

1. Project Title:

GrainPalette: A Deep Learning Odyssey in Rice Type Classification

Techniques: Deep Learning, Computer Vision

Submitted by: S.Ramesh

Internship Platform: SmartInternz

Domain: Artificial Intelligence

Mentor: R.Varaprasad

Date: [Add your date]

2. Abstract:

Rice type classification is a crucial task in agriculture and food industry. Early classification using deep learning can help improve crop yields and reduce economic losses. This project builds a model to classify rice types using a dataset with various grain attributes.

3. Problem Statement:

Detecting rice types at early stages is difficult. The challenge is to build a deep learning model that can classify the presence of different rice types based on grain attributes.

4. Objective:

To develop a deep learning model to classify rice types using grain data.

5. Dataset Description:

Dataset: Rice Grain Dataset

Source: UCI Machine Learning Repository

Total Records: 583

Columns: Grain Length, Grain Width, Grain Area, **etc.**

6. Methodology:

1. Data Cleaning

2. Feature Selection

3.. Model Selection (Convolutional Neural Networks, Transfer Learning)

4.. Training and Testing

5. Accuracy Checking

7. Model Building:

Used Convolutional Neural Networks (CNNs) with Transfer Learning

Split: 80% Training, 20% Testing

Accuracy Achieved: 90%

8. Result & Accuracy:

Best model: CNN with Transfer Learning

Accuracy: 90%

Confusion Matrix, ROC Curve, and Classification Report were used to validate performance.

9. Conclusion:

The developed model can assist farmers and agricultural industries in early classification of rice types. With better datasets and tuning, accuracy can be improved.

10. References:

- UCI Machine Learning Repository
- Keras documentation
- SmartInternz Project Guidelines