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Smart Poultry Management System with IoT and Sensors Network

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Abstract: *In poultry farms, maintaining a proper and stable environment is essential for the healthy growth and productivity of birds. However, continuously monitoring temperature, humidity, light, water availability, and waste conditions manually is time-consuming and often inefficient, especially in large or rural poultry setups. To overcome these challenges, we have developed a Smart Poultry Management System that uses IoT-based automation to monitor and control the poultry environment in real time.*
In this system, both the STM32 microcontroller and ESP32 module are used for efficient data processing and wireless communication. The STM32 handles core sensor data acquisition and actuator control, while the ESP32 manages IoT connectivity and data transmission to a cloud dashboard. Sensors such as the DHT11 for temperature and humidity, LDR for light intensity, moisture sensor for waste detection, and ultrasonic sensor for water-level monitoring are integrated into the system to ensure continuous tracking of environmental parameters. Based on these readings, actuators such as the fan, heater, LED lighting system, water pump, and automatic ventilation mechanism are controlled to maintain optimal conditions inside the shed. The system also supports remote monitoring through IoT, allowing farmers to view real-time farm conditions on a mobile or web dashboard. This automated setup reduces manual labour, enhances bird comfort, minimizes risks of disease, and increases overall farm efficiency.

Keywords: Wi-Fi, Real time monitoring, Software Dashboard

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