VARDHAMAN COLLEGE OF ENGINEERING, HYDERABAD

Autonomous institute affiliated to JNTUH

DEPARTMENT OF CSE(AI&ML)

Mini Project (A8041)

Review I

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Crop Recommendation and it's Optimal Pricing ShopBot

BATCH ID :22CSMPW-25

S. No	Roll. No	Student Name
1	22881A6673	B.PRANAV
2	22881A6690	K.SREEJA
3	22881A6695	K.VINAY REDDY
4	22881A66A1	M.TEJASWINI

Supervisor

A.SAI MADHAV RAJ

Assistant Proffesor

Department of CSE(AI&ML)

Outlines

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Abstract

- Agriculture in India: Agriculture is a major economic activity in India, with crops being yielded annually across different regions.
- Precision Agriculture: The proposal suggests moving towards precision agriculture to enhance crop yield, minimize costs, and automate the process.
- Data Mining for Crop Recommendation: Data mining techniques are employed for recommending crops based on climatic factors such as rainfall, temperature, and location.
- Fertilizers and Seeds: Fertilizers and seeds are essential for farming, and purchasing them in bulk with proper pricing is necessary for successful cultivation.
- E-Commerce for Farming Inputs: The process of purchasing farming commodities (fertilizers, seeds) on e-commerce platforms can be monotonous, often leading to missed opportunities or inefficiencies.
- ShopBot for Optimization: ShopBot technology aids online shopping by minimizing search costs and comparing products from various e-commerce websites.
- Optimization Aspect: The use of ShopBot in agriculture helps optimize both crop selection and the purchase of agricultural commodities at the best price and quantity

Introduction

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- Crop Recommendation and Its Optimal Pricing using ShopBot combines AI and web scraping to help farmers choose suitable crops and buy seeds at the best prices. It addresses climate variations and inconsistent online seed pricing by using machine learning for crop selection and a ShopBot for price comparison.

- The system analyzes rainfall, temperature, and soil data to recommend crops while web scraping extracts and standardizes seed prices across platforms. This automation improves yield, profitability, and efficiency, making agricultural decisions smarter and cost-effective.

- Fertilizers and seeds are essential inputs for farming, and purchasing them in bulk at optimal prices is crucial. However, selecting the best-priced commodities on e-commerce platforms can be challenging and time-consuming. To address this, ShopBot automates price comparison, minimizing search effort and optimizing both crop selection and purchasing for farmers.

Literature Review

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- **Crop Recommendation Systems:**
- Paper [5] developed a website to analyze climate parameters like rainfall, temperature, and soil quality for crop selection.
- Paper [6] introduced an ensemble-based crop recommendation system using Random Forest, Linear SVM, and Naïve Bayes, achieving 99.91% accuracy.
- Paper [7] applied an ensemble technique with Majority Voting for crop prediction, utilizing KNN, Naïve Bayes, and decision trees.
- **Web Scraping & Price Comparison:**
- Paper [11] introduced a dynamic topic-based web scraper that prioritizes URLs based on relevance.
- Paper [12] proposed an optimized template detection algorithm for web scraping using K-Means clustering.
- Paper [13] applied Naïve Bayes classification to a web-scraping-based job search system.

Literature Review

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Paper	Best suitable algorithm	Scores	Percentage
[5]	Decision Tree	Accuracy	>75
[6]	Ensembling technique	Accuracy	99.91
[7]	Ensembling technique	Accuracy	88
[8]	Neural Network	Accuracy	91
[9]	Bagging	Relative Absolute Error	9.195

State of the Art (SOTA)

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- **AI-based Crop Recommendation:** Advanced machine learning algorithms—such as Decision Trees, Random Forest, and Ensemble methods—analyze climate, soil, and historical data for precise crop recommendations.
- 🛒 **E-commerce Price Comparison Tools:** Cutting-edge price comparison tools use real-time web scraping and intelligent crawling to extract and standardize seed pricing from multiple e-commerce platforms.
- 📊 **Precision Farming with IoT:** Smart sensors and IoT devices monitor soil moisture, temperature, and crop health to optimize irrigation and nutrient supply.
- 🌱 **Automated Fertilizer Recommendation:** AI-driven models suggest the best fertilizer based on soil composition and crop needs, reducing waste and enhancing productivity.

Existing System with Pros and Cons

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Paper	Existing System	Pros	Cons
[5]	Crop recommendation using Decision Tree based on climatic parameters.	Helps in selecting predominant crops based on location.	Limited to specific parameters like rainfall, temperature, and soil quality.
[6]	Ensemble-based crop recommendation using multiple classifiers.	High accuracy (99.91%) in classifying crops into Rabi and Kharif seasons.	Requires extensive data preprocessing and parameter tuning.
[7]	Majority Voting technique for crop prediction.	Utilizes multiple algorithms like Random Trees, KNN, and Naïve Bayes for better results.	Base learners must be greater than two, increasing computational complexity.
[8]	Crop prediction using Neural Networks and Decision Trees.	Implemented map visualization for location-based recommendations.	Performance depends on dataset quality and proper model training.

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Thank
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