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AUTOMATEDAGRICULTURESUPPORTPLATFORM USING IMAGE PROCESSING AND WEATHER

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ABSTRACT:

Small-scale farmers, who are vital to rural economies, often struggle withchallenges such as crop diseases, pest infestations, poor soil health, and limited access to financial aid. These issues affect productivity and long-term sustainability. To tackle these problems, we propose an AI-powered agricultural bot that uses advanced technologies like deep learning, real-time object detection, and multilingual voice support to assist farmers. The system employs the InceptionV3 model to analyze crop images and detect diseases early, helping farmers take preventive measures. For pest detection, it uses the YOLO model, enabling fast and accurate identificationofpestsinreal-time,whichsupportstargetedpestcontrolandreducesexcessive pesticide use. The bot also analyzes data from soil and environmental sensors to provide personalized recommendations on soil health, irrigation schedules, and harvest timing. This helpsoptimizeresourceuse,reducewaste,andincreaseyield.Toimproveaccessibility,thebot supports voice-based interaction in both Tamil and English, making it usable for farmers regardless of language or technical skills. Future enhancements include integrating financial advisory features to connect farmers with microloans, subsidies, and government schemes. Overall, this system promotes precision farming and economic support, helping small-scale farmers improve their productivity, resilience, and long-term sustainability.