

Project Development Phase

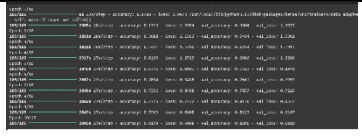
Model Performance Test

Date	27 June 2025
Team ID	LTVIP2025TMID41476
Project Name	Smart Sorting: Transfer Learning for identifying rotten fruits and vegetables
Maximum Marks	10 Marks

Model Performance Testing:

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

S.No	Parameter	Values	Screenshot																																																																																																																																																																
1.	Metrics	<div>VGG16+Dense output Model</div> <div>Classification Model: Confusion Matrix Accuray Score- 83 Classification Report – Accuracy-83 Precision-85 Recall-83 F1 Score-83</div>	<div>Confusion Matrix:</div> <div><pre>[[34 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 2 1 0 0 1 0 0 0 0 0] [0 30 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 2 4 0 1 0 0 0 0 0 0] [0 0 30 4 0 2 2 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 1 0 0 0 0 0] [0 2 2 31 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 1 0 0 2 0 0] [0 0 0 0 22 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0] [0 1 0 0 1 31 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 1 0 0 0 1 0 1 0] [0 0 0 0 0 0 35 1 0 0 0 0] [0 1 1 0 5 6 23 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 1 0] [0 0 0 0 2 1 0 35 0 0 0 0] [0 0 0 0 0 6 0 2 1 28 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0] [0 0 0 0 0 0 0 0 0 0 36 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0] [0 0 0 0 0 0 0 0 0 0 0 29 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0] [0 0 0 0 0 0 0 0 0 0 0 0 39 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0] [0 0 0 0 0 0 0 0 0 0 0 0 0 36 1 0 0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0] [0 0 0 0 0 0 0 0 0 0 0 0 0 1 38 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0] [0 0 0 0 0 0 0 0 0 0 0 0 0 0 4 31 1 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0] [0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 37 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0]]</pre></div> <div>Classification Report:</div> <table><thead><tr><th></th><th>precision</th><th>recall</th><th>f1-score</th><th>support</th></tr></thead><tbody><tr><td>0</td><td>0.92</td><td>0.85</td><td>0.88</td><td>40</td></tr><tr><td>1</td><td>0.79</td><td>0.75</td><td>0.77</td><td>40</td></tr><tr><td>2</td><td>0.91</td><td>0.75</td><td>0.82</td><td>40</td></tr><tr><td>3</td><td>0.86</td><td>0.78</td><td>0.82</td><td>40</td></tr><tr><td>4</td><td>0.96</td><td>0.68</td><td>0.79</td><td>40</td></tr><tr><td>5</td><td>0.46</td><td>0.78</td><td>0.58</td><td>40</td></tr><tr><td>6</td><td>0.70</td><td>0.88</td><td>0.78</td><td>40</td></tr><tr><td>7</td><td>0.82</td><td>0.57</td><td>0.68</td><td>40</td></tr><tr><td>8</td><td>0.92</td><td>0.88</td><td>0.90</td><td>40</td></tr><tr><td>9</td><td>0.97</td><td>0.78</td><td>0.81</td><td>40</td></tr><tr><td>10</td><td>1.00</td><td>0.90</td><td>0.95</td><td>40</td></tr><tr><td>11</td><td>1.00</td><td>0.97</td><td>0.99</td><td>40</td></tr><tr><td>12</td><td>1.00</td><td>0.97</td><td>0.99</td><td>40</td></tr><tr><td>13</td><td>0.86</td><td>0.90</td><td>0.88</td><td>40</td></tr><tr><td>14</td><td>0.83</td><td>0.95</td><td>0.88</td><td>40</td></tr><tr><td>15</td><td>1.00</td><td>0.78</td><td>0.87</td><td>40</td></tr><tr><td>16</td><td>0.79</td><td>0.93</td><td>0.85</td><td>40</td></tr><tr><td>17</td><td>0.81</td><td>0.95</td><td>0.87</td><td>40</td></tr><tr><td>18</td><td>0.87</td><td>0.85</td><td>0.86</td><td>40</td></tr><tr><td>19</td><td>0.76</td><td>0.78</td><td>0.77</td><td>40</td></tr><tr><td>20</td><td>0.97</td><td>0.93</td><td>0.95</td><td>40</td></tr><tr><td>21</td><td>0.97</td><td>0.95</td><td>0.96</td><td>40</td></tr><tr><td>22</td><td>0.53</td><td>0.89</td><td>0.64</td><td>40</td></tr><tr><td>23</td><td>0.76</td><td>0.65</td><td>0.70</td><td>40</td></tr><tr><td>24</td><td>0.97</td><td>0.88</td><td>0.92</td><td>40</td></tr><tr><td>25</td><td>0.78</td><td>0.95</td><td>0.85</td><td>40</td></tr><tr><td>26</td><td>0.82</td><td>0.90</td><td>0.86</td><td>40</td></tr><tr><td>27</td><td>0.93</td><td>0.68</td><td>0.78</td><td>40</td></tr><tr><td>accuracy</td><td></td><td></td><td>0.83</td><td>1120</td></tr><tr><td>macro avg</td><td>0.86</td><td>0.83</td><td>0.84</td><td>1120</td></tr><tr><td>weighted avg</td><td>0.86</td><td>0.83</td><td>0.84</td><td>1120</td></tr></tbody></table>		precision	recall	f1-score	support	0	0.92	0.85	0.88	40	1	0.79	0.75	0.77	40	2	0.91	0.75	0.82	40	3	0.86	0.78	0.82	40	4	0.96	0.68	0.79	40	5	0.46	0.78	0.58	40	6	0.70	0.88	0.78	40	7	0.82	0.57	0.68	40	8	0.92	0.88	0.90	40	9	0.97	0.78	0.81	40	10	1.00	0.90	0.95	40	11	1.00	0.97	0.99	40	12	1.00	0.97	0.99	40	13	0.86	0.90	0.88	40	14	0.83	0.95	0.88	40	15	1.00	0.78	0.87	40	16	0.79	0.93	0.85	40	17	0.81	0.95	0.87	40	18	0.87	0.85	0.86	40	19	0.76	0.78	0.77	40	20	0.97	0.93	0.95	40	21	0.97	0.95	0.96	40	22	0.53	0.89	0.64	40	23	0.76	0.65	0.70	40	24	0.97	0.88	0.92	40	25	0.78	0.95	0.85	40	26	0.82	0.90	0.86	40	27	0.93	0.68	0.78	40	accuracy			0.83	1120	macro avg	0.86	0.83	0.84	1120	weighted avg	0.86	0.83	0.84	1120
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2.	Tune the Model	<p>Hyperparameter Tuning - <input type="checkbox"/></p> <p>Learning Rate: 1e-5 (during fine-tuning)</p> <p>Epochs: 10 (fine-tuning), with EarlyStopping enabled</p> <p>EarlyStopping = True</p> <p>Validation Method - Validation split with ImageDataGenerator</p>	
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