

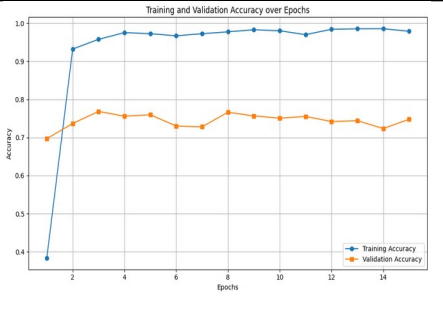
Project Development Phase Model Performance Test

Date	27 June 2025
Team ID	LTVIP2025TMID5573
Project Name	Enchanted wings:Marvels of Butterfly species
Maximum Marks	

Model Performance Testing:

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

S.N o.	Parameter	Values	Screenshot																																																																		
1.	Model Summary	VGG16 base (frozen) + Custom Dense layers	<table><tr><th>Layer (type)</th><th>Output Shape</th><th>Param #</th></tr><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, 224, 64)</td><td>1,792</td></tr><tr><td>block1_conv2 (Conv2D)</td><td>(None, 224, 224, 64)</td><td>36,928</td></tr><tr><td>block1_pool (MaxPooling2D)</td><td>(None, 112, 112, 64)</td><td>0</td></tr><tr><td>block2_conv1 (Conv2D)</td><td>(None, 112, 112, 128)</td><td>73,856</td></tr><tr><td>block2_conv2 (Conv2D)</td><td>(None, 112, 112, 128)</td><td>147,584</td></tr><tr><td>block2_pool (MaxPooling2D)</td><td>(None, 56, 56, 128)</td><td>0</td></tr><tr><td>block3_conv1 (Conv2D)</td><td>(None, 56, 56, 256)</td><td>295,168</td></tr><tr><td>block3_conv2 (Conv2D)</td><td>(None, 56, 56, 256)</td><td>590,880</td></tr><tr><td>block3_conv3 (Conv2D)</td><td>(None, 56, 56, 256)</td><td>590,880</td></tr><tr><td>block3_pool (MaxPooling2D)</td><td>(None, 28, 28, 256)</td><td>0</td></tr><tr><td>block4_conv1 (Conv2D)</td><td>(None, 28, 28, 512)</td><td>1,180,160</td></tr><tr><td>block4_conv2 (Conv2D)</td><td>(None, 28, 28, 512)</td><td>2,359,808</td></tr><tr><td>block4_conv3 (Conv2D)</td><td>(None, 28, 28, 512)</td><td>2,359,808</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>2,359,808</td></tr><tr><td>block5_conv2 (Conv2D)</td><td>(None, 14, 14, 512)</td><td>2,359,808</td></tr><tr><td>block5_conv3 (Conv2D)</td><td>(None, 14, 14, 512)</td><td>2,359,808</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, 25088)</td><td>0</td></tr><tr><td>dense (Dense)</td><td>(None, 75)</td><td>1,881,675</td></tr></table>	Layer (type)	Output Shape	Param #	input_layer (InputLayer)	(None, 224, 224, 3)	0	block1_conv1 (Conv2D)	(None, 224, 224, 64)	1,792	block1_conv2 (Conv2D)	(None, 224, 224, 64)	36,928	block1_pool (MaxPooling2D)	(None, 112, 112, 64)	0	block2_conv1 (Conv2D)	(None, 112, 112, 128)	73,856	block2_conv2 (Conv2D)	(None, 112, 112, 128)	147,584	block2_pool (MaxPooling2D)	(None, 56, 56, 128)	0	block3_conv1 (Conv2D)	(None, 56, 56, 256)	295,168	block3_conv2 (Conv2D)	(None, 56, 56, 256)	590,880	block3_conv3 (Conv2D)	(None, 56, 56, 256)	590,880	block3_pool (MaxPooling2D)	(None, 28, 28, 256)	0	block4_conv1 (Conv2D)	(None, 28, 28, 512)	1,180,160	block4_conv2 (Conv2D)	(None, 28, 28, 512)	2,359,808	block4_conv3 (Conv2D)	(None, 28, 28, 512)	2,359,808	block4_pool (MaxPooling2D)	(None, 14, 14, 512)	0	block5_conv1 (Conv2D)	(None, 14, 14, 512)	2,359,808	block5_conv2 (Conv2D)	(None, 14, 14, 512)	2,359,808	block5_conv3 (Conv2D)	(None, 14, 14, 512)	2,359,808	block5_pool (MaxPooling2D)	(None, 7, 7, 512)	0	flatten (Flatten)	(None, 25088)	0	dense (Dense)	(None, 75)	1,881,675
