PHASE-6: FUNCTIONAL & PERFORMANCE TESTING

OBJECTIVE

- To ensure that the Smart Sorting project performs accurately and reliably across different use cases and meets the intended functional goals.

TEST CASES EXECUTED

- • Tested with clear images of fresh fruits and vegetables: classified correctly.
- • Tested with low-light and blurry images: acceptable accuracy retained.
- • Mixed fruits in single image: identified dominant object and classified.
- • Tested edge cases like partially rotten fruits: borderline classification behavior noted.

BUG FIXES & IMPROVEMENTS

- • Fixed misclassification of overexposed images by normalizing image brightness.
- • Improved model inference speed by reducing image resolution without affecting accuracy.
- • Removed false positives through better augmentation and increased training samples.

FINAL VALIDATION

- After rigorous testing, the model consistently achieved over 90% accuracy. The system met all project requirements including ease of use, fast processing, and deployment readiness.

DEPLOYMENT

- The final Smart Sorting system was deployed using Streamlit, making it accessible through a web interface for real-time fruit/vegetable classification. The model was hosted locally and is ready for cloud deployment.