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POULTRY MONITORING AND AUTOMATION SYSTEM USING IoT

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Abstract—, The advent of Internet of Things (IoT) technology has revolutionized the poultry farming industry by enhancing productivity, optimizing resources, improving efficiency, and reducing production costs. This article explores the potential of IOT sensors in the field of poultry farming and provides insights into the future of automation. Various parameters such as humidity, temperature, gas levels, dust, and pesticide/insecticide quantities are monitored using a network of sensors, enabling comprehensive data collection and facilitating early fault detection and diagnosis. A Decision Support System (DSS) serves as the central operating system that governs and coordinates all activities within the poultry farm. This intelligent system utilizes the data collected by the sensors to provide real-time analysis, predictions, and recommendations, empowering farmers to make informed decisions for optimal farm management. By leveraging IOT technology, the DSS enables precise control over environmental conditions, feed distribution, and disease prevention, ensuring healthier and more productive poultry. This article also addresses the specific challenges faced by poultry rose farming and highlights the latest IoT-based solutions that are both intelligent and sustainable. The proposed model presented in this article is tailored to adapt to the changing environmental conditions, effectively redefining the concept of sustainability in poultry farming. By incorporating IOT technology, farmers can achieve significant improvements in resource utilization, minimize waste, and enhance the overall sustainability of their operations. The integration of IOT sensors and the DSS offers numerous benefits, including increased operational efficiency, reduced costs, improved animal welfare, and enhanced product quality. The automated monitoring and control provided by IoT systems streamline farm management processes and enable proactive decision- losses.

Keywords: IoT, DSS, Poultry farming

INTRODUTION

The Poultry Monitoring and Automation System is a comprehensive technological solution designed for the poultry industry. It integrates various sensors and devices to monitor and manage key aspects of poultry farming. This system tracks critical parameters such as temperature, humidity, ventilation, water supply, and feed levels in real-time. Through automated controls and alerts, it optimizes the environment for poultry health and growth, ultimately enhancing productivity and profitability. Additionally, it offers data analytics

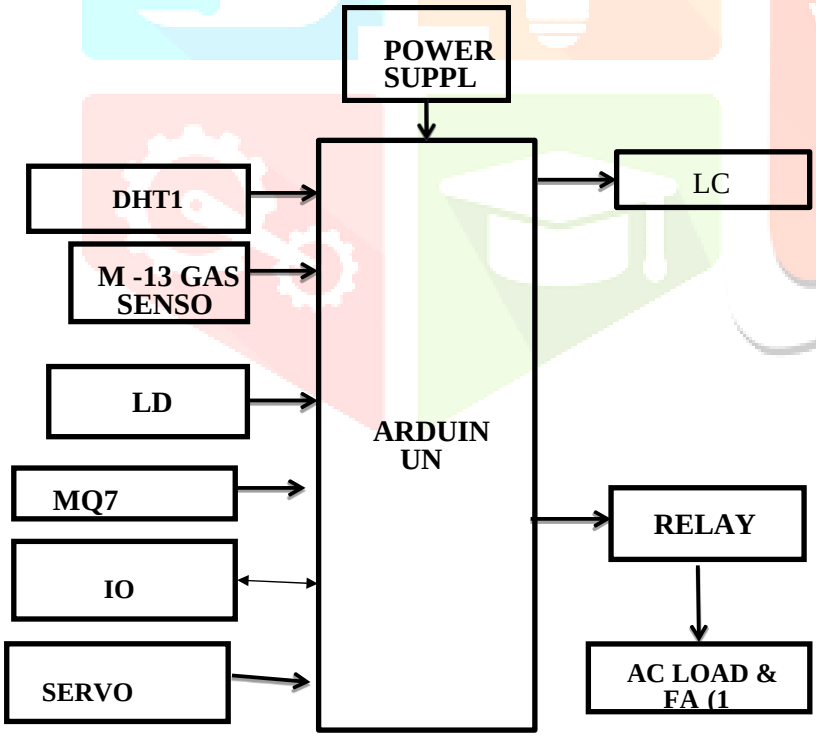
and reporting capabilities, enabling farmers to make informed decisions based on historical trends and current conditions. By reducing manual intervention and providing actionable insights, the Poultry

