



IOT BASED AUTOMATED POULTRY FARM

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Abstract: Most of the chicken barns in India are overseen and physically inspected. The crucial factors that ought to have been evaluated and managed include temperature, air quality, wetness, lighting, oxygenating the barn, and the chickens' food intake. Clearly connected to the production of poultry are these variables. Chicken farms are currently where they die off more quickly. By monitoring and effectively maintaining the temperature, dampness, air quality, and food feeder with the help of Wireless Sensor Networks (WSN) technology and the Internet of Things, this project aims to raise healthy layer chickens, slow the rate at which they die off, and improve the coherence of the poultry products (IoT). IoT and WSN developments were used to create a model, and the aforementioned boundaries were tested against limit values. Additionally, the client receives programmed ready notices from this system via SMS. Additionally, a web interface is created to screen and display these boundaries.

Index Terms - .Introduction, hardware tools, Ease of use, proposed system, Results & Discussion, References.

I. INTRODUCTION

The poultry industry is experiencing rapid growth and is generating a significant amount of solid waste. there are several solutions for managing poultry waste, including selling waste products, using it as livestock feed, producing biogas, and using it as organic fertilizer on soil. however, poultry waste can cause significant environmental contamination by promoting the growth of flies and rodents and emitting unpleasant odors. efficient utilization of its waste or by-products can boost economic productivity while also mitigating its adverse effects. inadequate waste disposal practices and reckless handling of waste products from chicken slaughterhouses can lead to disease problems, resulting in direct losses such as mortality and decreased output. therefore, early waste disposal using a well-organized system is a crucial tool for managing poultry waste to promote healthy and thriving poultry farming operations.

II. HARDWARE TOOLS

The tools we used while making this project are: 1.Arduino UNO, 2. DC motor, 3. IR sensor, 4. Gas sensor, 5. Temperature/Humidity sensor, 6. WI-FI module, 7. GSM module, 8. L239D, 9. Conveyor belt, 10. Exhaust fan. The Arduino UNO is used as the heart of the project, which is used for the connections of the other equipment and to intake code. The DC motor is used for the running of the conveyer belt which is used for the intake of the chicken feed and to dump the waste produced by the chicken. IR sensor is used for door handling system and egg and wastage detection, Gas sensor is used for the detection of nitrogen, nitrogen oxide and so on to six different gases. The dc motor and exhaust fan runs on 12 volts, whereas Arduino runs on 5 volts to overcome this problem I have used L239 driver. The Global System for Mobile communications is a cellular network that allows mobile phones to connect to nearby cells. The L293 and L293D are electronic components used as high-current half-H drivers for inductive loads. Esp8266 Technology is a Chinese firm that created the ESP8266 with its Internet of Things applications in mind.

