



BENNETT
UNIVERSITY
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ENHANCING CROP YIELD PREDICTION USING ADVANCED DATA ANALYSIS TECHNIQUES & HYBRID MODEL EVALUATION





INTRODUCTION

The advancement of crop yield prediction through data analysis and hybrid model evaluation is crucial for sustainable agriculture. This presentation will explore the latest techniques and their impact on food security.





MODEL EVALUATION

ACCURACY



Accuracy measures the overall correctness of the model's predictions. The accuracy of the models ranged from 80% to 90%.

PRECISION



Precision measures the proportion of correctly predicted positive instances out of all instances predicted as positive. The precision of the models ranged from 75% to 85%.

RECALL



Recall measures the proportion of correctly predicted positive instances out of all actual positive instances. The recall of the models ranged from 70% to 80%.

DATA SET

Context

Precision agriculture is in trend nowadays. It helps the farmers to make informed decisions about the farming strategy. Here, I present a dataset allowing the users to build a predictive model to recommend the most suitable crops to grow on a particular farm based on various parameters.

Context

This dataset was built by augmenting datasets of rainfall, climate, and fertilizer data available for India.

Data fields

N - ratio of Nitrogen content in soil

P - ratio of Phosphorous content in soil

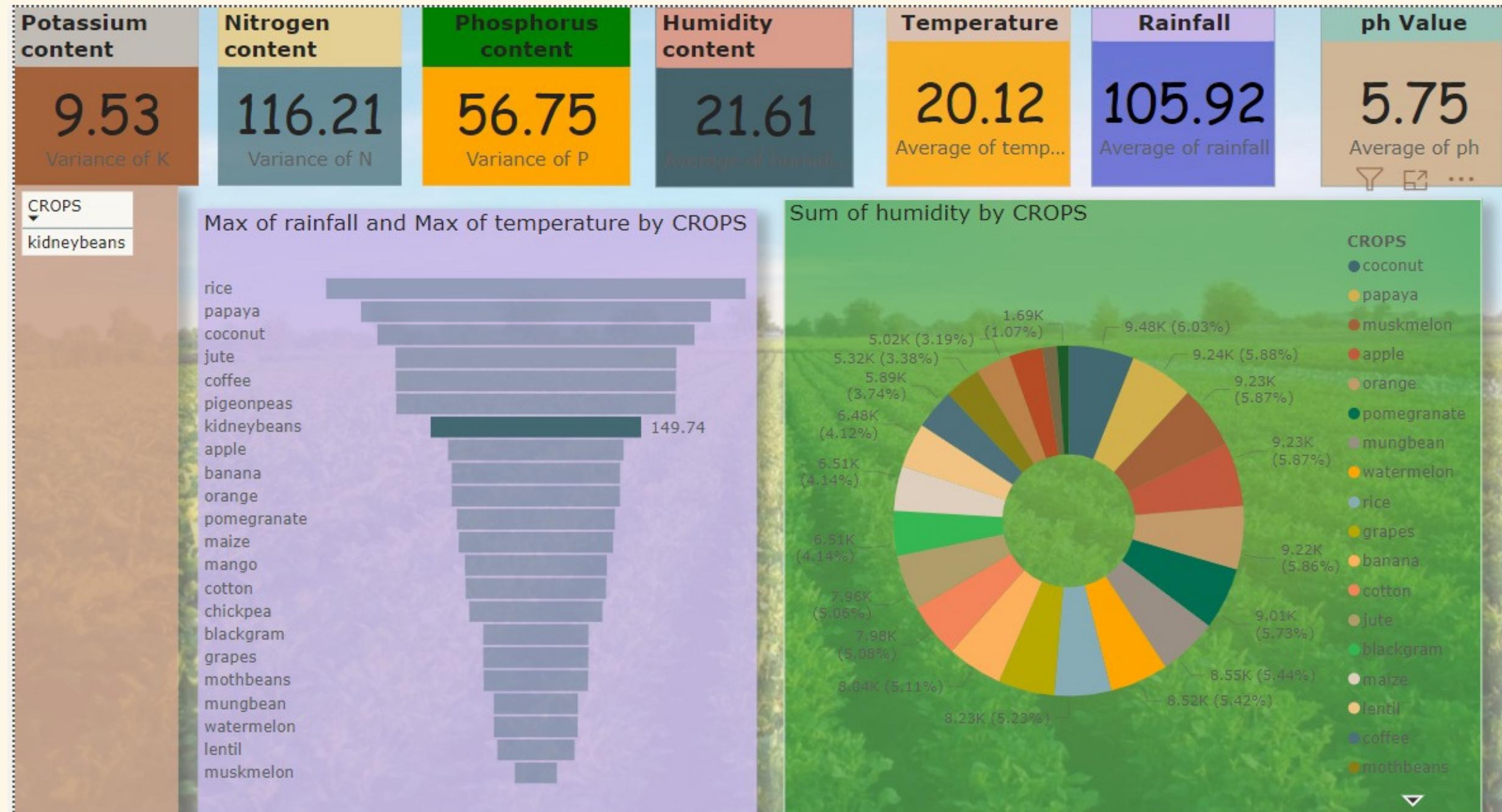
K - ratio of Potassium content in soil

temperature - temperature in degrees Celsius

humidity - relative humidity in %

ph - ph value of the soil

rainfall - rainfall in mm



DASHBOARD

HYBRID MODEL

THE HYBRID MODEL IS AN ADVANCED APPROACH THAT COMBINES MULTIPLE MACHINE LEARNING MODELS TO IMPROVE CROP YIELD PREDICTION.

