operate even without a microcontroller and that comes in handy when you are only trying to detect one particular gas. When it comes to measuring the gas in ppm the analog pin has to be used, the analog pin also TTL driven and works on 5V and hence can be used with most common microcontrollers.

WATER LEVEL SENSOR



Level sensors detect the level of substances that flow, including liquids, slurries, granular materials, and powders. Fluids and fluidized solids flow to become essentially level in their containers (or other physical boundaries) because of gravity whereas most bulk solids pile at an angle of repose to a peak. The substance to be measured can be inside a container or can be in its natural form (e.g., a river or a lake). The level measurement can be either continuous or point values. Continuous level sensors measure level within a specified range and determine the exact amount of substance in a certain place, while point-level sensors only indicate whether the substance is above or below the sensing point. Generally the latter detect levels that are excessively high or low.

LDR



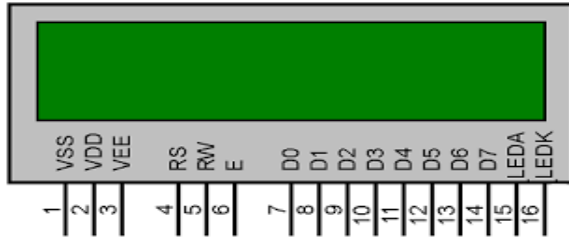
Ldr sensor can be abbreviated as Light Dependent Resistor sensor. Each node consists of its own LDR sensor. A light dependent device works on the principle of photoconductivity (i.e.) the resistivity of the material depends on the amount of light incident on them. During day when the light falls on the LDR, the resistance value decreases and at dark the value of resistance increases called as dark resistance. The resistance begins to drop drastically if the device is allowed to absorb light. When a constant voltage is applied to LDR or when the intensity of light increases falling on LDR, the current tends to get increased.

RELAY



Relays are used in a wide variety of applications. The advantage of relays is that it takes a relatively small amount of power to operate. Relays are simple switches which are operated both electrically and mechanically. Relays consist of an electromagnet. It also contains a set of contacts. The switching mechanism is based on electromagnet. Most of the devices have the application of relays.

LCD



It is called Liquid Crystal Display. We are going to use 16x2 characters LCD. This will be connected to microcontroller. The job of LCD will be to display all the system generated messages coming from the controller. LCD will provide interactive user interface. This unit requires +5VDC for its proper operation. This module is used for displaying the present status of the system.

BUZZER

A **buzzer** is a small yet efficient component to add sound features to our project/system. It is very small and compact 2-pin structure hence can be easily used on breadboard, Perf Board and even on PCBs which makes this a widely used component in most electronic applications.

RESULT

In this paper, we have proposed a methodology to Alert, Control temperature, humidity, ammonia gas and water level in a poultry farm. This work has been implemented and is done with the help of Atmega 328p micro controller and wifi module. It is used for organizing the data using a Google spreadsheet. This method can be further applied in applications involving remote monitoring of various physical parameters. All the sensor values are uploaded in web page. The person in-charge of poultry can see these details through mobile phone or laptop.

CONCLUSION

IOT is an innovative technology for poultry farming which can change a traditional farm into a modern automated poultry farm. Various environmental parameters have been continuously monitored to improve health and growth of the chicken. Water control mechanism helps to provide time to time water supply to the chickens as well as help to avoid the wastage of water. Application of inter of things helps the farmer to monitor the internal environment of poultry farm. Hence owner can be able to get all details of the poultry at anytime and anywhere.

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