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Intelligent Agriculture System using KNN Algorithm

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Abstract: *The agricultural sector faces the challenge of maximizing crop yields while maintaining sustainability and resource efficiency. Nostalgic or Romantic Views, oftenreliant on manual monitoring and subjective decision-making, can result in inefficiencies and lower productivity. To address these issues, an intelligent agriculture system utilizing the K-Nearest Neighbors (KNN) algorithm has been proposed. This paper presents an intelligent agriculture system that leverages the K- Nearest Neighbors (KNN) algorithm to enhance crop management and yield prediction. By analyzing various environmental factors such as soil moisture, temperature, and humidity, the system accurately classifies the optimal planting and harvesting times for different crops. Additionally, it provides real-time recommendations for irrigation and fertilization based on predictive analysis. The integration of KNN allows for adaptive learning from historical data, thereby improving decision-making processes for farmers. This approach aims to optimize resource utilization, increase productivity, and promote sustainable agricultural practices. The proposed intelligent agriculture system leverages the K- Nearest Neighbors (KNN) algorithm to enhance crop management and sustainability. By analyzing real-time environmental data and historical agricultural records, the system provides precise recommendations for optimal planting and harvesting times, efficient irrigation schedules, and tailored fertilization strategies. This data-driven approach aims to increase crop yields, optimize resource utilization, and reduce the environmental impact of farming practices. The system's continuous learning capability allows it to adapt to changing conditions, ensuring that farmers receive up-to-date and accurate guidance. Overall, the integration of KNN in agriculture represents a significant advancement towards sustainable and efficient farming.*

Keywords: Intelligent Agriculture, k-nearest neighbors, crop management, sustainable farming, irrigation optimization, fertilization strategies, environmental data analysis, machine learning in agriculture.