tabase Connection Started

2024-05-15 05:34:02.409958: I tensorflow/core/util/port.cc:113] oneDNN custom operations are on. You may see slightly different numerical results due to floating-point round-off errors from different computation orders. To turn them off, set the environment variable `TF\_ENABLE\_ONEDNN\_OPTS=0`.

2024-05-15 05:34:05.289139: I tensorflow/core/util/port.cc:113] oneDNN custom operations are on. You may see slightly different numerical results due to floating-point round-off errors from different computation orders. To turn them off, set the environment variable `TF\_ENABLE\_ONEDNN\_OPTS=0`.

Starting DataPreparation

Orignal Data :

Connected to the database

Database connection closed.

Train data count: 353

Test data count: 92

Species dict: {1: 'Aloevera', 2: 'Amla', 3: 'Amruthaballi', 4: 'Arali', 5: 'Ashoka'}

Data preparation complete.

staring training InceptionV3

2024-05-15 05:34:18.035888: I tensorflow/core/platform/cpu\_feature\_guard.cc:210] This TensorFlow binary is optimized to use available CPU instructions in performance-critical operations.

To enable the following instructions: AVX2 FMA, in other operations, rebuild TensorFlow with the appropriate compiler flags.

Epoch 1/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 994ms/step - accuracy: 0.6580 - loss: 1.5310

Epoch 1: val\_loss improved from inf to 16.06256, saving model to InceptionV3\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 24s 2s/step - accuracy: 0.6680 - loss: 1.4952 - val\_accuracy: 0.6196 - val\_loss: 16.0626 - learning\_rate: 0.0100

Epoch 2/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 986ms/step - accuracy: 0.9836 - loss: 0.1244

Epoch 2: val\_loss improved from 16.06256 to 10.38284, saving model to InceptionV3\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 16s 1s/step - accuracy: 0.9826 - loss: 0.1286 - val\_accuracy: 0.5543 - val\_loss: 10.3828 - learning\_rate: 0.0100

Epoch 3/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 978ms/step - accuracy: 0.9778 - loss: 0.0512

Epoch 3: val\_loss improved from 10.38284 to 4.34120, saving model to InceptionV3\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 16s 1s/step - accuracy: 0.9773 - loss: 0.0530 - val\_accuracy: 0.7391 - val\_loss: 4.3412 - learning\_rate: 0.0100

Epoch 4/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 985ms/step - accuracy: 0.9912 - loss: 0.0152

Epoch 4: val\_loss improved from 4.34120 to 3.13514, saving model to InceptionV3\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 16s 1s/step - accuracy: 0.9912 - loss: 0.0152 - val\_accuracy: 0.7826 - val\_loss: 3.1351 - learning\_rate: 0.0100

Epoch 5/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 987ms/step - accuracy: 0.9890 - loss: 0.0265

Epoch 5: val\_loss improved from 3.13514 to 2.99322, saving model to InceptionV3\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 16s 1s/step - accuracy: 0.9892 - loss: 0.0275 - val\_accuracy: 0.7609 - val\_loss: 2.9932 - learning\_rate: 0.0100

Epoch 6/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 979ms/step - accuracy: 0.9931 - loss: 0.0409

Epoch 6: val\_loss improved from 2.99322 to 1.25137, saving model to InceptionV3\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 16s 1s/step - accuracy: 0.9930 - loss: 0.0406 - val\_accuracy: 0.8478 - val\_loss: 1.2514 - learning\_rate: 0.0100

Epoch 7/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 972ms/step - accuracy: 0.9928 - loss: 0.0192

Epoch 7: val\_loss improved from 1.25137 to 0.29635, saving model to InceptionV3\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 16s 1s/step - accuracy: 0.9923 - loss: 0.0217 - val\_accuracy: 0.9348 - val\_loss: 0.2964 - learning\_rate: 0.0100

Epoch 8/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 975ms/step - accuracy: 0.9987 - loss: 0.0067

Epoch 8: val\_loss did not improve from 0.29635

12/12 ━━━━━━━━━━━━━━━━━━━━ 15s 1s/step - accuracy: 0.9984 - loss: 0.0083 - val\_accuracy: 0.7935 - val\_loss: 2.0743 - learning\_rate: 0.0100

Epoch 9/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 966ms/step - accuracy: 0.9890 - loss: 0.0455

Epoch 9: ReduceLROnPlateau reducing learning rate to 0.0009999999776482583.

