**CROP CLASSIFICATION WITH RECOMMENDATION**

**PDM PLAN**

1. **PROJECT OVERVIEW-**

**PROJECT SUMMARY:**

The project aims to create a system that classifies crops and provides recommendations to assist farmers or agricultural stakeholders in deciding which crops to plant, considering factors like environmental conditions, soil types, and weather patterns. This project uses machine learning and data analysis methods to categorize crops and suggest optimal choices for increasing agricultural efficiency. The recommendation system uses agricultural data analysis to assist farmers in selecting crops based on location, historical data, and market conditions, ultimately helping them optimize their choices.

This system can be especially valuable in precision agriculture, as it enables data-driven decisions on planting, fertilization, and harvesting. Crop classification helps to distinguish between various types of crops based on specific characteristics, while the recommendation system aids users in selecting appropriate crops for particular land conditions.

**RESEARCH QUESTION:**

What are the most efficient machine learning methods for creating a crop suggestion system that adjusts to fluctuating soil and environmental conditions?

**PROJECT OBJECTIVES:**

* Data importation and preparation
* Exploratory Data analysis(EDA)
* Feature Selection
* Crop classification
* Recommendation system
* Question prompting and evaluation by user.

**REFERENCES:**

Bhatti, W., Qamar, U., and Nawaz, R., 2020. A Machine Learning Approach to Predict Crop Yield Using Climate Data. Computers and Electronics in Agriculture, 169, p.105164. Available at: [click here](https://doi.org/10.1016/j.compag.2019.105164)

Das, R., Mishra, P., 2018. Crop Classification Using Remote Sensing Data: A Comprehensive Review. International Journal of Remote Sensing, 39(23), pp.8754-8787. Available at: [click here](https://doi.org/10.1080/01431161.2018.1524179)

Kadam, S.S., Biradar, M.V. and Kumari, P., 2021. Crop Recommendation System Using Machine Learning Algorithms for Precision Agriculture. International Journal of Emerging Technologies in Computational and Applied Sciences, 13(2), pp. 145-150.Available at: [Click here](https://www.researchgate.net/publication/351645272_Crop_Recommendation_System_Using_Machine_Learning_Algorithms_for_Precision_Agriculture)

1. **PROJECT PLAN:**

**TIMELINE:**

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| **Project plan** | **Due Date** | **Description** |
| **Initial project plan** | 27-Oct | Describe the project's general aims, objectives, and scope at this phase. I use this plan as the basis for everything I do after that. |
| **Preparation of PDM plan** | 28-Oct | Draft a Project Development Management (PDM) plan that outlines the project's schedule, duties, and responsibilities. This guarantees that I carry out and oversee my work in an organised manner. |
| **Presentation of PDM plan** | 29-Oct | Develop and provide a presentation outlining my PDM plan to stakeholders throughout this step. My objective is to convey the project's objectives, schedule, and resource needs in an effective manner. |
| **Research and Data preprocessing** | 30-Oct | I will collect pertinent literature and datasets for the study throughout this phase, making care to properly clean and prepare the data. To make sure I get high-quality input data for model training, this step is essential. |
| **Model development** | 31-Oct | I will develop the model which is efficient way for the classification. |
| **Data ethics preparation** | 01-Nov | Preparation for Data ethics quiz |
| **Data ethics quiz** | 02-Nov | Quiz day |
| **Model evaluation** | 03-Nov | Analysing the model with performance and accuracy which meets the project goal. |
| **Full implementation** | 04-Nov | full implementation |
| **Report creation** | 05-Nov | Report will be created for project |
| **Preparation for VIVA** | 06-Nov | Prepare and attend the mock VIVA. |
| **Report Submission** | 07-Nov | Report submission day |
| **Viva** | 10-Jan | Attend the Viva to showcase my work. |

1. **DATA MANAGEMENT PLAN:**

**OVERVIEW OF THE DATASET:**

Although the dataset doesn't specifically name any countries, it most likely comes from agricultural research or governmental agencies engaged in crop yield optimisation and agricultural planning. These kinds of datasets are usually gathered in areas with a variety of agricultural practices with the aim of enhancing farming methods by suggesting crops depending on environmental factors, weather, and soil health.

The information might be applied to precision agriculture research, which uses environmental data analysis to help farmers choose the optimum crop for their unique circumstances in order to maximise sustainability and production. Improving crop management and yield prediction for farmers, especially in nations with erratic climates like India or other agrarian economies, was probably the original goal.

**DATA COLLECTION:**

The data is originally collected from Kaggle

The link address- <https://www.kaggle.com/datasets/atharvaingle/crop-recommendation-dataset>

**METADATA:**

* The dataset file format is in .csv
* The dataset contains 2,300 rows and 8 columns
* The size of the file approximately 0.14 MB.

This dataset considered has small its best suitable quick processing and analysis in machine learning.

**DOCUMENT CONTROL:**

I have created GITHUB repository named as Projectcrop(/ipynb file aswell), shared for everyone as well

I will commit my insights and work to save my progress will make sure everything is recorded.

<https://github.com/Kishan2198/Projectcrop>

I intend to use a branching method, making distinct branches for bug fixes and new features. In order to make it easier to track the project's progress, I will additionally utilise tags to identify significant releases such as v1.0 and v1.1.

**README FILE OUTLINE:**

A README file will be added to the GitHub repository at the conclusion of the project. The following sections will be included in this file:

* The crop classification with recommendation system project the title.
* Project Description: A succinct synopsis of the objectives of the project and its significance for agriculture.
* Setting up Instructions: Detailed instructions for installing dependencies and configuring the environment.
* Use: Comprehensive guidelines for executing the code that provide sample inputs and outcomes.
* Acknowledgements: Give credit to any materials or people who helped with the project.
* Contact Details: For questions or assistance, use my email address or GitHub account.

**Security and storage:**

The repository is protected and I will use my OneDrive and My pc as my backup.

**Ethical requirements:**

1.     Does the data come under GDPR requirements? **Yes**

2.     Does the project conform to UH ethical policies? **Yes**

3.     Do you have permission to use the data for your proposed research project? **Yes Licensed by -** [**Apache 2.0**](https://www.apache.org/licenses/LICENSE-2.0)

4.Are you assured that the data was collected ethical (i.e. by the original people who gathered/collected/ collated/made the data)? **Yes**