Project Initialization and Planning Phase

Date	7 July 2024
Team ID	SWTID1720078167
Project Title	Rice Type Classification using CNN
Maximum Marks	3 Marks

Project Proposal (Proposed Solution) template

This project aims to develop a Convolutional Neural Network (CNN) model for accurately classifying various rice types based on their physical and chemical properties. By leveraging deep learning techniques, the proposed solution seeks to improve labeling precision, enhance quality control measures, and streamline operational workflows within the rice industry. The project will focus on data collection, model development, rigorous evaluation, and deployment of the CNN model to provide a robust tool for efficient rice type classification.

Project Overview	
Objective	Develop and deploy a CNN model to accurately classify diverse rice types based on their physical and chemical properties, enhancing labeling accuracy and supporting quality control in the rice industry.
Scope	This solution involves training and implementing a CNN model that analyzes grain characteristics to classify rice types reliably, aiming to streamline classification processes, improve product traceability, and support informed decision-making.
Problem Statement	
Description	Our CNN model utilizes advanced deep learning techniques to classify various rice types based on detailed physical and chemical characteristics.
Impact	Implementing this CNN-based solution is poised to revolutionize rice classification accuracy, ensuring precise product labeling, enhancing quality control standards, and optimizing operational efficiency. This innovation not only meets consumer expectations for quality and authenticity but also empowers stakeholders across the rice industry supply chain with reliable data for informed decision-making and improved market competitiveness.

Proposed Solution	
Approach	Our approach leverages a CNN model tailored for rice type classification, utilizing deep learning to analyze. This method surpasses traditional visual inspection by automating the classification process with high accuracy and consistency.
Key Features	This CNN model excels in feature extraction from rice grain images, enabling precise multi-class classification of varieties such as Basmati, Jasmine, and Arborio.

Resource Requirements

Resource Type	Description	Specification/Allocation
Hardware		
Computing Resources	CPU/GPU specifications, number of cores	T4 GPU
Memory	RAM specifications	8 GB
Storage	Disk space for data, models, and logs	1 TB SSD
Software		
Frameworks	Python frameworks	Flask
Libraries	Additional libraries	Tensorflow, sklearn, matplotlib, pandas, numpy, cv2, os
Development Environment	IDE	Jupyter Notebook, Google Collab
Data		
Data	Source	Kaggle dataset