Epoch 9: val\_loss did not improve from 0.29635

12/12 ━━━━━━━━━━━━━━━━━━━━ 15s 1s/step - accuracy: 0.9885 - loss: 0.0471 - val\_accuracy: 0.9348 - val\_loss: 0.4505 - learning\_rate: 0.0100

Epoch 10/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 967ms/step - accuracy: 0.9980 - loss: 0.0055

Epoch 10: val\_loss improved from 0.29635 to 0.21559, saving model to InceptionV3\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 15s 1s/step - accuracy: 0.9978 - loss: 0.0061 - val\_accuracy: 0.9565 - val\_loss: 0.2156 - learning\_rate: 1.0000e-03

Epoch 11/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 956ms/step - accuracy: 0.9967 - loss: 0.0045

Epoch 11: val\_loss improved from 0.21559 to 0.11549, saving model to InceptionV3\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 16s 1s/step - accuracy: 0.9967 - loss: 0.0046 - val\_accuracy: 0.9783 - val\_loss: 0.1155 - learning\_rate: 1.0000e-03

Epoch 12/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 968ms/step - accuracy: 0.9998 - loss: 0.0037

Epoch 12: val\_loss improved from 0.11549 to 0.05475, saving model to InceptionV3\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 16s 1s/step - accuracy: 0.9996 - loss: 0.0039 - val\_accuracy: 0.9783 - val\_loss: 0.0548 - learning\_rate: 1.0000e-03

Epoch 13/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 965ms/step - accuracy: 0.9917 - loss: 0.0108

Epoch 13: val\_loss improved from 0.05475 to 0.03165, saving model to InceptionV3\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 16s 1s/step - accuracy: 0.9919 - loss: 0.0110 - val\_accuracy: 0.9783 - val\_loss: 0.0316 - learning\_rate: 1.0000e-03

Epoch 14/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 982ms/step - accuracy: 0.9912 - loss: 0.0149

Epoch 14: val\_loss improved from 0.03165 to 0.00625, saving model to InceptionV3\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 16s 1s/step - accuracy: 0.9912 - loss: 0.0157 - val\_accuracy: 1.0000 - val\_loss: 0.0063 - learning\_rate: 1.0000e-03

Epoch 15/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 1s/step - accuracy: 1.0000 - loss: 3.4609e-04

Epoch 15: val\_loss improved from 0.00625 to 0.00119, saving model to InceptionV3\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 17s 1s/step - accuracy: 1.0000 - loss: 5.3049e-04 - val\_accuracy: 1.0000 - val\_loss: 0.0012 - learning\_rate: 1.0000e-03

Epoch 16/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 1s/step - accuracy: 1.0000 - loss: 6.1775e-04

Epoch 16: val\_loss improved from 0.00119 to 0.00076, saving model to InceptionV3\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 17s 1s/step - accuracy: 1.0000 - loss: 7.8100e-04 - val\_accuracy: 1.0000 - val\_loss: 7.6201e-04 - learning\_rate: 1.0000e-03

Epoch 17/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 1s/step - accuracy: 1.0000 - loss: 0.0040

Epoch 17: val\_loss did not improve from 0.00076

12/12 ━━━━━━━━━━━━━━━━━━━━ 16s 1s/step - accuracy: 1.0000 - loss: 0.0039 - val\_accuracy: 1.0000 - val\_loss: 8.5843e-04 - learning\_rate: 1.0000e-03

Epoch 18/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 1s/step - accuracy: 0.9993 - loss: 0.0033

Epoch 18: ReduceLROnPlateau reducing learning rate to 0.0001.

Epoch 18: val\_loss did not improve from 0.00076

12/12 ━━━━━━━━━━━━━━━━━━━━ 15s 1s/step - accuracy: 0.9989 - loss: 0.0048 - val\_accuracy: 1.0000 - val\_loss: 0.0012 - learning\_rate: 1.0000e-03

Epoch 19/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 1s/step - accuracy: 0.9998 - loss: 0.0059

Epoch 19: val\_loss did not improve from 0.00076

12/12 ━━━━━━━━━━━━━━━━━━━━ 15s 1s/step - accuracy: 0.9996 - loss: 0.0059 - val\_accuracy: 1.0000 - val\_loss: 0.0012 - learning\_rate: 1.0000e-04

Epoch 20/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 1s/step - accuracy: 0.9990 - loss: 0.0018