Monitoring and Automation System represents a significant advancement in modern poultry farming practices. The proposed Poultry Monitoring and Automation System represents a cutting-edge solution for the poultry industry. By integrating advanced sensors and automation technology, it revolutionizes poultry farming practices. Real-time monitoring of crucial parameters like temperature, humidity, and feed levels ensures optimal conditions for bird health and growth. Data analytics provide valuable insights for informed decision-making. Additionally, the system offers timely alerts in case of emergencies, reducing potential in terms of increased productivity and resource efficiency make it a valuable investment for modern poultry farming operations.

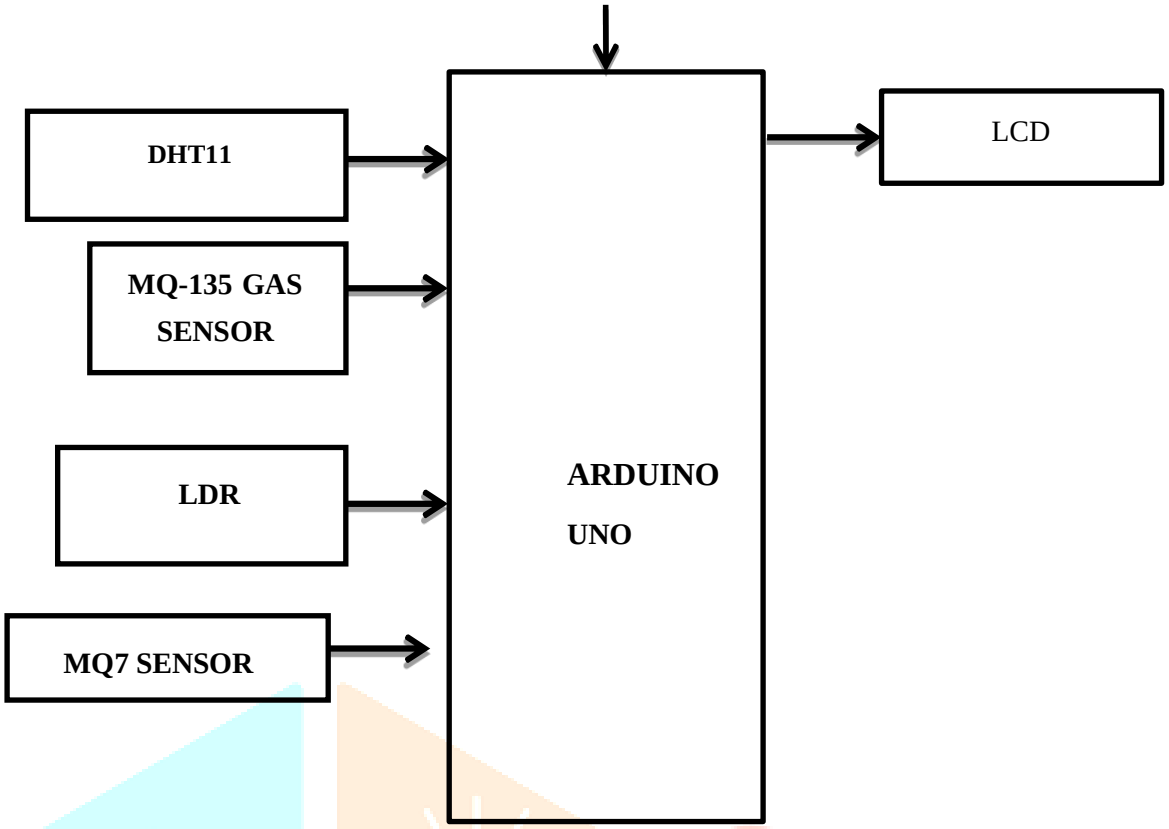
PROPOSED

Comprehensive Sensor Integration: Utilizes advanced sensors for real-time monitoring of temperature, humidity, ventilation, water, and feed levels. Implements intelligent automation to regulate environmental conditions, optimizing poultry health and growth. Offers robust analytics for informed decision-making, leveraging historical data and current conditions.

