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(57) Abstract :
ABSTRACT IOT-ENABLED PREDICTIVE FARMING SYSTEM WITH RESOURCE OPTIMIZATION The present disclosure provides an IoT-enabled predictive farming system (100) with resource optimization. The system (100) includes an IoT sensor network (102) for monitoring soil and environmental conditions, a data preprocessing and integration module (104) for cleaning and normalizing collected data, a machine learning model (106) utilizing Random Forest and neural network algorithms for crop recommendation, a user interface (108) for farmers to input location-specific details and receive personalized crop recommendations, and a feedback and continuous learning module (110) for updating the prediction model. The system (100) aggregates soil characteristics, temperature, humidity, rainfall, and past crop yield data to suggest the best crops for a specific location. The system (100) also incorporates hyper-local intelligence through satellite imaging and drone-based monitoring (120), and utilizes multiple connectivity modes (118) for data collection in remote farmland areas.

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