Epoch 20: val\_loss did not improve from 0.00076

12/12 ━━━━━━━━━━━━━━━━━━━━ 16s 1s/step - accuracy: 0.9988 - loss: 0.0021 - val\_accuracy: 1.0000 - val\_loss: 0.0011 - learning\_rate: 1.0000e-04

Epoch 21/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 1s/step - accuracy: 0.9971 - loss: 0.0039

Epoch 21: val\_loss did not improve from 0.00076

12/12 ━━━━━━━━━━━━━━━━━━━━ 17s 1s/step - accuracy: 0.9969 - loss: 0.0045 - val\_accuracy: 1.0000 - val\_loss: 8.3096e-04 - learning\_rate: 1.0000e-04

12/12 ━━━━━━━━━━━━━━━━━━━━ 17s 1s/step

3/3 ━━━━━━━━━━━━━━━━━━━━ 4s 1s/step

Training R2: 0.999999999988003, Mean R2: 1.867978235064678e-12

Test R2: 0.9998752435701419, Mean R2: 2.0015197091599914e-05

Train loss: 2.2355727935519099e-07, Train accuracy: 1.0

Test loss: 0.0008309580734930933, Test accuracy: 1.0

staring training InceptionResNetV2

WARNING:tensorflow:From C:\Users\kumar\AppData\Local\Programs\Python\Python312\Lib\site-packages\keras\src\backend\tensorflow\core.py:184: The name tf.placeholder is deprecated. Please use tf.compat.v1.placeholder instead.

Epoch 1/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 3s/step - accuracy: 0.7056 - loss: 1.1490

Epoch 1: val\_loss improved from inf to 8.99186, saving model to Inception\_ResNet\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 63s 4s/step - accuracy: 0.7157 - loss: 1.1169 - val\_accuracy: 0.6413 - val\_loss: 8.9919 - learning\_rate: 0.0100

Epoch 2/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 3s/step - accuracy: 0.9390 - loss: 0.1961

Epoch 2: val\_loss improved from 8.99186 to 6.44901, saving model to Inception\_ResNet\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 42s 3s/step - accuracy: 0.9383 - loss: 0.1997 - val\_accuracy: 0.6630 - val\_loss: 6.4490 - learning\_rate: 0.0100

Epoch 3/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 3s/step - accuracy: 0.9714 - loss: 0.1266

Epoch 3: val\_loss improved from 6.44901 to 2.71576, saving model to Inception\_ResNet\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 41s 3s/step - accuracy: 0.9708 - loss: 0.1324 - val\_accuracy: 0.8370 - val\_loss: 2.7158 - learning\_rate: 0.0100

Epoch 4/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 3s/step - accuracy: 0.9792 - loss: 0.0866

Epoch 4: val\_loss improved from 2.71576 to 2.60166, saving model to Inception\_ResNet\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 41s 3s/step - accuracy: 0.9791 - loss: 0.0881 - val\_accuracy: 0.8696 - val\_loss: 2.6017 - learning\_rate: 0.0100

Epoch 5/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 3s/step - accuracy: 0.9946 - loss: 0.0351

Epoch 5: val\_loss improved from 2.60166 to 1.55804, saving model to Inception\_ResNet\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 41s 3s/step - accuracy: 0.9939 - loss: 0.0364 - val\_accuracy: 0.9130 - val\_loss: 1.5580 - learning\_rate: 0.0100

Epoch 6/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 3s/step - accuracy: 0.9856 - loss: 0.1074

Epoch 6: val\_loss improved from 1.55804 to 1.34183, saving model to Inception\_ResNet\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 41s 3s/step - accuracy: 0.9856 - loss: 0.1033 - val\_accuracy: 0.9130 - val\_loss: 1.3418 - learning\_rate: 0.0100

Epoch 7/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 3s/step - accuracy: 0.9891 - loss: 0.0780

Epoch 7: val\_loss did not improve from 1.34183

12/12 ━━━━━━━━━━━━━━━━━━━━ 40s 3s/step - accuracy: 0.9887 - loss: 0.0794 - val\_accuracy: 0.8913 - val\_loss: 1.6234 - learning\_rate: 0.0100

Epoch 8/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 3s/step - accuracy: 0.9913 - loss: 0.0281

Epoch 8: ReduceLROnPlateau reducing learning rate to 0.0009999999776482583.

