**Internship Project documentation**

**Agriculture Price Prediction**

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**Abstract ;**

Agriculture plays a major role in economic development and security around the world. However, Farming is the backbone of the Indian Economy. Farming is facing several issues for the production of the food. In, most of the cases crops or different seeds are may not available at a particular place or location and farmers they could not identify which crop is best at a particular location. So, To overcome this we are building a project, To identify the crop or seeds where is the nearest place to buy them either in market or perspective region. So according to project. We will give some user inputs such as State, District, Nearest Places to visit them So it will show the prices of the nearest market in graphical format and we can also give different types of seeds as an input so that which will be the best seed to the soil according to the parameters, we can justify them. We can also predict future prices of the seeds based upon the timestamp provided so that it will be benefit to farmer .It enables the farmer to calculate the income of the crop. Based upon the crop forecasting we can predict whether the crop can be profit or loss

**Historical Context :**

Agricultural price prediction has a long history, with various methods being used and try to predict the prices of crops, and other agricultural products. Earlier methods were often based on simple supply and demand models, also anecdotal information and local market knowledge. With the rise of computational power and artificial intelligence, modern accurate , These methods typically consider a wide range of factors such as weather patterns, disease outbreaks, economic conditions and geopolitical events, among all. In order to make predictions about the future prices of agricultural products, several algorithms have been introduced.

**Life cycle of a project:**

Life cycle of a project basically it participates in several stages to finish the task.

1. **Planning and project setup**
2. **Data collection and labelling**
3. **Model exploration**
4. **Model refinement**
5. **Testing and evaluation**
6. **Model deployment**
7. **Ongoing model maintenance**

The life cycle of a project for agriculture price prediction involves the following steps:

**Planning and project setup:**

Defining the project scope, identifying holders and establishing project goals and objectives of the project. Developing a project plan, identifying resources and dependencies , and creating a timeline for completion.

**Data Collection:**

Gathering relevant data from the various resources on agriculture prices, weather conditions, and other relevant factors that could impact prices on land.

* Kaggle
* Github
* API

**Model Exploration:**

Cleaning and preprocessing the data, and performing exploratory data analysis to understand the patterns and relation among the various dependencies.

**Model Refinement**

Selecting various machine learning algorithms, training the model using the data and tuning with the parameters to improve performances.

**Testing and evaluation:**

Evaluating the model’s performance on a test set, and making and necessary changes to improve accuracy, With various algorithms such as decision tree, random forest regressor, PCA analysis.

**Model deployment:**

Deploying a model in a production environment, and setting up monitoring and maintenance processes to ensure its continued operation. Also conducting a post-implementation review, documenting the results, and making recommendations for future developments.

**Ongoing model maintenance:**

Documenting the final results, archiving project documentation, and releasing resources. The specific steps and details of the life cycle may vary depending on the specifics of the project and the organization’s process.

**Software Development Life Cycle**

Software Development Life Cycle (SDLC) report for Agriculture Price Prediction

**Introduction:**

The agriculture sector is highly dependent on unpredictable factors such as weather, climate change, and market fluctuations. Predicting crop prices is critical for farmers, traders, and other stakeholders in the agriculture industry. In this report, we will outline the software development life cycle (SDLC) methodology used for developing an agriculture price prediction system.

**SDLC Methodology:**

The chosen SDLC methodology for this project is the Agile methodology. The Agile methodology is highly flexible, allowing the development team to respond to changing market conditions and new requirements quickly. This approach emphasizes collaboration, iterative development, and continuous testing.

**Requirement Gathering:**

In the first phase of the SDLC, we identified the requirements of the agriculture price prediction system. We worked closely with domain experts and stakeholders to understand their needs and expectations. The requirements were then documented, and a product backlog was created.

**Design:**

In the design phase, we developed the architecture and design of the system. The system's components, data flow, and user interface were identified, and the design was documented. The design was reviewed by the development team and stakeholders to ensure that it met the requirements.

**Implementation:**

In the implementation phase, we developed the software according to the design. The software was developed in an iterative manner, with each iteration adding new functionality and improvements based on feedback. Continuous testing was done throughout the development process to ensure that the software met the requirements.

**Testing:**

In the testing phase, we tested the software to ensure that it met the requirements and was free of bugs. Testing was done at different levels, including unit testing, integration testing, and system testing. We also conducted user acceptance testing (UAT) to ensure that the system met the users' needs and expectations.

**Deployment:**

In the deployment phase, the software was released into production. The deployment was done in a controlled manner to minimize disruptions to the users. The software was also monitored to ensure that it was performing optimally and that any issues were addressed promptly.

**Maintenance:**

In the maintenance phase, we provided ongoing support and maintenance to the software. This included fixing bugs, addressing user issues, and updating the software to meet new requirements.

**Conclusion:**

The SDLC methodology used for developing the agriculture price prediction system was the Agile methodology. This approach allowed us to develop the software in an iterative and flexible manner, responding quickly to changing market conditions and new requirements. The result is a software system that meets the needs and expectations of the users, providing accurate and timely crop price predictions.