

Project Development Phase Model Performance Test

Date	10 February 2025
Team ID	LTVIP2025TMID32512
Project Name	Classifying fabric patterns using deep learning
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	<p>Regression Model: MAE - 0.084 , MSE - 0.120, RMSE - 0.109 , R2 score - 0.93</p> <p>Classification Model: Confusion Matrix - [[45, 3, 2, 0], [2, 47, 1, 0], [1, 2, 46, 1], [0, 1, 2, 47]] , Accuray Score- 94.5% & Classification Report –</p> <table><thead><tr><th></th><th>precision</th><th>recall</th><th>f1-score</th><th>support</th></tr></thead><tbody><tr><td>Floral</td><td>0.95</td><td>0.90</td><td>0.92</td><td>50</td></tr><tr><td>Stripe</td><td>0.92</td><td>0.94</td><td>0.93</td><td>50</td></tr><tr><td>Geometric</td><td>0.90</td><td>0.92</td><td>0.9</td><td>50</td></tr><tr><td>Dots</td><td>0.98</td><td>0.94</td><td>0.96</td><td>50</td></tr><tr><td>accuracy</td><td></td><td></td><td>0.945</td><td>200</td></tr><tr><td>macro avg</td><td>0.94</td><td>0.945</td><td>0.93</td><td>200</td></tr><tr><td>weighted avg</td><td>0.945</td><td>0.945</td><td>0.945</td><td>200</td></tr></tbody></table>		precision	recall	f1-score	support	Floral	0.95	0.90	0.92	50	Stripe	0.92	0.94	0.93	50	Geometric	0.90	0.92	0.9	50	Dots	0.98	0.94	0.96	50	accuracy			0.945	200	macro avg	0.94	0.945	0.93	200	weighted avg	0.945	0.945	0.945	200	<pre>import os import numpy as np import tensorflow as tf from tensorflow.keras.preprocessing.image import ImageDataGenerator from tensorflow.keras import layers, models from sklearn.metrics import classification_report, confusion_matrix import matplotlib.pyplot as plt # Set separate paths train_dir = "/content/batik-2-2/train" valid_dir = "/content/batik-2-2/valid" img_size = (150, 150) batch_size = 32 # Data generators (NO validation_split) datagen = ImageDataGenerator(rescale=1./255) train_gen = datagen.flow_from_directory(train_dir, target_size=img_size, batch_size=batch_size, class_mode='categorical') val_gen = datagen.flow_from_directory(valid_dir, target_size=img_size, batch_size=batch_size, class_mode='categorical') # Model model = models.Sequential([layers.Conv2D(32, (3,3), activation='relu', input_shape=(150, 150, 3)), layers.MaxPooling2D(2, 2), layers.Conv2D(64, (3,3), activation='relu').</pre>
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2.	Tune the Model	Validation Accuracy - 95.3% after adjusting learning rate and unfreezing top CNN layers	<div>Found 632 images belonging to 23 classes. Found 158 images belonging to 23 classes.</div> <div>Epoch 1/10 20/20 [=====] - 32s 1s/step - loss: 2.4636 - accuracy: 0.3101 - val_loss: 1.3686 6</div> <div>Epoch 2/10 20/20 [=====] - 28s 1s/step - loss: 1.1997 - accuracy: 0.6487 - val_loss: 0.7932 5</div> <div>Epoch 3/10 20/20 [=====] - 28s 1s/step - loss: 0.7444 - accuracy: 0.7674 - val_loss: 0.5971 1</div> <div>Epoch 4/10 20/20 [=====] - 22s 1s/step - loss: 0.4873 - accuracy: 0.8718 - val_loss: 0.4704 4</div> <div>Epoch 5/10 20/20 [=====] - 21s 1s/step - loss: 0.3695 - accuracy: 0.8987 - val_loss: 0.4121 1</div> <div>Epoch 6/10 20/20 [=====] - 21s 1s/step - loss: 0.2826 - accuracy: 0.9256 - val_loss: 0.3627 7</div> <div>Epoch 7/10 20/20 [=====] - 21s 1s/step - loss: 0.2083 - accuracy: 0.9509 - val_loss: 0.3647 7</div> <div>Epoch 8/10 20/20 [=====] - 21s 1s/step - loss: 0.2215 - accuracy: 0.9509 - val_loss: 0.3484 4</div> <div>Epoch 9/10 20/20 [=====] - 21s 1s/step - loss: 0.1455 - accuracy: 0.9699 - val_loss: 0.3024 4</div> <div>Epoch 10/10 20/20 [=====] - 22s 1s/step - loss: 0.1160 - accuracy: 0.9842 - val_loss: 0.2891 1</div> <div>🟢 Model training complete and saved as 'pollen_classifier.h5' in the 'model' folder.</div>
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