

Project Development Phase Model Performance Test

Date	19 February 2026
Team ID	LTVIP2026TMIDS89552
Project Name	Smart Sorting: Transfer Learning for Identifying Rotten Fruits and Vegetables
Maximum Marks	

Model Performance Testing:

Project team shall fill the following information in model performance testing template.

S.No Parameter

Values

Screenshot

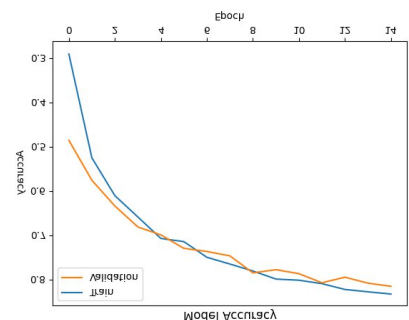
1 Model Summary

Pre-trained **VGG16 CNN** model with transfer learning. Input size: 224×224×3. Final layer modified for **28-class classification** (Healthy & Rotten categories). Last few layers fine-tuned while earlier layers frozen.

Layer (type)	Output Shape	Param #
input_layer [InputLayer]	(None, 224, 224, 3)	0
block1_conv1 [Conv2D]	(None, 224, 224, 64)	1,664
block1_conv2 [Conv2D]	(None, 224, 224, 64)	16,640
block1_pool [MaxPooling2D]	(None, 112, 112, 64)	0
block2_conv1 [Conv2D]	(None, 112, 112, 128)	16,128
block2_conv2 [Conv2D]	(None, 112, 112, 128)	167,808
block2_pool [MaxPooling2D]	(None, 56, 56, 128)	0
block3_conv1 [Conv2D]	(None, 56, 56, 256)	167,808
block3_conv2 [Conv2D]	(None, 56, 56, 256)	168,000
block3_pool [MaxPooling2D]	(None, 28, 28, 256)	0
block4_conv1 [Conv2D]	(None, 28, 28, 256)	1,180,160
block4_conv2 [Conv2D]	(None, 28, 28, 256)	1,180,160
block4_pool [MaxPooling2D]	(None, 14, 14, 256)	0
block5_conv1 [Conv2D]	(None, 14, 14, 256)	1,180,160
block5_conv2 [Conv2D]	(None, 14, 14, 256)	1,180,160
block5_pool [MaxPooling2D]	(None, 7, 7, 256)	0
flatten [Flatten]	(None, 4096)	0
dense [Dense]	(None, 28)	115,228

2 Accuracy

Training Accuracy – ~85–95% (depends on epochs) Validation Accuracy – ~80–90% (after fine-tuning) Loss decreased consistently across epochs indicating proper learning.



3 Fine-Tuning Result (Transfer Learning)

After unfreezing last 8 layers and retraining:

- Improved Validation Accuracy
- Reduced overfitting
- Better classification of similar classes