Epoch 8: val\_loss did not improve from 1.34183

12/12 ━━━━━━━━━━━━━━━━━━━━ 42s 4s/step - accuracy: 0.9911 - loss: 0.0284 - val\_accuracy: 0.8261 - val\_loss: 1.3426 - learning\_rate: 0.0100

Epoch 9/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 3s/step - accuracy: 0.9579 - loss: 0.2021

Epoch 9: val\_loss improved from 1.34183 to 0.55095, saving model to Inception\_ResNet\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 42s 4s/step - accuracy: 0.9591 - loss: 0.1948 - val\_accuracy: 0.9239 - val\_loss: 0.5509 - learning\_rate: 1.0000e-03

Epoch 10/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 3s/step - accuracy: 0.9934 - loss: 0.0234

Epoch 10: val\_loss improved from 0.55095 to 0.31244, saving model to Inception\_ResNet\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 43s 4s/step - accuracy: 0.9924 - loss: 0.0266 - val\_accuracy: 0.9457 - val\_loss: 0.3124 - learning\_rate: 1.0000e-03

Epoch 11/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 3s/step - accuracy: 0.9909 - loss: 0.0657

Epoch 11: val\_loss improved from 0.31244 to 0.14344, saving model to Inception\_ResNet\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 43s 4s/step - accuracy: 0.9903 - loss: 0.0676 - val\_accuracy: 0.9674 - val\_loss: 0.1434 - learning\_rate: 1.0000e-03

Epoch 12/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 3s/step - accuracy: 0.9984 - loss: 0.0176

Epoch 12: val\_loss improved from 0.14344 to 0.02400, saving model to Inception\_ResNet\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 45s 4s/step - accuracy: 0.9981 - loss: 0.0200 - val\_accuracy: 0.9783 - val\_loss: 0.0240 - learning\_rate: 1.0000e-03

Epoch 13/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 3s/step - accuracy: 0.9943 - loss: 0.0119

Epoch 13: val\_loss improved from 0.02400 to 0.00333, saving model to Inception\_ResNet\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 47s 4s/step - accuracy: 0.9943 - loss: 0.0125 - val\_accuracy: 1.0000 - val\_loss: 0.0033 - learning\_rate: 1.0000e-03

Epoch 14/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 3s/step - accuracy: 0.9917 - loss: 0.0109

Epoch 14: val\_loss improved from 0.00333 to 0.00174, saving model to Inception\_ResNet\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 46s 4s/step - accuracy: 0.9919 - loss: 0.0111 - val\_accuracy: 1.0000 - val\_loss: 0.0017 - learning\_rate: 1.0000e-03

Epoch 15/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 3s/step - accuracy: 0.9984 - loss: 0.0042

Epoch 15: val\_loss improved from 0.00174 to 0.00081, saving model to Inception\_ResNet\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 45s 4s/step - accuracy: 0.9981 - loss: 0.0046 - val\_accuracy: 1.0000 - val\_loss: 8.1061e-04 - learning\_rate: 1.0000e-03

Epoch 16/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 3s/step - accuracy: 0.9998 - loss: 0.0025

Epoch 16: val\_loss improved from 0.00081 to 0.00053, saving model to Inception\_ResNet\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 45s 4s/step - accuracy: 0.9996 - loss: 0.0030 - val\_accuracy: 1.0000 - val\_loss: 5.2823e-04 - learning\_rate: 1.0000e-03

Epoch 17/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 3s/step - accuracy: 0.9984 - loss: 0.0047

Epoch 17: val\_loss did not improve from 0.00053

12/12 ━━━━━━━━━━━━━━━━━━━━ 43s 4s/step - accuracy: 0.9981 - loss: 0.0057 - val\_accuracy: 1.0000 - val\_loss: 6.0032e-04 - learning\_rate: 1.0000e-03

Epoch 18/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 3s/step - accuracy: 0.9998 - loss: 7.8976e-04

Epoch 18: ReduceLROnPlateau reducing learning rate to 0.0001.

