Chapter 18
Design and Develop a Decision-Making Assistance Model for Agriculture Product Price Prediction: Deep Learning

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ABSTRACT

Most of India's wealth and economy are derived from agriculture. Crop production price forecasting has always been a challenge for farmers. Climatological changes as well as other market variables have resulted in significant losses for farmers. Despite their best efforts, farmers are unable to sell their crops for the prices they want. A decision-assistance model for agricultural product price forecasting is being developed in this project. Farming decisions may be made using this method, which takes into consideration elements like yearly rainfall, WPI, and so on. A year's worth of forecasts are available from the technology. The system employs a machine learning regression approach known as decision tree regression.

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INTRODUCTION

Agriculture and agricultural goods are the backbone of the Indian economy. For the vast majority of the people, agricultural production is their primary source of income. For agricultural purposes, 60 percent of the country's land is devoted. Our research aims to provide a practical solution to the issue of accurately predicting crop value, in order to provide farmers with predictable revenues (Nelson et al., 2002). A vast variety of agricultural goods may be found on the. There are several variables that affect agricultural product prices and even the same commodity might be priced differently in various marketplaces. At any moment, food production commodities prices might increase or fall, inflicting havoc on the economy. The Decision Tree Regression approach is used in this system to predict crop value from a validated dataset using data from the dataset.

Customers may have more possibilities thanks to an outstanding agricultural prices forecast model. Furthermore, the findings are given in the form of a net appliance that farmers may use with ease. Since farmers may plant their harvests based on future expenditures, they will profit from the work done here to predict the expenditures of horticulture items. In agriculture, there is a standard rate for everything, and these fees are spread out across the full year (Wallenius et al., 2008). In the event that these fees are made known to farmers in due course, this ensures a return on investment (ROI). This graph may be used by horticultural specialists to predict advertising revenues for agricultural producers.

Artificial intelligence (AI) technologies have helped shape global agricultural policy, and that's what this essay sets out to explore in detail. Several publications were uncovered after a search of the main scientific archives was conducted.. Agent-based models, cellular automata, and genetic algorithms are the most often utilized AI approaches, according with data. Another application for these models is to predict agriculture productivity and irrigation and land consumption (Keating et al., 2003). There's little doubt that artificial intelligence (AI) has a critical role to play in formulating agricultural policy.

Agricultural policy, artificial intelligence (AI), and decision-making make up the article's conceptual model, all of which are described specifically in relation to agriculture. For a greater understanding of public policy and its decision-making procedure, as well as how AI has been applied in decision-making procedures are first examined. Governments use many techniques and customs to deal with common issues, such as "the formulation of these policies is founded on societal interests," says. As a consequence, all public policy creation processes have three stages: formulation, implementation, and assessment. Public policy decision-making must be as aggressive as feasible in order to identify the best available implementation option at the formulation stage.

The use of AI technologies in the development of the agricultural sector public policies has shown to be highly advantageous, and their implementations are related in three different ways. When it comes to agricultural public policy, the first question is how certain rural areas will respond to it. An agent-based approach is the AI used to generate this prediction. The second use of artificial neural networks and support vector machines is to assist agricultural public authorities make much better judgments, demonstrating that they are the ideal tools for the task (Lee et al., 002). Using land and water administration as inputs, the third app determines different sorts of agriculture products and examines the results in terms of output units and ecological repercussions. There were cellular automata, fuzzy logic, and Bayesian networks involved. Genetic algorithms, neural networks, and support vector machines have all been found to enhance industrial processes. Public authorities benefit from using AI in agriculture because it helps them make better decisions based on a wide range of criteria and data points.