Project Definition

Define project goal: Rice grain type identification using deep learning.

Set clear objectives (accuracy, speed, usability).

Identify stakeholders (students, farmers, agri-tech users).

Requirement Analysis

Functional: Image upload, prediction display.

Technical: Model training, dataset processing, web deployment.

Resource: Laptops, dataset source, internet (30 Mbps+), two browsers.

Dataset Collection & Preparation

Collect rice grain images (from Kaggle or manual sources).

Preprocess images: resize, normalize, augment.

Split data: Train, validation, test sets.

Model Development

Use transfer learning (e.g., MobileNetV2 or ResNet).

Train model on rice grain images.

Evaluate using accuracy, precision, recall

Interface Design

Build frontend: Upload button, image preview, prediction result.

Backend: Serve model, handle requests.

Tools: Streamlit / Flask / Gradio.

Testing

Functional testing: UI, upload, prediction.

Model testing: Performance on test dataset.

User testing: Feedback from real u

Deployment

Host model and app online (Render / Heroku / Firebase).

Ensure mobile and desktop compatibility.

Share with users (via link or QR).

Documentation

Technical documentation (code, model architecture).

User guide (how to use the tool).

Summary of results (graphs, tables, confusion matrix).

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