8. ADVANTAGES & DISADVANTAGES

Advantages

1. **Automated Classification**
   The model automatically classifies rice types with high accuracy, reducing human effort and error.
2. **Time-Efficient**
   Uploading and predicting the rice grain class takes only a few seconds, making it ideal for real-time applications.
3. **User-Friendly Interface**
   The web application has a clean and intuitive UI, even for users with no technical background.
4. **Scalable Solution**
   The project is built using modular components (Flask, Keras, etc.), making it scalable to other grains or image-based classifications.
5. **Cost-Effective**
   No need for expensive hardware or third-party APIs. It can run locally on a normal laptop.
6. **Open Source**
   The code is available on GitHub for further development, improvement, and customization.

⚠️ Disadvantages

1. **Limited Dataset**
   The model performance may degrade if it encounters rice grain images that are very different from the training dataset.
2. **No Real-Time Camera Support**
   Currently, the app supports only image uploads. Real-time camera integration is not included.
3. **No Mobile Responsiveness**
   The current interface is designed for desktop usage. May not work well on mobile devices.
4. **Model Size**
   The rice.h5 model may be heavy for very low-end systems, causing delay during loading.
5. **Security Aspects Missing**
   The app lacks authentication, validation checks, and secure file handling.