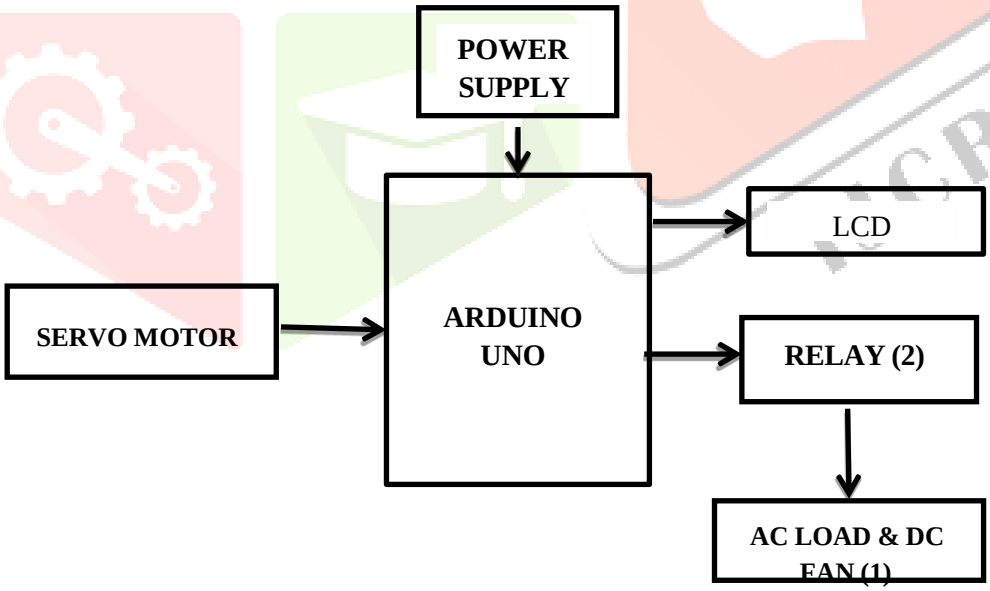
BLOCK DIAGRAM



COLLECT THE DATA FROM POULTRY FARMING

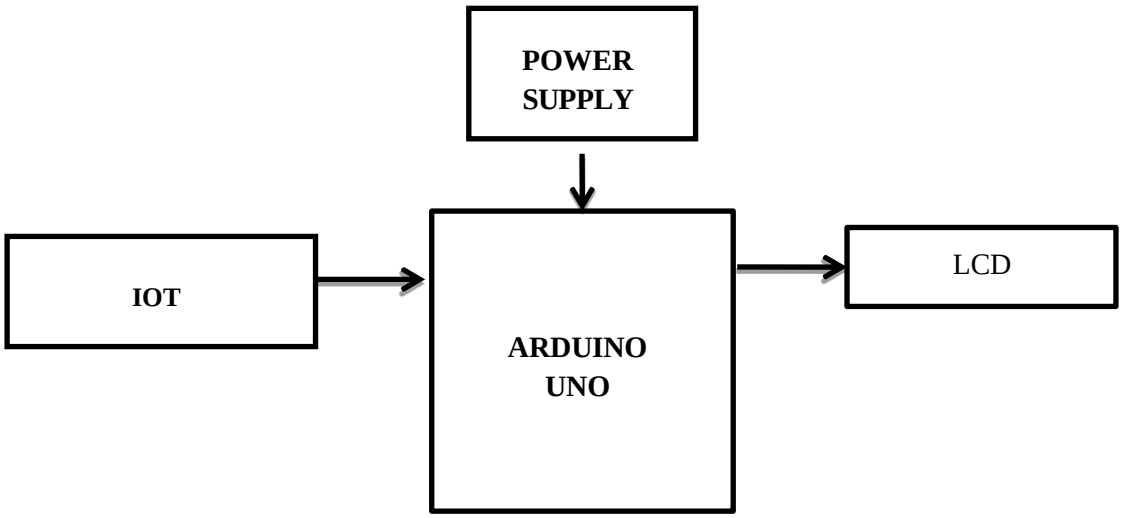


MAINTAIN THE POULTRY



Based on the temperature, humidity and air quality data's dedicating any abnormal that time RELATY condition ON/OFF(acload and dc fan) used to maintain the poultry

