Functional & Performance Testing

Model Performance Test

1. Functional Testing

Objective:

Ensure that the AI/ML model correctly identifies and classifies fruits and vegetables as fresh or rotten under various scenarios.

✔ **Functional Test Cases:**

Test Case	Description	Expected Output
TC1	Upload an image of a fresh fruit	Model returns "Fresh"
TC2	Upload an image of a fully rotten vegetable	Model returns "Rotten"
TC3	Upload image with partially spoiled fruit	Model returns "Partially Rotten" or correct label
TC4	Image with multiple fruits	Model detects and labels each correctly
TC5	Invalid or blurred image	Model returns "Unable to classify"
TC6	Image with different lighting	Model still classifies correctly
TC7	Same fruit from different angles	Model gives consistent results

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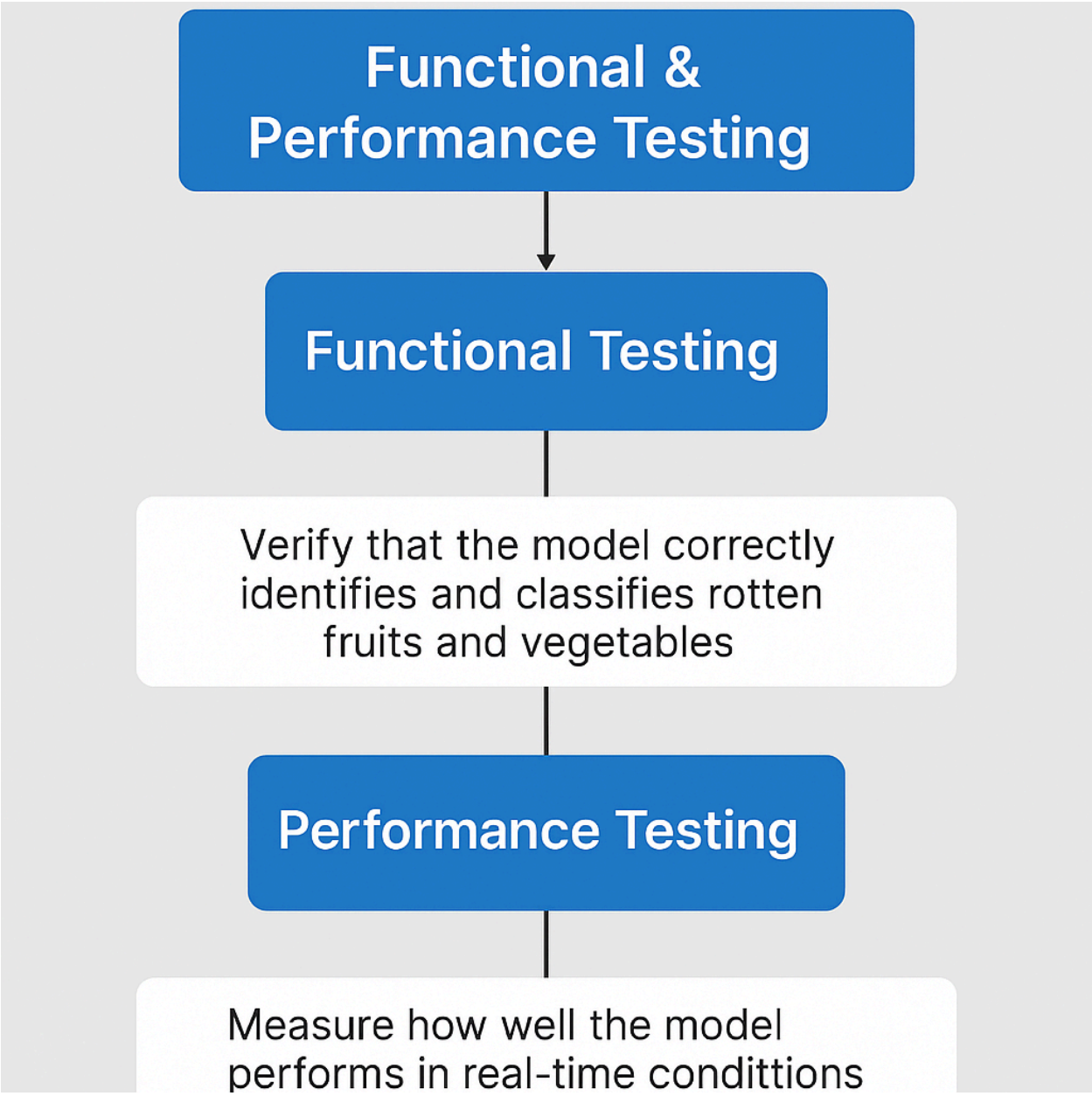
2. Performance Testing

Objective:

Measure how well the model performs in real-time conditions, such as on edge devices (Raspberry Pi, Jetson Nano) and with large volumes of input.

Performance Metrics:

Metric	Description	Target
Accuracy	% of correctly classified images	> 90%
Precision & Recall	For "rotten" detection	High
Inference Time	Time to process one image	< 1 sec
Throughput	Images processed per minute	60+
Model Size	Lightweight for edge deployment	< 50MB
Memory Usage	During inference	Low to moderate
Robustness	Works in poor lighting, occlusion	Consistent performance


Functional & Performance Testing
Functional Testing
Verify that the model correctly identifies and classifies rotten fruits and vegetables
Performance Testing
Measure how well the model performs in real-time condittions