

TEAM ID:LTVIP2025TMID40690

Project Name : Grainpalatte - Rice Type Classification

Problem Statement: Rice Type Classification

Background

Rice is one of the most widely consumed staple foods globally, with numerous varieties grown and traded worldwide. Different rice types have distinct characteristics, nutritional profiles, and market values. However, manual classification of rice types is time-consuming, prone to human error, and requires expertise.

Problem Definition

The challenge is to develop an automated system that can accurately classify different types of rice based on their physical characteristics. This system should be able to distinguish between common rice varieties such as Basmati, Jasmine, Arborio, Brown, and Wild rice, among others.

Challenges

- Visual similarity between certain rice varieties makes classification difficult
- Environmental factors and growing conditions can affect the appearance of rice grains
- Varying quality of input images or data can impact classification accuracy
- Need for a robust system that can handle real-world variations in rice samples

Objectives

- Develop a machine learning model capable of classifying rice types with high accuracy (>95%)
- Create a dataset of rice grain images representing diverse varieties
- Extract meaningful features from rice grains such as shape, size, color, and texture
- Build a user-friendly interface for end-users to utilize the classification system
- Ensure the system performs well under various lighting conditions and image qualities

Success Criteria

- Classification accuracy of at least 95% on test data
- Processing time of less than 2 seconds per sample
- Ability to distinguish between at least 8 common rice varieties
- Robust performance across different imaging conditions
- Scalability to incorporate new rice varieties in the future

Potential Applications

- Quality control in rice processing plants
- Automated sorting in agricultural facilities
- Research tool for agricultural scientists
- Mobile application for farmers and traders
- Educational tool for agricultural students