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Experimental Study and Evaluation of Farm Environmental Monitoring System Based on the Internet of Things, Sudan

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Abstract : Smart environment sensors integrated with 'Internet of Things' (IoT) technology can provide a new concept in tracking, sensing, and monitoring objects in the environment. The aim of the study is to evaluate the farm environmental monitoring system based on (IoT) and to realize the automated management of agriculture and the implementation of precision production. Until now, irrigation monitoring operations in Sudan have been carried out using traditional methods, which is a very costly and unreliable mechanism. However, by utilizing soil moisture sensors, irrigation can be conducted only when needed without fear of plant water stress. The result showed that software application allows farmers to display current and historical data on soil moisture and nutrients in the form of line charts. Design measurements of the soil factors: moisture, electrical, humidity, conductivity, temperature, pH, phosphorus, and potassium; these factors, together with a timestamp, are sent to the data server using the Lora WAN interface. It is considered scientifically agreed upon in the modern era that artificial intelligence works to arrange the necessary procedures to take care of the terrain, predict the quality and quantity of production through deep analysis of the various operations in agricultural fields, and also support monitoring of weather conditions.

Keywords : smart environment, monitoring systems, IoT, LoRa Gateway, center pivot
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