

DESIGNING AND DEVELOPING AN IOT-BASED AUTOMATIC GRAIN DRYING RACK CONTROLLED VIA TELEGRAM

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ABSTRACT

Traditional grain drying methods are highly vulnerable to sudden weather changes, often leading to a decline in both grain quality and yield. This study aims to design an Internet of Things (IoT)-based automatic grain drying system to address this challenge. The system integrates a rain sensor (for precipitation detection), an LDR (for measuring light intensity), and a DHT11 sensor (for temperature and humidity monitoring). An ESP32 microcontroller serves as the central control unit, processing sensor data to activate a servo motor that opens or closes the drying rack accordingly. Real-time status updates are sent to users via Telegram notifications. Testing results indicate that the prototype operates effectively, responding accurately and promptly to environmental changes and controlling the drying rack movement as intended. The Telegram integration successfully delivers timely updates. This innovation is expected to enhance drying efficiency, reduce weather-related losses, and improve both the quality and quantity of grain harvests.

Keywords: *Automatic Drying Rack, Rain Sensor, Servo Motor, ESP32, Telegram.*