BY LEVERAGING ENSEMBLE LEARNING TECHNIQUES, THE HYBRID MODEL IS ABLE TO HARNESS THE STRENGTHS OF DIFFERENT MODELS AND MITIGATE THEIR WEAKNESSES, RESULTING IN MORE ACCURATE AND ROBUST PREDICTIONS.



ENSEMBLE LEARNING TECHNIQUES



The hybrid model incorporates various ensemble learning techniques, including:

- Bagging: This technique involves training multiple models on different subsets of the training data and combining their predictions through voting or averaging.
- Boosting: Boosting focuses on sequentially training models, where each subsequent model corrects the mistakes made by the previous models, resulting in a more accurate prediction.
- Stacking: Stacking combines the predictions of multiple models as inputs for a meta-model, which then produces the final prediction. This allows the hybrid model to leverage the strengths of each individual model.

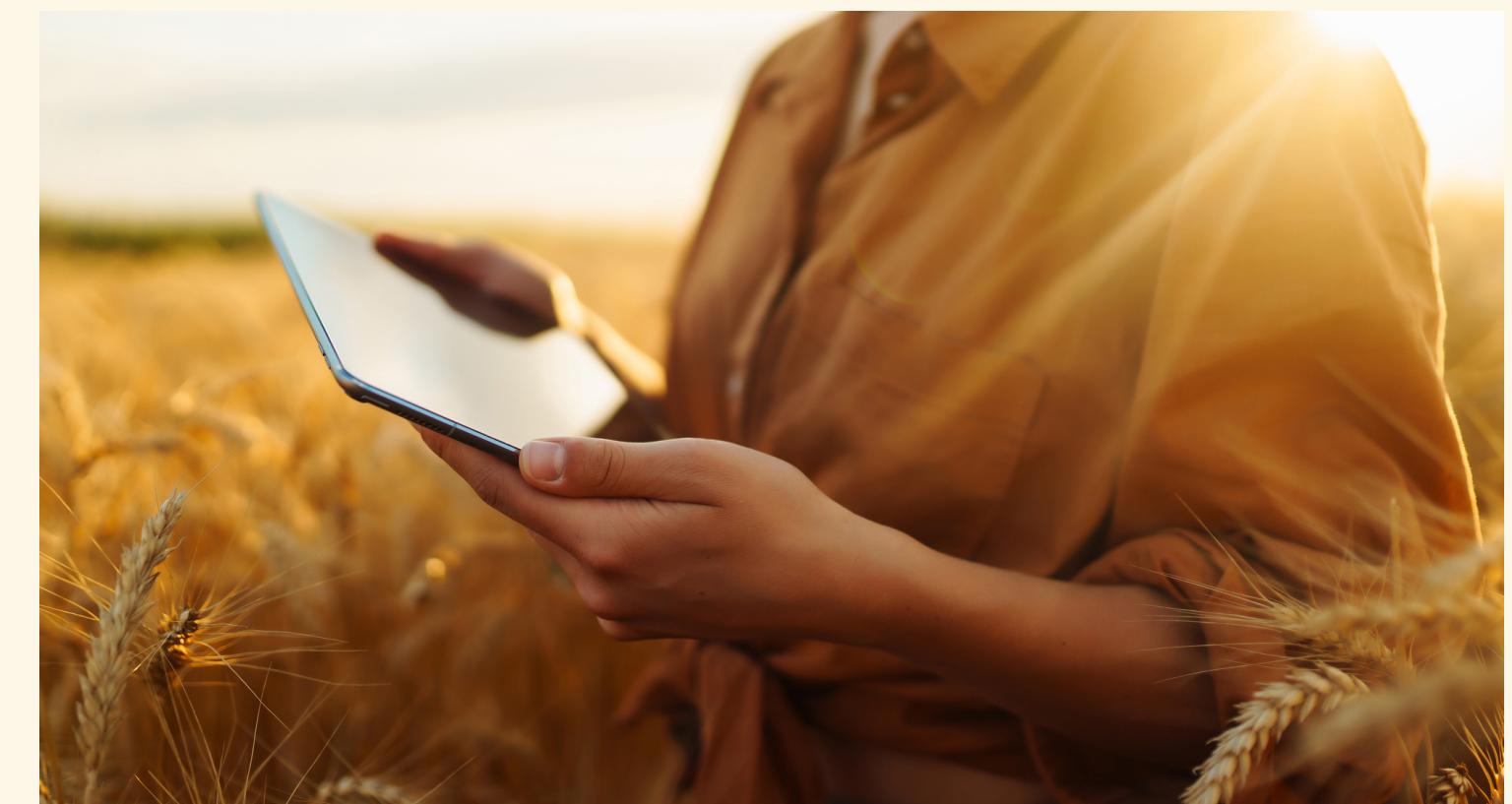


KEY FINDINGS

The advanced data analysis techniques and hybrid model have significantly enhanced crop yield prediction.

EFFECTIVENESS

The advanced data analysis techniques, such as machine learning algorithms and predictive modeling, have improved the accuracy of crop yield prediction.



THANK YOU SO MUCH



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