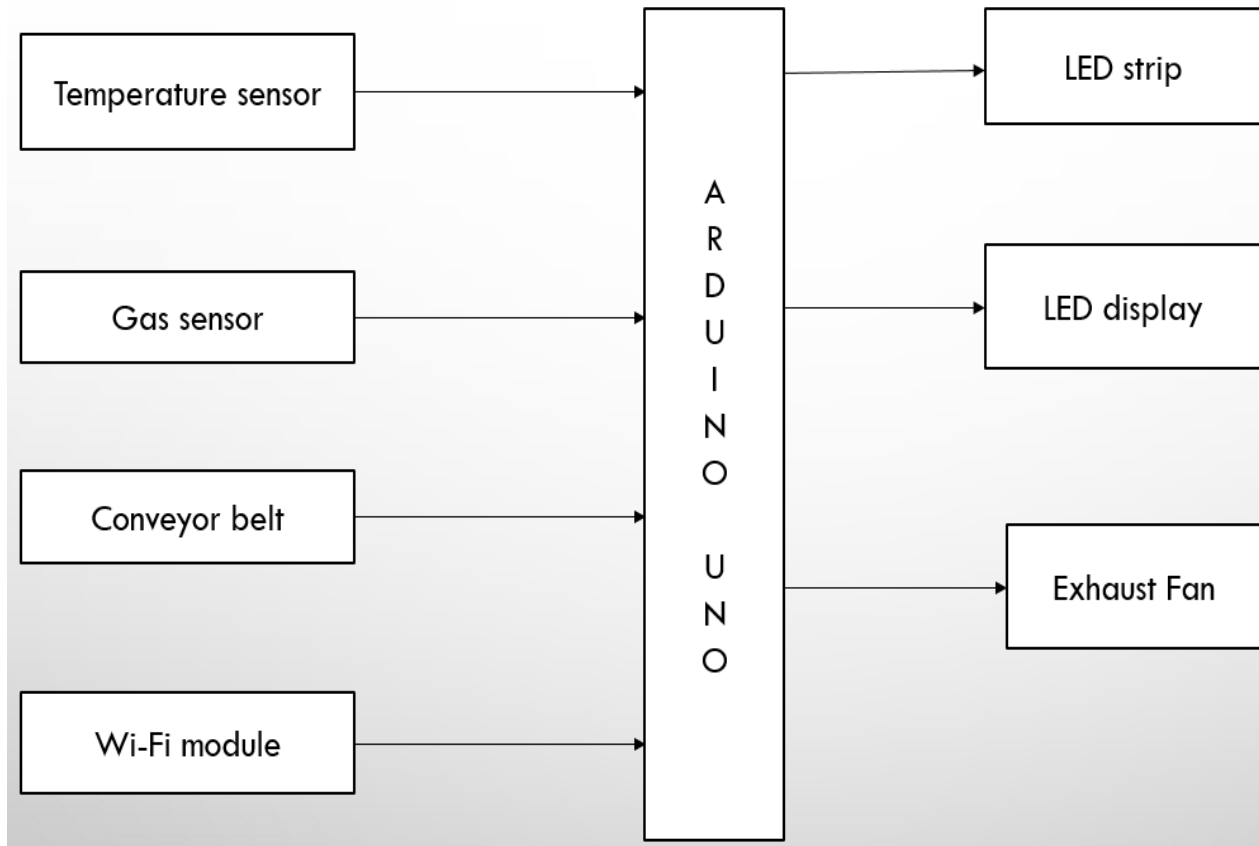
III. EASE OF USE

In this project, we propose a new method by using conveyor belt to make a clean poultry farm, easy to collect chicken pit as well as eggs, by using two conveyor belts. The proper management of poultry waste is essential for reducing the negative impact it can have on the environment, as well as for ensuring the health and productivity of the poultry industry. There are various waste management options available, and each one has its advantages and disadvantages. One option is to use poultry waste as an organic fertilizer by applying it to land. This can provide nutrients for crops and improve soil health, but it can also lead to excess nutrient runoff and contamination of water sources if not managed properly. Another option is to use poultry waste as feed for livestock, which can provide a source of protein and other nutrients. However, this option may not be suitable for all types of poultry waste, and there may be concerns about the spread of diseases.

Biogas production is another option, which can generate energy from poultry waste through anaerobic digestion. This can provide a renewable energy source, but it requires specialized equipment and may not be economically feasible for smaller poultry operations. There are also various commercial products that can be produced from poultry waste, such as animal feed supplements, fertilizers, and even cosmetics. However, these products often require specialized processing and may not be suitable for all types of waste. Regardless of the waste management option chosen, it is important to dispose of poultry waste in a timely and organized manner to prevent the spread of diseases and minimize negative impacts on the environment. Proper storage and disposal techniques, such as composting, can help reduce offensive odors and prevent the breeding of flies and rodents.

