



AUTOMATIC POULTRY FARMING SYSTEM USING IOT

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Abstract: The chicken poultry is a crucial component of our nation's sustainable food supply. The creation of an automated system for managing poultry can be highly beneficial for the expansion of the poultry sector. In the current setup, the hens require a human presence to manually provide them with food and water to keep the farm running. The proposed method can take the position of the employee in charge of caring for the farm and feeding the chickens. Consequently, the sector's labour issues were resolved, and the chicken industry introduced an automatic procedure. The poultry farm and agricultural sectors can use the proposed system. The goal of this project is to create a working prototype that can automatically water and feed chickens while also keeping the farm clean.

The customer can lead the poultry more speedier and more effectual. It is composed of automated devices like, Breadboards, timer Modules, Arduino, sun gear mechanism and load cells to deliver food to the poultry. The automatic Poultry management system is more effectual than physical process of poultry feeding. Thus, reduce the feeding time and maintain the poultry and makes the poultry production better.

Keywords - Sun gear, Poultry, Automation, Water feeder, Arduino, timer module, and load cell.

I. INTRODUCTION

Raising of domesticated birds like ducks, chickens turkeys, and geese for meat or eggs for food is termed as poultry farming. The construction of chicken feeding machine, water feeder, and maintaining hygiene is very useful for the growth of the poultry industry. These manual processes are done in normal poultry farms. Smart poultry farms are introduced to replace these manual activities and making the work in poultry easier. Smart system are introduced for the construction of a smart poultry farm. Billions of chickens are uplifted yearly for food, that is meat and eggs. Industrial hens typically begin birth eggs at 16-20 weeks. These chickens are raised for the food purpose. Feeding of food and water and maintaining hygiene of the farm, all are done manually. Using this model of prototype human work will be less and smart work will be carried out.

In India one of the most important growing economic agricultural sector is poultry. Currently, because of normalized farming management and good manufacturing practices, production of chickens are rapidly increasing. In this modern world, automation plays a central role and concept like Internet of Things (IoT) is monitored and manual jobs like cleanliness, water supply system, and food feeding are managed.

II. METHODOLOGY

Poultry has been a fundamental component of farming system in India. It is necessary to build a smart poultry system in this modern world.

The project focuses on the automation of poultry farming system using IoT techniques to perform various things. The automatic smart poultry system consists of four sections namely the Floor cleaning section Waste collection section, Food feeding section, and Water feeding section. Through this project work, an approach is being worked out to model a prototype.

2.1 Floor Cleaning and Waste Collection section:

In addition to being essential for environmental management, litter control is also essential for the health, performance, and final carcass quality of chickens. The chicken will get sores on its knee bones if the litter is excessively hard. The chicken will suffer foot lesions if the litter is allowed to become damp.

To overcome this, we developed a system that consists of fine brushes that move from one end on a timely basis. In this way, any litter (like fecal matters of chicken, rice hills, shredded paper, sawdust, etc) in the way of the brush is pushed towards the waste collection system. poultry system to another end of the system in a timely basis. In this way, any litter (like fecal matters of chicken, rice hills, shredded paper, sawdust, etc) in the way of the brush is pushed towards the waste collection system.

When time is set and the hat goes off, the “Arduino Uno” will send a signal to motor, and the motor in turn will move fine brushes along the length of the poultry system. By this all-litter present is collected inside a waste collecting system.

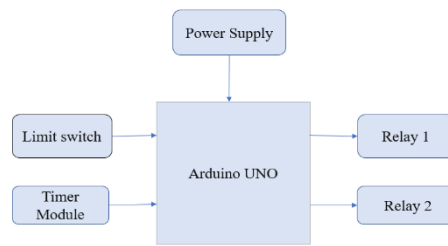


Fig 2.1: Block diagram of Floor cleaning and Waste collection section

Organic material included in poultry manure and litter can be processed into organic fertilizers.

Limit Switch: A limit switch is a switch that is activated by the movement of an object or by a machine element. Here we are using 2 limit switches for cleaning section.

2.2. Food feeding section:

People were used to physically filling containers with grains and other items to feed chickens before the invention of automatic feeder technology. The primary issue with this approach is the breeders' constant desire to offer food and their constant awareness of the food still there in the cages. This is a lot of wastage of food in this method. To overcome this, we are designing a system that senses the weight of the feeder using a load cell. The A load cell is a gadget that transforms a force into a "electrical signal" that electrical signal is sent to “Arduino Uno” & if the weight of food is above the maximum level, then the flow of food from the hopper to the feeder is stopped. If the weight of food is below minimum level then the flow of food is continued to feeder by a hopper. This opening & closing of hopper value is by the action of the DC motor connected to Arduino Uno through the “motor shield”.

Load Cell: monitors mechanical force, mostly the weight of things. Here it measures the weight of the food tray and send signal to Arduino. Arduino send the signal to servo motor and it actuates the servo motor which is fitted at the tip of food hopper.

