VIT-AP UNIVERSITY

Capstone Project Proposal Report
(Individual Report)

Project and Task Description: Provide a brief (one or two page) technical description of the design project and your specific tasks, as outlined below: (use a separate sheet)

(a) Provide a summary of the project, including a description of the project and its requirements, the purpose, specifications, and a summary of the approach. If this is a continuing project, you may use and/or edit the same project description.

Summary: With the aid of machine learning algorithms, the goal is to predict the crop and determine its production. The calculation of accuracy uses a variety of machine learning techniques. For the crop prediction for the selected district, the preferred machine learning algorithm was applied. developed a method to anticipate crop prediction using data gathered in the past. The suggested method aids farmers in choosing which crop to plant in the field. This work is done to learn more about the crops that can be used to harvest things in an effective and helpful way. As a result, the yield rate of crop production is enhanced, which benefits our Indian economy.

Description: Based on prior crop yield, nutrients supplied, fertilizers used, climatic conditions to achieve a high crop yield and predict the best crops that yield the highest value for the upcoming cultivating season.

Requirements: Dataset will be collected from Government's data resources like ODG (Open Government Data).

Purpose:

- The main purpose of this project is to help farmers to decide on what to grow and when to grow.
- The Agricultural yield primarily depends on weather conditions (rain, temperature, etc), pesticides. Accurate information about the history of crop yield is important for making decisions related to agricultural risk management and future predictions.
- We eat a lot of corn, wheat, rice, and other simple crops. In this project, machine learning methods are applied to predict various crops.

Specifications:

- Needs: Helping farmers to decide on what they grow and what they achieve after applying methods
- Objectives: Achieve one of the best visual websites which makes it easy for users to navigate and manage features in an efficient manner.
- Expected Features: This is an eco-friendly website that takes inputs from farmers like crop items, year, nutrients, pesticides, land area used, and land area irrigated.
- Deadlines: (October- December) 2023
- Budget: ₹500 - ₹1000

Continuing Project:(Yes/No)
Yes, if needed depending upon situation:

- This project depends on the input given by the farmer based on the current price of the crop. This can be improved by collecting data on crop prices across the country.
- This project can be specialized regionally (for example, statewide crop yield prediction) depending on the factors prevailing in that region.
- More climatic factors like rainfall, precipitation, wind speed, humidity, etc can also be taken into consideration in order to improve the model's efficiency in terms of climatic conditions.
- Data related to the soil present in the crop can also be considered for more insights by examining the soil through other artificial intelligence techniques.
- Considering the effects of the natural disasters might help the farmers in exceptional environmental conditions.
- More crops can be added to the list of the crops in order to increase the reach of the project to more farmers.
- The application's UI can be made more farmer-friendly by supporting regional languages.

(b) Describe the specific role and tasks that **you individually** will be completing as part of the design of the project. What **specific deliverables** will you produce?

Hemanth:
Role: Team Leader
Tasks: Literature Survey, Dataset Collection, Data Preprocessing and Preparation, Website Development, Analysis from the Testing Result.

Atchyut:
Role: Team Member
Tasks: Selecting and Training the Machine Learning Model, Evaluation Metrics (Root Mean Squared Error, R2 Score), References.

Specific Deliverables:

By developing these machine learning algorithms and using them in these situations (more demand for particular crop requirements), it will help in many ways, such as trade negotiations will increase, the government will get to know the price and be able to decide on the basis of imports or exports.

(c) Discuss in detail the specific approach that will be used to complete **your** portion of the design.

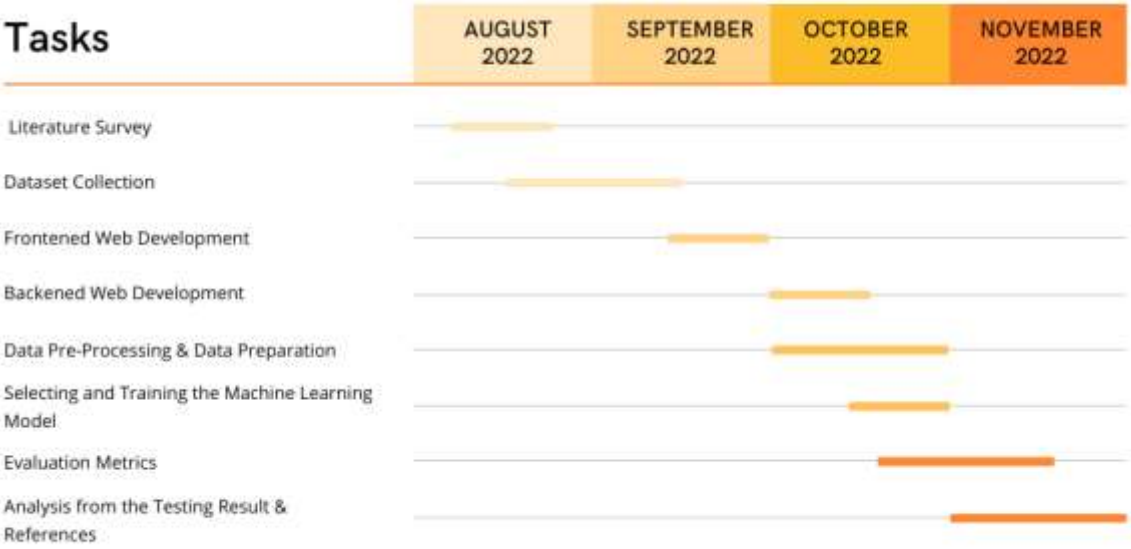
Detail: We have taken five machine learning algorithms. Whichever algorithm gives the best result, that algorithm will be considered for this project.

Design: We are creating a user-friendly interface website that takes inputs from farmers like crop items, year, nutrients, pesticides, land area used, and land area irrigated.

(d) Describe the phases of the design process that will be incorporated and what work will be accomplished during those phases. (You may attach a Gantt Chart)

Crop Yield & Price Prediction Using Machine Learning

Gantt Chart



Outcome Matrix: Describe your plan to demonstrate each of the outcomes below.

Outcomes:	**Plan for demonstrating outcome:**
a) an ability to apply knowledge of mathematics, science, and engineering	Yes, we are applying machine learning algorithms, web development, using references and applying to get in the correct way.
c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability	It will have a huge positive impact on the environmental point of view, business point of view, economic structure, and further future sustainability of available resources to make sure they can be used without any further restrictions and move forward at an equal pace.
d) an ability to function on multidisciplinary teams	Yes, we are working as a team and resolving each other's issues to know what steps can be further taken.
e) an ability to identify, formulate, and solve engineering problems	Solving problems of real life by using algorithms, identifying them and using the right resources to make a good foundation.
g) an ability to communicate effectively	Yes, communication is going well and well, cooperating with each other and coordinating with great spirit.
k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice	Technical skills, design skills, and essential practices are being undertaken and we are implementing them by following such as going through references and managing those steps in a structured and responsible manner.

Realistic Constraints:

Going to the farmer and collecting details is difficult for us. So, I will take the dataset from the government website, which has all the required details.

Engineering Standards:

Discuss the Engineering Standards that will be followed and maintained in the Project:

We are applying five machine learning algorithms. And, we are going to develop a user-friendly website.