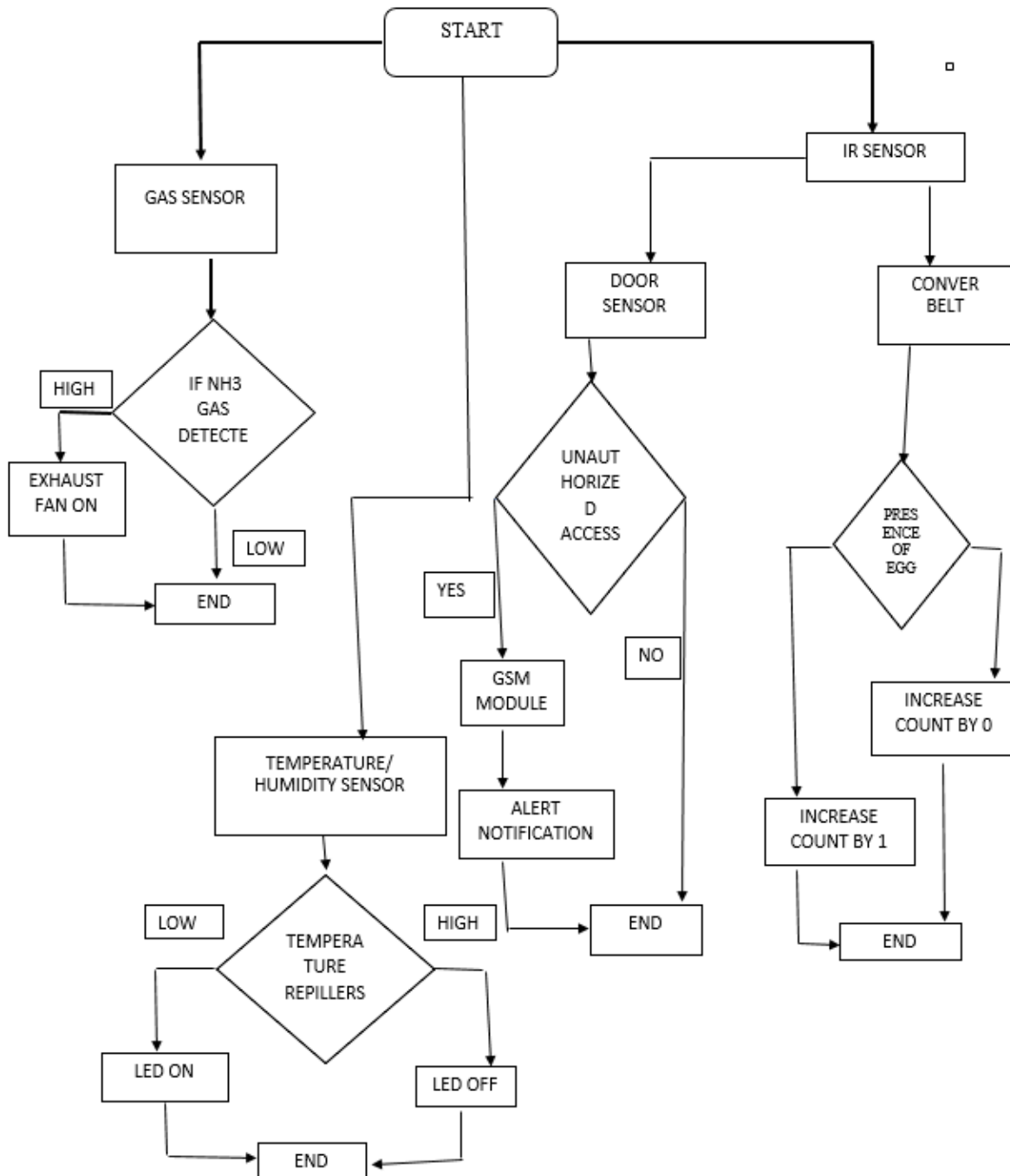
IV. PROPOSED SYSTEM

The use of gas brooders in these barns can be particularly harmful to young chickens. Moisture levels also need to be carefully managed to ensure proper development. Adequate ventilation is necessary to maintain air quality and prevent excessive ammonia gas build up, but currently, there is no effective mechanism to monitor this gas. When excessive levels of ammonia gas are detected, exhaust fans are used to expel the gas outside. Food is transported through a semi-automatic belting system, but human interaction is still required to ensure proper distribution. Overall, traditional poultry farming methods in India require significant manual labour and attention to detail, which can be challenging to scale up for increased profitability.



One of Arduino's most significant advantages is its low cost compared to other microcontroller boards. Even the most basic Arduino module can be handcrafted, making it an affordable option. Moreover, Arduino software is bridge and can be used on a variety of operating systems, including Window, Mac OS X, and Linux, providing it an advantage over other microcontroller frameworks, which are exclusively available for Windows. The Arduino programming environment is simple and easy to learn, making it suitable for beginners while also allowing advanced users to experiment. Moreover, since Processing is a popular programming environment for educators, students who learn to code in that environment will be familiar with Arduino's possibilities. The programming language used by Arduino is open source and extensible, allowing experienced engineers to build their implementations of the language using open-source tools. C++ libraries provide access to the language, and developers can transition converting Uno to the Aortic Valve Replacement C programming language. As a result, AVR-C code can be directly included in Arduino programs.