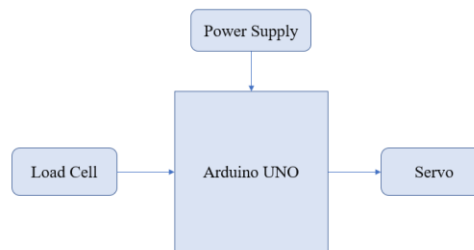


Fig. 2.2: Block diagram of Food feeding section

2.3. Water feeder section:

Feeding in poultry farming could be a subject of nice interest for poultry producers. Feeding & water are the two most expensive components in any form & therefore an efficient supply must be guaranteed.

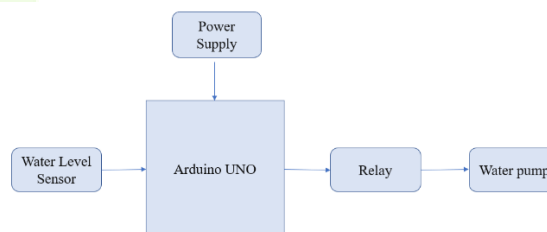


Fig. 2.3: Block diagram of Water feeding section

III. LITERATURE REVIEW

[1] This focuses on gathering, storing, and managing the information of the chicken farm in order to deliver meals that are both high quality and plentiful. This system was created to address a number of issues in poultry farms, including the necessity for numerous human workers to manage the farm, high maintenance costs, and erroneous data collected at one time. The suggested methodology significantly aids in completing this assignment within the allotted time. A technology-based approach is suggested for the management of chicken framing that is low cost, asset conserving, quality-oriented, and productive.

[2] This study demonstrates the use of sensors in the regulation of temperature, water level, smoke, gas, and food distribution. The Raspberry Pi, which can operate all of these sensors and track all data, is connected to all of them. A webpage is maintained with a full record of the poultry farm and the status of the environmental conditions, and the data is transmitted via GPRS.

[3] The automation of poultry farms utilising wireless sensor networks and mobile communication systems is the main topic of the paper. This paper also focuses on autonomously monitored and managed environmental elements like temperature, humidity, and ammonia gas.

[4] People don't have as much time to handle tasks, thus automation is a quick technique to handle any equipment or gadget that will perform as we want. is a project that attempts to create and develop home automation using an Arduino and a Bluetooth

module. With an Android app, the home automation system offers a user-friendly and dependable technology. A home automation system employing an Arduino Uno and Bluetooth module may manage household equipment including fans, bulbs, air conditioners, and automated door locks. The article primarily focuses on the monitoring and management of smart homes by Android phones and offers a security-based smart home, when people are not at home. The goal of this article is to control home appliances in smart homes with user-friendly, affordable, and straightforward installation design.

[5] The paper focuses on the automation of chicken farms utilising Internet of Things technologies to carry out numerous management-related tasks. The management of manual tasks such as food feeding, water supply systems, and cleaning is done while also keeping an eye on environmental conditions that have an impact on the health of chickens, such as temperature, humidity, light, and ammonia gas. Maintaining these conditions will boost chicken production and quality.

IV. RESULT

4.1 Water feeding section.



Fig. 4.1: Hardware setup of Water feeding section

The Fig. 4.1 shows the Hardware setup of Water feeding section

4.2 Food feeding section.

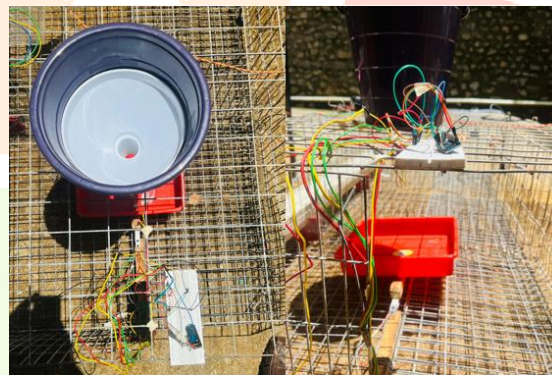


Fig. 4.1: Hardware setup of Food feeding section

The Fig. 4.2 shows the Hardware setup of Water feeding section

4.3 Cleaning section



Table 4.3: Hardware setup of Cleaning section

The Fig. 4.3 shows the Hardware setup of cleaning section

V. CONCLUSION

This method transforms conventional farms into intelligent farms. It increases production efficiency and reduces labor and maintenance costs. The smart monitoring of different parameter consists of food feeding, water feeding, waste cleaning and collection. Production and health of the product increases. All above parameters are automatically controlled using IoT. In the future, we can add a fire alarm system, build an automated fire extinguisher system, and update the website with additional information about the poultry farm, such as reminders for bird vaccinations, worker information, etc. The same technique can be used for both food preservation and poly houses.

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