INTEGRATED AGRICULTURAL SUPPORT SYSTEM WITH MULTI-LINGUAL ASSISTANCE

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ABSTRACT:

Small-scale farmers often struggle with low productivity due to limited access to expert agricultural guidance, inefficient irrigation practices, and a lack of awareness of government schemes and financial aid. Existing solutions frequently rely on real-time sensors or high-cost infrastructure, making them in accessible to marginal farmers.This project introduces Chatbot, an AI powered multilingual virtual assistant that leverages historical agricultural datasets to offer intelligent recommendations in soil quality assessment, pest detection, crop selection, irrigation scheduling, and government scheme navigation. The system uses machine learning models such as XGBoost for soil fertility analysis, Convolutional Neural Networks (CNNs) for pest identification through image classification, and Long Short-Term Memory (LSTM) networks for yield rediction. A reinforcement learning module optimizes irrigation strategies based on historical weather and soil data. The platform includes a voice-note feature and NLP-powered multi lingual support (English,Tamil,andothers) using BERT to ensure accessibility for farmers with low digital literacy. Unlike sensor- dependent systems, it works entirely with pre-collected data, ensuring affordability and scalability in resource-limited settings.