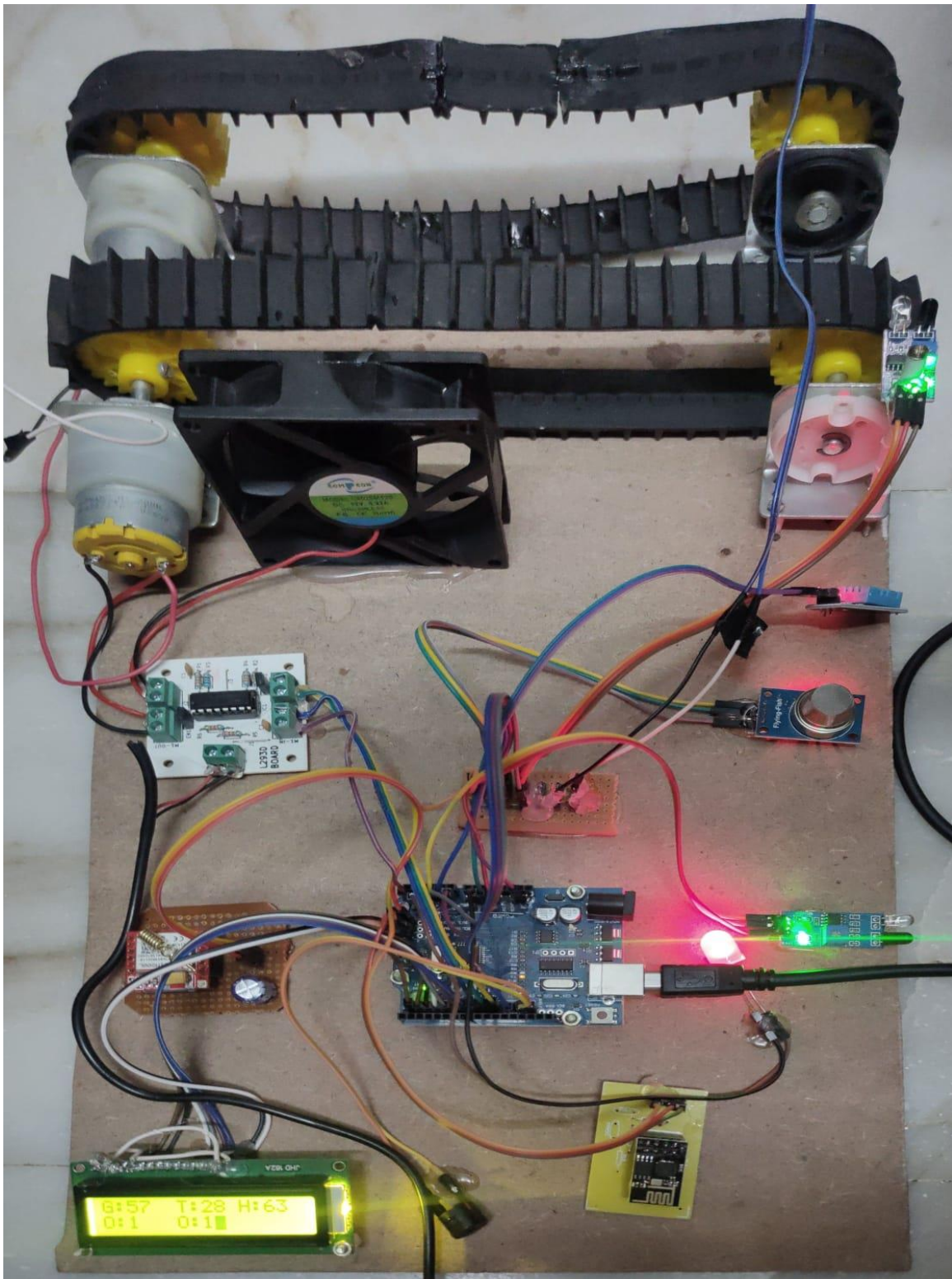
Program flow chart:



V. RESULTS AND DISCUSSION

One of the main features of this chicken coop management system is the LED, which can be adjusted based on the temperature sensor to regulate the temperature inside the coop. The system also uses a servo motor to control the feed dispenser, ensuring that the chickens receive the correct amount of feed. A gas sensor is also included, which can detect hazardous gases like ammonia and activate the exhaust fan to eliminate them. To make it easy to monitor the coop's environment, the system sends data on temperature, humidity, air quality, and egg production to the cloud, where it can be accessed remotely in real-time. The system also uses a GSM module to send weekly reminders to provide essential nutrients for the chickens' growth and high-quality egg production. The GSM module can also send SMS alerts if the cage is opened, ensuring the safety and security of the chickens. Overall, this system provides an automated and intelligent solution for managing chicken coops, helping farmers increase efficiency, productivity, and profitability while maintaining the health and well-being of their chickens.

BEFORE



DETECTION



AFTER DETECTION

VI. REFERENCES

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