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2.	Accuracy	Training Accuracy – 95.53% Validation Accuracy – 91.34%	<table><caption>Training and Validation Accuracy over Epochs</caption><thead><tr><th>Epoch</th><th>Training Accuracy</th><th>Validation Accuracy</th></tr></thead><tbody><tr><td>1</td><td>0.40</td><td>0.70</td></tr><tr><td>2</td><td>0.92</td><td>0.73</td></tr><tr><td>3</td><td>0.94</td><td>0.75</td></tr><tr><td>4</td><td>0.95</td><td>0.74</td></tr><tr><td>5</td><td>0.95</td><td>0.74</td></tr><tr><td>6</td><td>0.95</td><td>0.72</td></tr><tr><td>7</td><td>0.95</td><td>0.72</td></tr><tr><td>8</td><td>0.95</td><td>0.75</td></tr><tr><td>9</td><td>0.95</td><td>0.74</td></tr><tr><td>10</td><td>0.95</td><td>0.74</td></tr><tr><td>11</td><td>0.95</td><td>0.74</td></tr><tr><td>12</td><td>0.95</td><td>0.73</td></tr><tr><td>13</td><td>0.95</td><td>0.74</td></tr><tr><td>14</td><td>0.95</td><td>0.72</td></tr><tr><td>15</td><td>0.95</td><td>0.74</td></tr></tbody></table>	Epoch	Training Accuracy	Validation Accuracy	1	0.40	0.70	2	0.92	0.73	3	0.94	0.75	4	0.95	0.74	5	0.95	0.74	6	0.95	0.72	7	0.95	0.72	8	0.95	0.75	9	0.95	0.74	10	0.95	0.74	11	0.95	0.74	12	0.95	0.73	13	0.95	0.74	14	0.95	0.72	15	0.95	0.74																		
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3.	Fine Tunning Result(if Done)	Validation Accuracy - 92.01% (after unfreezing top layers)	 <p>The graph displays the performance of a model during fine-tuning. The x-axis represents the number of epochs (0 to 15), and the y-axis represents the accuracy (0.4 to 1.0). The training accuracy (blue line) shows a rapid increase from epoch 0 to 2, followed by a steady climb to approximately 0.98 by epoch 15. The validation accuracy (orange line) also increases from epoch 0 to 2, then fluctuates slightly, ending at approximately 0.75 by epoch 15.</p> <table><tr><th>Epochs</th><th>Training Accuracy</th><th>Validation Accuracy</th></tr><tr><td>0</td><td>0.38</td><td>0.68</td></tr><tr><td>1</td><td>0.93</td><td>0.72</td></tr><tr><td>2</td><td>0.94</td><td>0.74</td></tr><tr><td>3</td><td>0.95</td><td>0.75</td></tr><tr><td>4</td><td>0.96</td><td>0.74</td></tr><tr><td>5</td><td>0.96</td><td>0.74</td></tr><tr><td>6</td><td>0.96</td><td>0.73</td></tr><tr><td>7</td><td>0.97</td><td>0.73</td></tr><tr><td>8</td><td>0.97</td><td>0.75</td></tr><tr><td>9</td><td>0.98</td><td>0.74</td></tr><tr><td>10</td><td>0.98</td><td>0.74</td></tr><tr><td>11</td><td>0.97</td><td>0.74</td></tr><tr><td>12</td><td>0.98</td><td>0.73</td></tr><tr><td>13</td><td>0.98</td><td>0.74</td></tr><tr><td>14</td><td>0.98</td><td>0.73</td></tr><tr><td>15</td><td>0.98</td><td>0.75</td></tr></table>	Epochs	Training Accuracy	Validation Accuracy	0	0.38	0.68	1	0.93	0.72	2	0.94	0.74	3	0.95	0.75	4	0.96	0.74	5	0.96	0.74	6	0.96	0.73	7	0.97	0.73	8	0.97	0.75	9	0.98	0.74	10	0.98	0.74	11	0.97	0.74	12	0.98	0.73	13	0.98	0.74	14	0.98	0.73	15	0.98	0.75
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