NUTRIGROW:

Objectives of the Study

This study aims to develop a system that forecasts banana harvests and recommends fertilizers based on soil conditions and the nutrients needed for bananas.

then, the following objectives are the study aims to accomplish:

First, we will create a mobile application that forecasts banana harvest and establishes the relationship between the recommended fertilizer for the soil and banana varities.

Second, we will utilize and evaluate the following soil fertility prediction model that interpret the results of the soil detector and classify soil conditions based on nutrients level and pH that recommend a fertilizer.

The algorithm for this is the **Classification Algorithm** and **Decision Trees**

Third, we will develop the following harvest forecasting model that estimates banana yields based on applied fertilizer types and amount recommended.

We will use **Autoregressive Integrated Moving Average (ARIMA),** and **Seasonal Decomposition of Time Series** methods for this purpose**.**

Possible Question

Mobile NPK Application: The term "mobile NPK application" likely refers to a mobile application designed to assist users in managing and optimizing the application of nitrogen (N), phosphorus (P), and potassium (K) fertilizers in agricultural settings. NPK fertilizers are commonly used in agriculture to provide essential nutrients to plants, and their proper application is crucial for maximizing crop yields and promoting healthy plant growth.

Classification algorithm: The classification algorithm aims to identify the category of soil fertility (e.g., low, medium, high) based on the soil analysis results.

Decision Trees: decision trees are utilized to develop a model for soil fertility prediction and fertilizer recommendation.

Arima: the ARIMA model is utilized to forecast banana harvests based on applied fertilizer types and amounts recommended.

Seasonal Decomposition of Time Series: seasonal decomposition is used to analyze the seasonal patterns and fluctuations in banana yields over time.

VEGGIETY:

Objectives of the Study

This study aims to develop a forecasting and spatial analysis to enhance traceability in vegetable sourcing and predict market trends accurately to stabilize vegetable prices and promote food security.

then, the study aims to accomplish the following objectives:

First, we will create a web-based system that will determine the correlation between predicted vegetable supply and location of the supplier.

Second, we will employ **Regression Analysis**, **Time Series Analysis**, and the **Long Short-Term Memory (LSTM) algorithm** to forecast vegetable supply.

Third, we will assess the performance metrics of the mentioned techniques using accuracy and F1 score.

Possible Question

Regression Analysis:

Regression Analysis is used to model the relationship between a dependent variable (in this case, vegetable supply) and one or more independent variables (such as time, seasonal patterns, historical data).

The purpose of Regression Analysis in this study is to analyze historical data on vegetable supply and other relevant factors to identify trends, patterns, and correlations. This information is crucial for predicting future vegetable supply levels accurately.

Time Series Analysis:

Time Series Analysis focuses on analyzing data points collected, recorded, or observed sequentially over time.

In this study, Time Series Analysis is applied to understand the temporal patterns and variations in vegetable supply. It helps in identifying seasonal trends, cycles, and other time-dependent factors that influence vegetable supply dynamics.

Long Short-Term Memory (LSTM):

LSTM is a type of recurrent neural network (RNN) architecture that is particularly effective for processing and predicting sequences of data.

The purpose of LSTM in this study is to capture the temporal dependencies and long-range dependencies present in the historical data of vegetable supply. LSTM models excel in capturing patterns over extended periods, making them suitable for forecasting tasks involving time-series data.

In the study "VEGGIETY: Enhancing Vegetable Supply Chain Efficiency through Farm Mapping and Forecasting," the purpose of using accuracy and F1 score as performance metrics is to assess the effectiveness of the predictive models developed using data mining techniques (such as Regression Analysis, Time Series Analysis, and Long Short-Term Memory) in forecasting vegetable supply. These metrics help evaluate the models' ability to accurately predict vegetable supply levels and balance precision and recall, thereby aiding in stabilizing vegetable prices and promoting food security in Tagum City, Davao del Norte, Philippines.

DESTINAV:

Objectives of the Study

This study aims to develop and evaluate the DestiNav: Intelligent Tourism Route Recommendation System for Davao del Norte.

The study aims to accomplish the following objectives:

First, we will develop mobile based application recommending itinerary covering Tourism Category within Davao del Norte.

Focusing on cultural and historical landmarks, beaches, and natural sites.

Second, we will utilize following algorithm techniques for destination ranking and selection, ensuring alignment with user preferences and constraints.

The algorithm for this is **Clustering Algorithm** and **PersQ Algorithm.**

Third, we will assess the efficiency of the algorithm techniques using accuracy and F1 score.

Possible Question

Clustering Algorithm:

Purpose:

The Clustering Algorithm is utilized to group similar tourist destinations together based on certain characteristics or features.

By clustering destinations, the algorithm helps in organizing and categorizing the vast array of tourist spots within Davao del Norte into meaningful groups.

This clustering process enables the application to recommend routes that include destinations with similar themes or characteristics, making it easier for users to explore related sites efficiently.

For example, cultural and historical landmarks could be clustered together, beaches could form another cluster, and natural sites could constitute a separate cluster.

Benefits:

Enhances user experience: Grouping similar destinations together helps users discover and explore related attractions of interest more conveniently.

Optimizes route recommendations: By considering clustered destinations, the application can suggest itineraries that cover a diverse range of attractions while maintaining thematic coherence.

PersQ Algorithm:

Purpose:

The PersQ Algorithm, short for Personalized Query, is designed to prioritize and rank tourist destinations based on individual user preferences and constraints.

It takes into account factors such as user preferences for specific types of attractions (e.g., historical sites over beaches), constraints (e.g., time limitations), and real-time contextual factors (e.g., current weather conditions).

The algorithm tailors its recommendations to each user's unique preferences and constraints, ensuring that the suggested routes align closely with their interests and requirements.

Benefits:

Personalized recommendations: By incorporating user-specific preferences and constraints, the PersQ Algorithm enhances the relevance and usefulness of the recommended routes.

Increases user satisfaction: Providing personalized recommendations enhances the overall user experience, as travelers receive suggestions that resonate with their interests and preferences.

Improves engagement and adoption: Personalization fosters a sense of connection with the application, encouraging users to rely on it for trip planning and exploration.

Accuracy: Accuracy measures the proportion of correctly predicted instances out of the total instances. In the context of the DestiNav application, accuracy would indicate how well the recommendation system aligns with the actual preferences and constraints of users.

F1 Score: The F1 score is a combined metric that considers both precision and recall. providing a single value that reflects the overall performance of the recommendation system. In the context of the DestiNav application, the F1 score helps in evaluating the balance between accurately recommending relevant destinations (precision) and ensuring that all relevant destinations are recommended (recall).