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(57) Abstract :

Revolutionizing Smart Agriculture Management System Using AI-Powered Drones ABSTRACT In an embodiment, a smart agriculture management system is disclosed, that includes a drone equipped with a camera to capture aerial images of crop fields and a plurality of IoT-based soil sensors embedded in the soil to collect real-time data, including nitrogen, phosphorus, potassium levels, pH, moisture, temperature, and rainfall. The system includes a computing device communicatively coupled to both the drone and the soil sensors. The computing device executes a machine learning model, including a convolutional neural network, to analyze the aerial images and detect crop disease types and severity levels. Based on the detected disease and real-time soil data, the system generates a treatment plan recommending appropriate pesticides, fertilizers, or irrigation adjustments. The system enables early disease detection, precision treatment, and optimized resource usage, supporting sustainable and autonomous farm management. [To be published with FIG. 1]

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