Enriching Crops

Advising for crop cultivation using Machine Learning

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AGENDA

- IMPROVING AGRICULTURE.
- IMPROVING LIVES.
- CULTIVATING CROPS TO MAKE FARMERS INCREASE PROFIT.

INTRODUCTION

This is a walkthrough for recommending crops to the farmers using Machine Learning. Farming is one of the major sectors that influences a country's economic growth.In country like India, majority of the population is dependent on agriculture for their livelihood. Many new technologies, such as Machine Learning and Deep Learning, are being implemented into agriculture so that it is easier for farmers to grow and maximize their yield. To recommend optimum crops to be cultivated by farmers based on several parameters and help them make an informed decision before cultivation which may lead to profits and make their livelihood much better

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Crop

Fertilizer

Basic content of soil

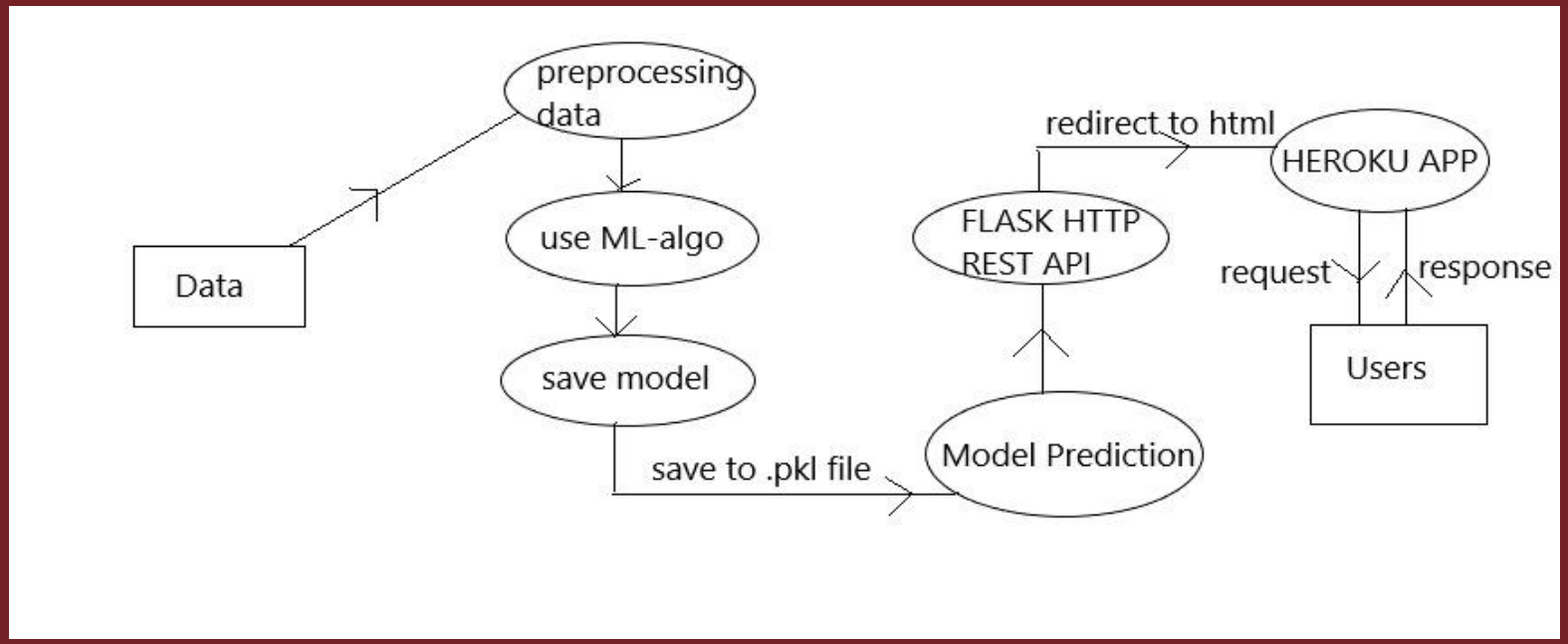
1. The nutrients that are required by crops in the largest amounts are N, P and K. For that reason, they are often considered as the most important nutrients.

2. The main functions of N and P are that they are constituents of proteins and nucleic acids, which are important components of plant tissue. K is the only nutrient that is not a constituent of organic plant compounds, but is mainly of importance in the regulation of processes in the plant, such as osmosis and enzyme activities. K is generally playing an important role for the quality of harvested plant products.

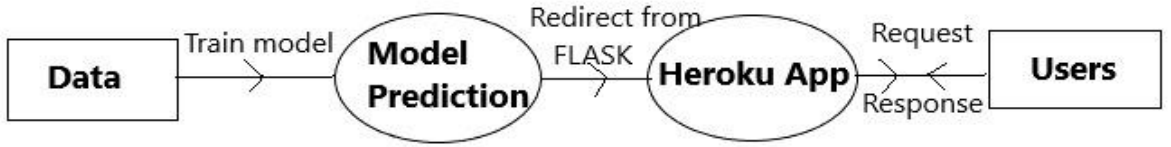
Importance of fertilizer

1. **Nutrient deficiency will lead to visual symptoms in the plant, which may be the yellowing of leaves, or the occurrence of brown spots on the leaf. The exact symptoms depend on the function of the nutrient in the plant and the way the nutrient is transported within the plant.**
2. **The availability of N, P and K in soil should be sufficient, but not too high. Too low availabilities will lead to hampered growth and low yields, while too high availabilities of one or more nutrients may lead to disturbed plant growth and adverse effects for yield and/or quality of harvested products. Moreover, the N, P and K availability should be balanced, so the availability of the other nutrients should be taken into account while the availability of the considered nutrient is adjusted.**

