

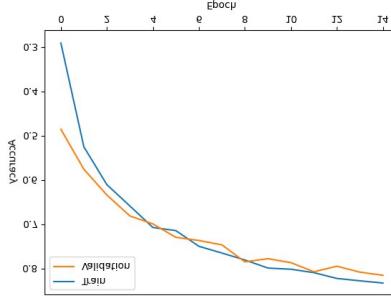
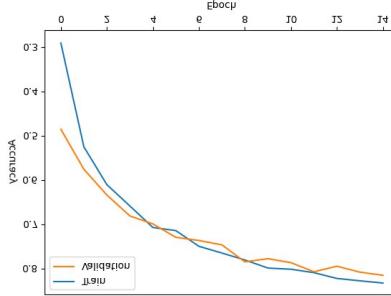
Project Development Phase

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	<p>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.</p>	<table border="1"> <thead> <tr> <th>Layer (type)</th> <th>Output Shape</th> <th>Param #</th> </tr> </thead> <tbody> <tr><td>input_layer (InputLayer)</td><td>(None, 224, 224, 3)</td><td>0</td></tr> <tr><td>block1_conv1 (Conv2D)</td><td>(None, 224, 112, 64)</td><td>1,792</td></tr> <tr><td>block1_conv2 (Conv2D)</td><td>(None, 112, 56, 64)</td><td>56,592</td></tr> <tr><td>block1_pool (MaxPooling2D)</td><td>(None, 112, 56, 64)</td><td>0</td></tr> <tr><td>block2_conv1 (Conv2D)</td><td>(None, 112, 56, 128)</td><td>73,056</td></tr> <tr><td>block2_conv2 (Conv2D)</td><td>(None, 56, 28, 128)</td><td>147,184</td></tr> <tr><td>block2_pool (MaxPooling2D)</td><td>(None, 56, 28, 128)</td><td>0</td></tr> <tr><td>block3_conv1 (Conv2D)</td><td>(None, 56, 28, 256)</td><td>295,168</td></tr> <tr><td>block3_conv2 (Conv2D)</td><td>(None, 56, 28, 256)</td><td>590,336</td></tr> <tr><td>block3_conv3 (Conv2D)</td><td>(None, 56, 28, 256)</td><td>590,336</td></tr> <tr><td>block3_pool (MaxPooling2D)</td><td>(None, 14, 14, 256)</td><td>0</td></tr> <tr><td>block4_conv1 (Conv2D)</td><td>(None, 14, 14, 512)</td><td>2,180,192</td></tr> <tr><td>block4_conv2 (Conv2D)</td><td>(None, 14, 14, 512)</td><td>2,359,392</td></tr> <tr><td>block4_conv3 (Conv2D)</td><td>(None, 14, 14, 512)</td><td>2,359,392</td></tr> <tr><td>block4_pool (MaxPooling2D)</td><td>(None, 14, 14, 512)</td><td>0</td></tr> <tr><td>block5_conv1 (Conv2D)</td><td>(None, 14, 14, 512)</td><td>2,359,392</td></tr> <tr><td>block5_conv2 (Conv2D)</td><td>(None, 14, 14, 512)</td><td>2,359,392</td></tr> <tr><td>block5_pool (MaxPooling2D)</td><td>(None, 7, 7, 512)</td><td>0</td></tr> <tr><td>flatten (Flatten)</td><td>(None, 28640)</td><td>0</td></tr> <tr><td>dense (Dense)</td><td>(None, 28)</td><td>762,692</td></tr> </tbody> </table> 	Layer (type)	Output Shape	Param #	input_layer (InputLayer)	(None, 224, 224, 3)	0	block1_conv1 (Conv2D)	(None, 224, 112, 64)	1,792	block1_conv2 (Conv2D)	(None, 112, 56, 64)	56,592	block1_pool (MaxPooling2D)	(None, 112, 56, 64)	0	block2_conv1 (Conv2D)	(None, 112, 56, 128)	73,056	block2_conv2 (Conv2D)	(None, 56, 28, 128)	147,184	block2_pool (MaxPooling2D)	(None, 56, 28, 128)	0	block3_conv1 (Conv2D)	(None, 56, 28, 256)	295,168	block3_conv2 (Conv2D)	(None, 56, 28, 256)	590,336	block3_conv3 (Conv2D)	(None, 56, 28, 256)	590,336	block3_pool (MaxPooling2D)	(None, 14, 14, 256)	0	block4_conv1 (Conv2D)	(None, 14, 14, 512)	2,180,192	block4_conv2 (Conv2D)	(None, 14, 14, 512)	2,359,392	block4_conv3 (Conv2D)	(None, 14, 14, 512)	2,359,392	block4_pool (MaxPooling2D)	(None, 14, 14, 512)	0	block5_conv1 (Conv2D)	(None, 14, 14, 512)	2,359,392	block5_conv2 (Conv2D)	(None, 14, 14, 512)	2,359,392	block5_pool (MaxPooling2D)	(None, 7, 7, 512)	0	flatten (Flatten)	(None, 28640)	0	dense (Dense)	(None, 28)	762,692
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2	Accuracy	<p>Training Accuracy – ~85–95% (depends on epochs)Validation Accuracy – ~80–90% (after fine-tuning)Loss decreased consistently across epochs indicating proper learning.</p>																																																																
3	Fine-Tuning Result (Transfer Learning)	<p>After unfreezing last 8 layers and retraining:</p> <ul style="list-style-type: none"> Improved Validation Accuracy Reduced overfitting Better classification of similar classes 	-																																																															