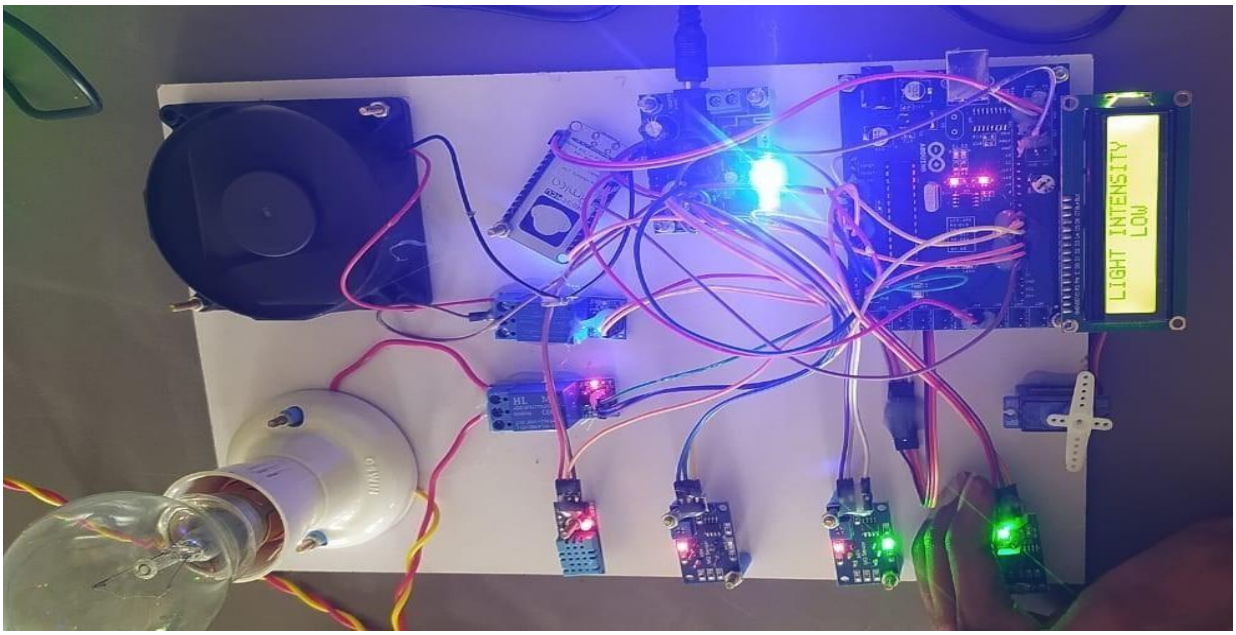
MONITORING THROUGH THE WEBPAGE

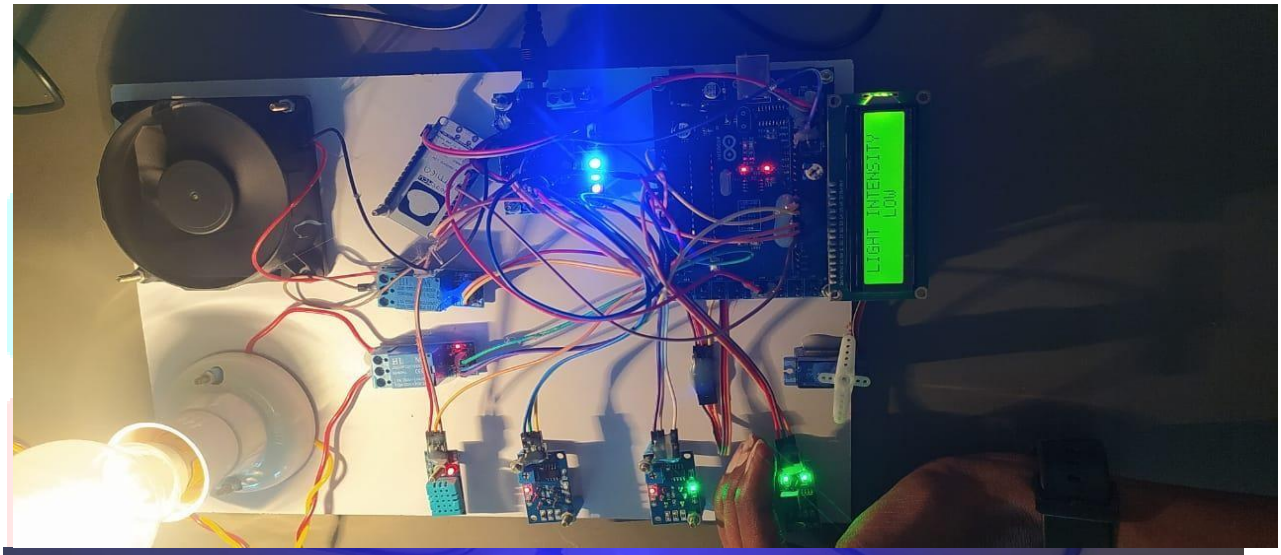


Monitor the POULTRY FARMING area through our remote location anywhere in the world. And we can get the all the sensor information from the webpage. Based on the sensor values we will maintain the POULTRY FARMING.

BLOCK DIAGRAM WORKING

sensor to monitor the weather conditions. These sensors provide real-time data on temperature and humidity levels. Additionally, a dust sensor is employed to monitor the dust level. An air quality sensor measures the gas level. The microcontroller continuously reads the sensor data. Then the temperature and humidity levels, as well as the light intensity, reach a certain threshold (as defined by the high level of the DHT11 and LRD sensor values), the microcontroller activates a relay. The project utilizes sensors such as a temperature sensor and humidity relay is used to control an AC load, and a DC fan. The ARDUINO UNO also interfaces with an LCD display to provide real-time updates on the sensor values. Additionally, an IOT module, specifically the ESP8266, is used to connect the microcontroller to the internet and update the sensor information to the cloud. The data from the sensors is sent to the cloud, where it can be accessed and monitored through a webpage. Then the servo motor will be automatically work at food needed time using internal cloak. This allows users to remotely view the environmental conditions of the Poultry field area.


