


Chapter 4

Agricultural Crop Recommendations Based on Productivity and Season

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ABSTRACT

This chapter aims to develop an agricultural crop recommendation system leveraging the power of machine learning algorithms. The proposed system takes into account crop productivity and prevailing season as crucial factors in making appropriate crop suggestions. The authors proposed the SVM algorithm, which was trained and evaluated on a comprehensive dataset comprising historical agricultural data with diverse features such as climate variables, soil properties, and geographical factors. The data was further segmented based on seasonal patterns to provide crop recommendations tailored to specific timeframes. The models' performance was evaluated using standard metrics, and an ensemble approach was considered to enhance the system's robustness. Ultimately, the developed system offers farmers and agricultural experts a valuable tool for making informed decisions, optimizing crop selection, and

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increasing overall agricultural productivity

INTRODUCTION

Machine Learning

Machine learning is a subfield of artificial intelligence (AI) that focuses on developing algorithms and models that enable computers to learn and improve their performance on a specific task without being explicitly programmed. The fundamental idea behind machine learning is to allow computers to recognize patterns, make decisions, and solve problems based on data rather than relying on explicit instructions from programmers. In order to find patterns and correlations in the data, machine learning algorithms learn from past data and experiences. These patterns and relationships can then be used to predict the future, categorize new data, or improve decision-making procedures. Machine learning is widely used in various fields, including natural language processing, computer vision, recommendation systems, autonomous vehicles, finance, healthcare, and more. With the availability of large datasets, powerful computing resources, and advances in algorithms, machine learning continues to make significant contributions to solving complex problems and driving innovations across industries.

Recommender System

A recommender system is a type of information-collecting system designed to suggest relevant items to users based on their preferences, interests, and past behavior. These systems are commonly used in various online platforms to enhance user experience by providing personalized recommendations, thereby increasing user engagement and satisfaction. Recommender systems include a wide range of applications, including e-commerce, online streaming services, social media, and content platforms. Other advanced techniques and hybrid approaches may also be used, combining elements of collaborative filtering, content-based filtering, and additional factors like context, demographics, and popularity. Recommender systems have become an essential part of many online platforms, helping users discover new content, products, and services they are likely to enjoy while also benefiting businesses by increasing user engagement and driving sales. However, designing an effective recommender system involves addressing challenges such as data sparsity, cold start problems (when new users/items have limited data), and ensuring fairness and diversity in recommendations.

Knowledge Discovery in Databases

Knowledge Discovery in Databases (KDD) is the process of extracting useful and actionable knowledge from large volumes of data. It is an interdisciplinary field that combines techniques from databases, machine learning, statistics, and data mining to discover patterns, trends, relationships, and insights that are hidden in the data. It is a critical process in data-driven decision-making and plays a different role in various applications, including customer relationship management, fraud detection, market analysis, healthcare informatics, and scientific research. It is important to note that the KDD process is not a one-time activity; it often involves an iterative approach as new data is collected, and new knowledge is discovered, leading to continuous improvement and refinement of insights.

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