1. 🌾 Rice Type Detection Using Deep Learning

🔍A Machine Learning Based Classification Project

📋Submitted by

Chityala Manoj and Team

College: Rise Krishna Sai Prakasam Group of Institutions

Roll Number: 228A1A05B0

🎯Project Objective

To build a deep learning-based model that can detect and classify the type of rice grain from an image using a trained Convolutional Neural Network (CNN).

🛰 Tools & Technologies Used

• Python

• TensorFlow / Keras

• NumPy, Pandas, Matplotlib

• LabelEncoder

• Scikit-learn

• Flask (for Web Deployment)

• HTML, CSS (for Frontend Design)

🗁 Dataset Information

The dataset contains 5 different types of rice grains:

1. Arborio

2. Basmati

3. Ipsala

4. Jasmine

5. Karacadag

Each class contains labeled images for training and testing the model.

🔨Project Workflow

1. Data Collection – Images were collected and organized.

2. Preprocessing – Resizing, normalization, and label encoding were done.

3. Model Building – A CNN architecture was created using Keras.

4. Training – The model was trained with high accuracy on rice grain images.

5. Testing – Model performance was evaluated using metrics like accuracy and confusion matrix.

6. Deployment – Flask was used to create a web application for rice type prediction.

☑ Model Results

• ☑ Achieved test accuracy: ~97%

• CNN with Conv2D, MaxPooling, Flatten, Dense Layers

• Efficient classification for each rice type

🌐 Web Application Features

• Upload image of a rice grain

• Predict button shows the result

• Displays input image and the predicted rice type

• Neatly designed user interface using HTML & CSS

💡 Key Highlights

• High accuracy with optimized CNN

• Beautiful UI using HTML/CSS

• Real-time prediction using Flask

• Easily extendable for more rice types

📫 Contact Us (Sample Section from Web App)

info@ricepredict.com

+91 9603171517 | +91 9989206385

🐨 Special Thanks

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⏎ Conclusion

This project demonstrates the capability of deep learning in agricultural classification tasks, especially using image-based predictions. The model is scalable, efficient, and useful for real-time applications in agritech.