LIGHT INTENSITY
LOW


LIGHT INTENSITY
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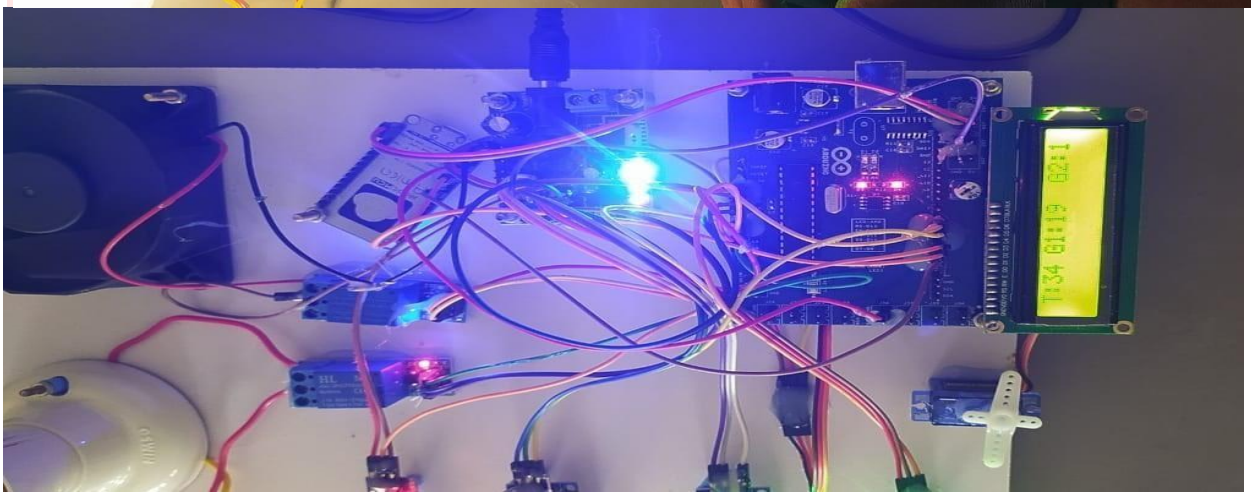

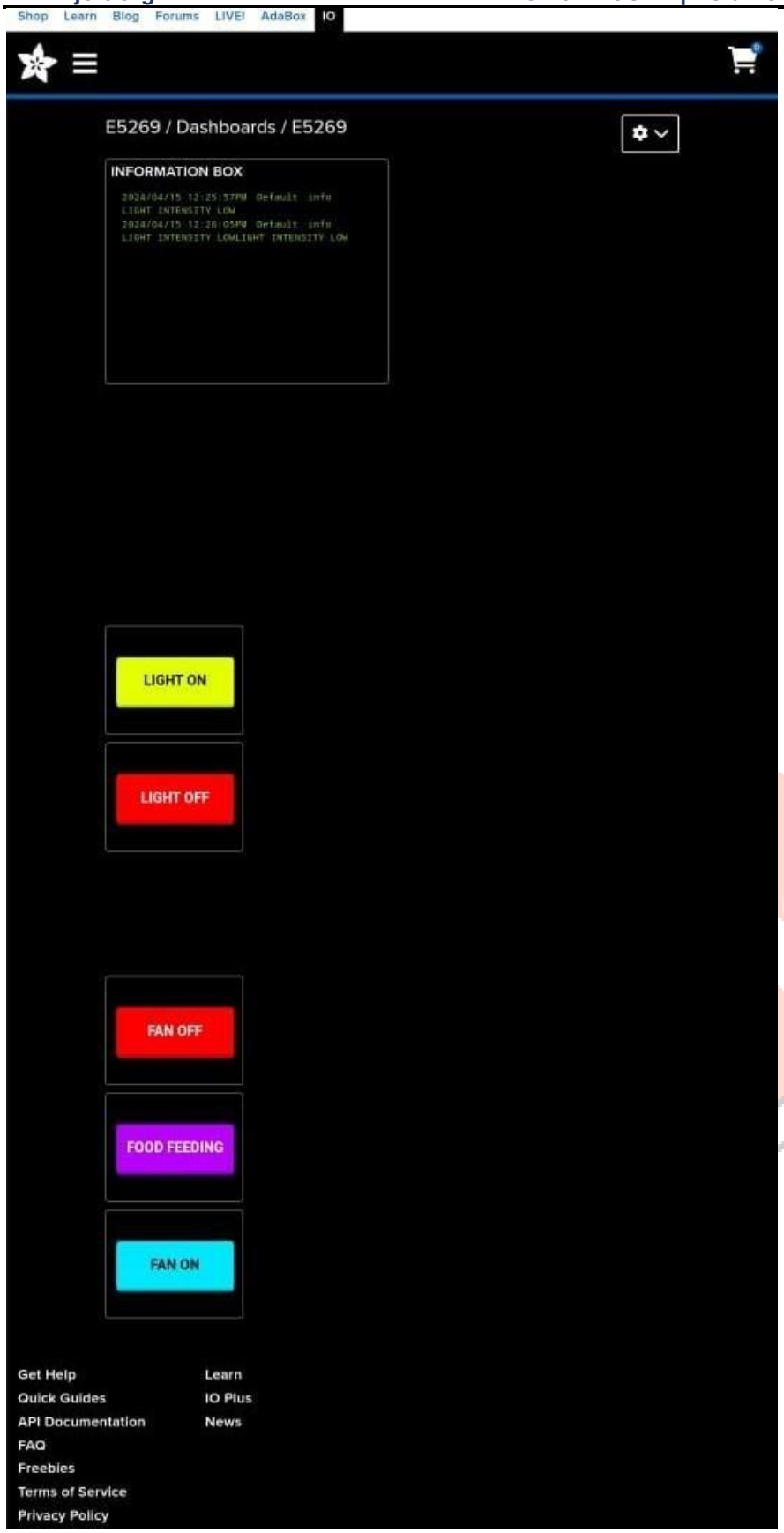
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FOOD FEEDING
FAN ON
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Quick Guides
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APPLICATIONS

