Rice Image Classification using CNN and PyTorch

Overview

This project is a Convolutional Neural Network (CNN) model for classifying different types of rice grains usi

Dataset

The dataset consists of labeled rice images for training and testing. The dataset structure should be:

```
/data
  train
      class_1
      class_2
      ...
  test
      class_1
      class_2
      ...
```

Features

- Image classification using CNN
- Uses PyTorch for deep learning
- Data augmentation for improved model performance
- Trained on multiple rice grain classes
- Model evaluation with accuracy metrics

Installation

To set up the project, follow these steps:

1. Clone the repository

```
git clone https://github.com/your_username/rice-image-classification.git
cd rice-image-classification
```

2. Create a virtual environment (optional but recommended)

```
python -m venv venv
source venv/bin/activate   # On Windows use: venv\Scripts\activate
```

3. Install dependencies

```
pip install -r requirements.txt
```

Model Training

To train the model, run the following command:

```
python train.py --epochs 10 --batch_size 32 --lr 0.001
```

Hyperparameters

- Epochs: 10
- Batch Size: 32
- Learning Rate: 0.001

Model Evaluation

After training, evaluate the model using:

```
python evaluate.py
```

Sample Predictions

Here are sample images classified by the model:

| Input Image | Predicted Class |

|------------|----------------|

| sample1.png | Basmati |

| sample2.png | Jasmine |

License

This project is licensed under the MIT License - see the LICENSE file for details.

Author

- Your Name

- GitHub: your_username

Feel free to contribute or raise issues if you find any bugs!