UML


preprocessing data
Data
use ML-algo
save model
save to .pkl file
redirect to html
HEROKU APP
FLASK HTTP REST API
request
response
Users
Model Prediction

DFD


Data
Train model
Model Prediction
Redirect from FLASK
Heroku App
Request
Response
Users

PROJECT OVERVIEW

- **In the crop recommendation application, the user can provide the soil data from their side and the application will predict which crop should the user grow.**
- **For the fertilizer recommendation application, the user can input the soil data and the type of crop they are growing, and the application will predict what the soil lacks or has excess of and will recommend improvements.**

DATA SOURCE :

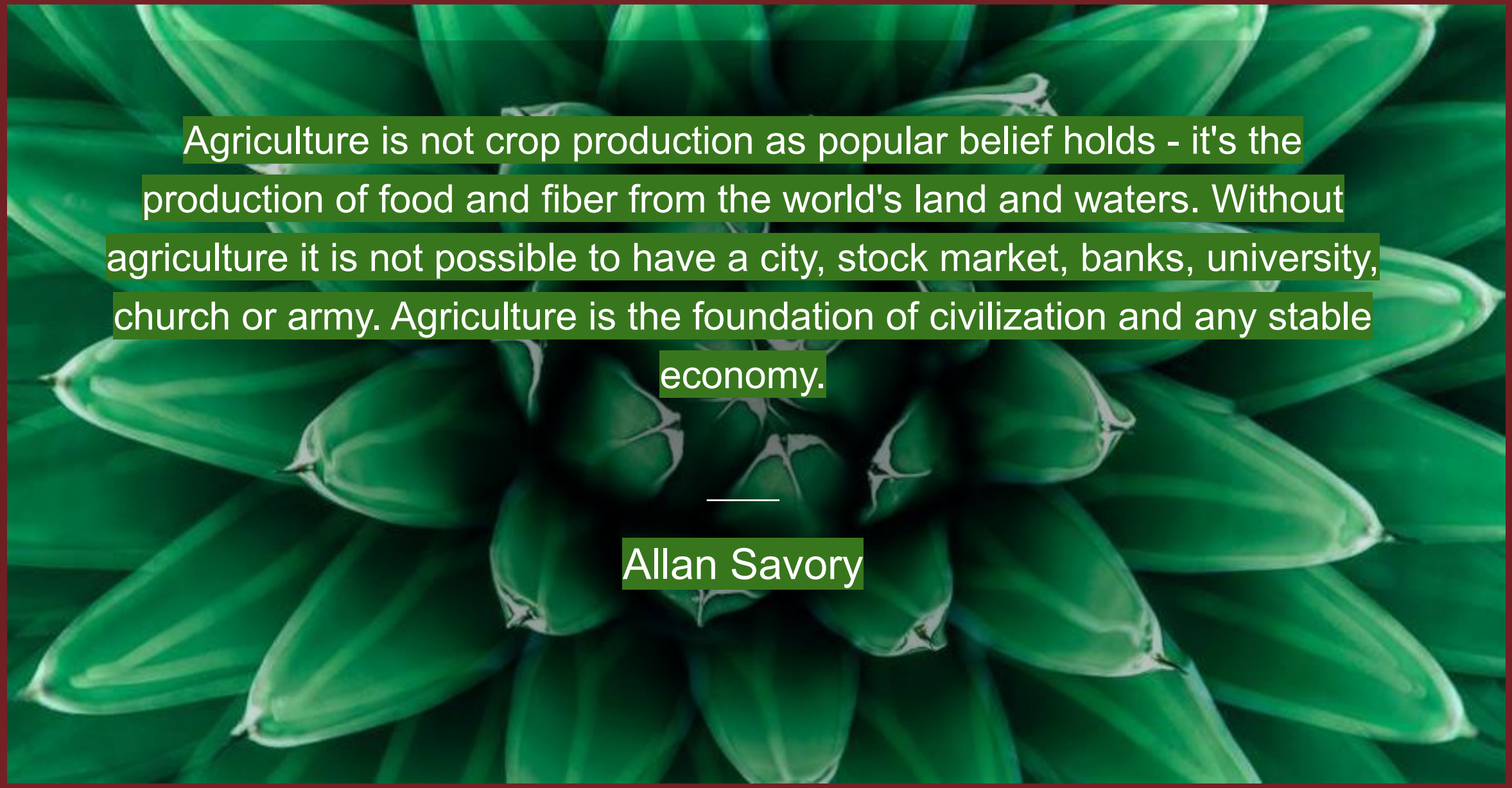
- Crop recommendation dataset (custom built dataset)
- Fertilizer suggestion dataset (custom built dataset)

TECHNOLOGIES USED IN PROJECT

we just apply all the machine learning algorithm to these above data set data set and we observe that the accuracy of model are

1. **Decision Tree --> 0.9**
2. Naive Bayes --> 0.990909090909091
3. SVM --> 0.9795454545454545
4. Logistic Regression --> 0.9522727272727273
5. RF --> 0.990909090909091
6. XGBoost --> 0.9931818181818182

so from this we take the Random forest algorithm for our project .


Agriculture is not crop production as popular belief holds - it's the production of food and fiber from the world's land and waters. Without agriculture it is not possible to have a city, stock market, banks, university, church or army. Agriculture is the foundation of civilization and any stable economy.
Allan Savory

SUMMARY

We use state-of-the-art machine learning technologies to help you guide through the entire farming process. Make informed decisions to understand the demographics of your area, understand the factors that affect your crop and keep them healthy for a super awesome successful yield.




Thank you