1. Agriculture

   Measuring soil moisture is important for agricultural applications to help farmers manage their irrigation systems more efficiently. Knowing the exact soil moisture conditions on their fields, not only are farmers able to generally use less water to grow a crop, they are also able to increase yields and the quality of the crop by improved management of soil moisture during critical plant growth stages.

2. Landscape irrigation

   In urban and suburban areas, landscapes and residential lawns are using soil moisture sensors to interface with an irrigation controller. Connecting a soil moisture sensor to a simple irrigation clock will convert it into a "smart" irrigation controller that prevents irrigation cycles when the soil is already wet, e.g. following a recent rainfall event.

   Golf courses are using soil moisture sensors to increase the efficiency of their irrigation systems to prevent over-watering and leaching of fertilizers and other chemicals into the ground.

3. Research

   Soil moisture sensors are used in numerous research applications, e.g. in agricultural science and horticulture including irrigation planning, climate research, or environmental science including solute transport studies and as auxiliary sensors for soil respiration measurements.

4. Simple sensors for gardeners

   Relatively cheap and simple devices that do not require a power source are available for checking whether plants have sufficient moisture to thrive. After inserting a probe into the soil for approximately 60 seconds, a meter indicates if the soil is too dry, wet or moist for plants

FUTURE ENHANCEMENT

Future enhancements for the Poultry Monitoring and Automation System could include AI-driven predictive analytics for proactive health management, integration with IoT devices for even greater automation and data gathering capabilities, and remote accessibility through mobile applications. Implementing blockchain technology for secure data storage and traceability may also become a key feature, ensuring transparency in the supply chain. Additionally, the system could evolve to incorporate machine learning algorithms for more precise and adaptive control of environmental parameters. These advancements would further solidify the system's position at the forefront of modern poultry farming technology, fostering sustainable and efficient practices.

CONCLUSION

In conclusion, the Poultry Monitoring and Automation System represents a significant leap forward in poultry farming technology. Its integration of advanced sensors, automation, and data analytics ensures optimal conditions for bird health and productivity. The system's capacity for real-time monitoring and timely alerts mitigates potential risks and losses. While initial setup costs may be a consideration, the long-

term benefits in increased efficiency and profitability make it a valuable investment for the poultry industry. Furthermore, future enhancements like AI-driven analytics, IoT integration, and blockchain technology hold promise for even greater advancements. Overall, this system stands as a testament to the potential of technology to revolutionize and optimize traditional agricultural practices, ushering in a new era of sustainable and efficient poultry farming.

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