Data Flow Diagrams

Date	31 January 2025
Team ID	LTVIP2025TMID60812
Project Name	Grain Palette - A Deep Learning Odyssey In Rice Type Classification Through Transfer Learning
Maximum Marks	4 Marks

? Context-Level DFD (Level 0)

This diagram gives an overview of the entire system as a single process.

```
sql
CopyEdit
        +------------------+             +----------------------+
        |                  |             |                      |
        |    End User      +-----------> |  Grain Palette System|
        | (Farmer/Inspector)| Uploads     | (Rice Classifier UI) |
        |                  |   Image     |                      |
        +------------------+             +----------+-----------+
                                                    |
                                                    v
                                          +-------------------------+
                                          |   Classification Result |
                                          +-------------------------+
```

?? Level 1 DFD: Internal Components

Shows the key internal processes of the system.

```
less
CopyEdit
[User]
  |
  v
[1. Upload Image] ---> [2. Preprocessing Module] ---> [3. ML Model
(EfficientNetB0)]
                                                              |
                                                              v
                                                  [4. Classification Output]
                                                              |
                                                              v
                                                [5. Power BI Dashboard / Report
Generator]
                                                              |
                                                              v
```

[User Feedback Module]

User Stories

These help define how different users interact with the system in real-world scenarios. Each user story follows this format:

As a [type of user], I want [some goal] so that [some reason].

✅Key User Stories

1. **Image Upload**
   - *As a farmer, I want to upload an image of rice grains so that the system can classify the variety.*
2. **Get Prediction**
   - *As a rice mill quality inspector, I want to receive the predicted rice type and confidence score so that I can quickly verify grain quality.*
3. **View Classification History**
   - *As a trader, I want to view previous classification results so I can track variety distribution over time.*
4. **Use on Mobile Device**
   - *As a rural user, I want to use the system on a low-end mobile phone so that I can classify rice on the go.*
5. **See Reports and Trends**
   - *As a supply chain analyst, I want to generate visual reports so that I can analyze quality trends by region or supplier.*
6. **Give Feedback**
   - *As a user, I want to give feedback if I disagree with a classification so that the model can improve over time.*
7. **Offline Capability (optional)**
   - *As a user in an area with poor connectivity, I want to use the system offline so that I can classify grains without the internet.*