**Rice Classification using CNN**

**Milestone 1: Project Initialization and Planning Phase**

The "Project Initialization and Planning Phase" marks the project's outset, defining goals, scope, and stakeholders. This crucial phase establishes project parameters, identifies key team members, allocates resources, and outlines a realistic timeline. It also involves risk assessment and mitigation planning. Successful initiation sets the foundation for a well-organized and efficiently executed machine learning project, ensuring clarity, alignment, and proactive measures for potential challenges.

**Activity 1: Define Problem Statement**

There are many types of rice available for production. It is essential to identify the type of rice as each produce needs different amounts of water, manure, etc. It is not possible for the farmers to pay the agriculture experts hefty fees every time they have a new produce. We have come up with a solution to this problem. We have trained an AI model which can be used by farmers to check the type of rice. The users need to upload image of a rice grain and click on the submit button. Our model will give its prediction for probable rice type based on the image. Our model can predict up to 5 different types of rice. This model is useful for farmers, agriculture scientists, home farmers, gardeners, etc. This AI model is made using Convolutional Neural networks and under CNN we will be using transfer learning.

**Template:** [**Click here**](https://github.com/palak-012/Rice-Classification-Templates/blob/master/Project%20Initialization%20and%20Planning/Project%20Initialization%20and%20Planning%20Phase.pdf)

**Activity 2: Project Proposal (Proposed Solution)**

We have trained an AI model which can be used by farmers to check the type of rice. The users need to upload image of a rice grain and click on the submit button. Our model will give its prediction for probable rice type based on the image. Our model can predict up to 5 different types of rice.

**Template:** [**Click here**](https://github.com/palak-012/Rice-Classification-Templates/blob/master/Project%20Initialization%20and%20Planning/Project%20Proposal%20(Proposed%20Solution)%20template.pdf)

**Activity 3: Initial Project Planning Initial Project**

Planning involves outlining key objectives, defining scope, and identifying stakeholders for a loan approval system. It encompasses setting timelines, allocating resources, and determining the overall project strategy. During this phase, the team establishes a clear understanding of the dataset, formulates goals for analysis, and plans the workflow for data processing. Effective initial planning lays the foundation for a systematic and well-executed project, ensuring successful outcomes.

**Template:** [**Click here**](https://github.com/palak-012/Rice-Classification-Templates/blob/master/Project%20Initialization%20and%20Planning/Project%20Planning%20Template.pdf)

**Milestone 2: Data Collection and Preprocessing Phase**

The Data Collection and Preprocessing Phase involves executing a plan to gather relevant rice type data from Kaggle, ensuring data quality through verification and addressing missing values. Preprocessing tasks include cleaning, encoding, and organizing the dataset for subsequent exploratory analysis and deep learning model development.

**Activity 1: Data Collection Plan, Raw Data Sources Identified, Data Quality Report**

Elevate your data strategy with the Data Collection plan and the Raw Data Sources report, ensuring meticulous data curation and integrity for informed decision-making in every analysis and decision-making endeavor.

**Template:** [**Click here**](https://github.com/palak-012/Rice-Classification-Templates/blob/master/Data%20Collection%20and%20Preprocessing%20Phase/Raw%20Data%20Sources%20And%20Data%20Quality%20Report%20template.pdf)

**Activity 2: Data Quality Report**

The Data Quality Report Template will summarize data quality issues from the selected source, including severity levels and resolution plans. It will aid in systematically identifying and rectifying data discrepancies**.**

**Template:** [**Click here**](https://github.com/palak-012/Rice-Classification-Templates/blob/master/Data%20Collection%20and%20Preprocessing%20Phase/Data%20Quality%20Report%20template.pdf)

**Activity 3: Data Exploration and Preprocessing**

Data Exploration involves analyzing the loan applicant dataset to understand patterns, distributions, and outliers. Preprocessing includes handling missing values, scaling, and encoding categorical variables. These crucial steps enhance data quality, ensuring the reliability and effectiveness of subsequent analyses in the loan approval project.

**Template:** [**Click here**](https://github.com/palak-012/Rice-Classification-Templates/blob/master/Data%20Collection%20and%20Preprocessing%20Phase/Data%20Preprocessing%20template.pdf)

**Milestone 3: Model Development Phase**

**Activity 1: Model Selection Report**

In the model selection report for future deep learning and computer vision projects, architectures such as CNNs will be evaluated. Factors such as performance, complexity, and computational requirements will be considered to determine the most suitable model for the task at hand.

**Template:** [**Click here**](https://github.com/palak-012/Rice-Classification-Templates/blob/master/Model%20Development%20Phase/Model%20Selection%20Report%20template.pdf)

**Activity 2: Initial Model Training Code, Model Validation and Evaluation Report**

The Initial Model Training Code employs selected algorithms on the loan approval dataset, setting the foundation for predictive modeling. The subsequent Model Validation and Evaluation Report rigorously assesses model performance, employing metrics like accuracy and precision to ensure reliability and effectiveness in predicting loan outcomes.

**Template:** [**Click here**](https://github.com/palak-012/Rice-Classification-Templates/blob/master/Model%20Development%20Phase/Initial%20Model%20Training%20Code%2C%20Model%20Validation%20and%20Evaluation%20Template.pdf)

**Milestone 4: Model Optimization and Tuning Phase**

The Model Optimization and Tuning Phase involves refining machine learning models for peak performance. It includes optimized model code, fine-tuning hyperparameters, comparing performance metrics, and justifying the final model selection for enhanced predictive accuracy and efficiency.

**Activity 1: Hyperparameter Tuning Documentation**

The Model Optimization and Tuning Phase involves refining neural network models for peak performance. It includes optimized model code, fine-tuning hyperparameters, comparing performance metrics, and justifying the final model selection for enhanced predictive accuracy and efficiency.

**Template:** [**Click here**](https://github.com/palak-012/Rice-Classification-Templates/blob/master/Model%20optimization%20and%20Tuning/Model%20Optimization%20and%20Tuning%20Phase%20Template.pdf)

**Milestone 5: Project Demonstration**

In the upcoming module called Project Demonstration, individuals will be required to record a video by sharing their screens. They will need to explain their project and demonstrate its execution during the presentation.

<https://drive.google.com/file/d/1A9o0oJ_CV__qZhd8vRoTpZ9F2OJ_zcnu/view?usp=sharing>