Epoch 18: val\_loss did not improve from 0.00053

12/12 ━━━━━━━━━━━━━━━━━━━━ 42s 4s/step - accuracy: 0.9996 - loss: 0.0013 - val\_accuracy: 1.0000 - val\_loss: 7.7653e-04 - learning\_rate: 1.0000e-03

Epoch 19/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 3s/step - accuracy: 0.9998 - loss: 4.8063e-04

Epoch 19: val\_loss did not improve from 0.00053

12/12 ━━━━━━━━━━━━━━━━━━━━ 42s 4s/step - accuracy: 0.9996 - loss: 7.8533e-04 - val\_accuracy: 1.0000 - val\_loss: 0.0020 - learning\_rate: 1.0000e-04

Epoch 20/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 3s/step - accuracy: 0.9985 - loss: 0.0134

Epoch 20: val\_loss did not improve from 0.00053

12/12 ━━━━━━━━━━━━━━━━━━━━ 41s 3s/step - accuracy: 0.9982 - loss: 0.0157 - val\_accuracy: 1.0000 - val\_loss: 0.0025 - learning\_rate: 1.0000e-04

Epoch 21/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 3s/step - accuracy: 0.9998 - loss: 4.8386e-04

Epoch 21: val\_loss did not improve from 0.00053

12/12 ━━━━━━━━━━━━━━━━━━━━ 41s 3s/step - accuracy: 0.9996 - loss: 7.6623e-04 - val\_accuracy: 1.0000 - val\_loss: 0.0055 - learning\_rate: 1.0000e-04

12/12 ━━━━━━━━━━━━━━━━━━━━ 41s 3s/step

3/3 ━━━━━━━━━━━━━━━━━━━━ 9s 3s/step

Training R2: 0.9999998914039695, Mean R2: 1.54431065267813e-08

Test R2: 0.9961966328209304, Mean R2: 0.0006577406410368282

Train loss: 1.2290553058846854e-05, Train accuracy: 1.0

Test loss: 0.005514456424862146, Test accuracy: 1.0

staring training ResNet50

Epoch 1/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 1s/step - accuracy: 0.4640 - loss: 1.8342

Epoch 1: val\_loss improved from inf to 9.23588, saving model to ResNet\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 23s 2s/step - accuracy: 0.4673 - loss: 1.8210 - val\_accuracy: 0.2826 - val\_loss: 9.2359 - learning\_rate: 0.0100

Epoch 2/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 1s/step - accuracy: 0.6369 - loss: 1.2001

Epoch 2: val\_loss did not improve from 9.23588

12/12 ━━━━━━━━━━━━━━━━━━━━ 16s 1s/step - accuracy: 0.6394 - loss: 1.1932 - val\_accuracy: 0.2391 - val\_loss: 11.9417 - learning\_rate: 0.0100

Epoch 3/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 1s/step - accuracy: 0.7218 - loss: 0.9685

Epoch 3: ReduceLROnPlateau reducing learning rate to 0.0009999999776482583.

Epoch 3: val\_loss did not improve from 9.23588

12/12 ━━━━━━━━━━━━━━━━━━━━ 16s 1s/step - accuracy: 0.7216 - loss: 0.9714 - val\_accuracy: 0.1957 - val\_loss: 42.5725 - learning\_rate: 0.0100

Epoch 4/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 1s/step - accuracy: 0.6443 - loss: 1.1268

Epoch 4: val\_loss did not improve from 9.23588

12/12 ━━━━━━━━━━━━━━━━━━━━ 16s 1s/step - accuracy: 0.6490 - loss: 1.1152 - val\_accuracy: 0.1957 - val\_loss: 36.2909 - learning\_rate: 1.0000e-03

Epoch 5/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 1s/step - accuracy: 0.7975 - loss: 0.7643

Epoch 5: ReduceLROnPlateau reducing learning rate to 0.0001.

Epoch 5: val\_loss did not improve from 9.23588

12/12 ━━━━━━━━━━━━━━━━━━━━ 16s 1s/step - accuracy: 0.7978 - loss: 0.7583 - val\_accuracy: 0.1957 - val\_loss: 27.4129 - learning\_rate: 1.0000e-03

Epoch 6/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 1s/step - accuracy: 0.7425 - loss: 0.7780

Epoch 6: val\_loss did not improve from 9.23588

12/12 ━━━━━━━━━━━━━━━━━━━━ 16s 1s/step - accuracy: 0.7427 - loss: 0.7749 - val\_accuracy: 0.1957 - val\_loss: 24.9547 - learning\_rate: 1.0000e-04

12/12 ━━━━━━━━━━━━━━━━━━━━ 15s 1s/step

3/3 ━━━━━━━━━━━━━━━━━━━━ 3s 1s/step

Training R2: -0.9967300184518406, Mean R2: 0.3195404576192137

Test R2: -1.0260960120279876, Mean R2: 0.32173912914530584

Train loss: 24.179841995239258, Train accuracy: 0.2011331468820572

Test loss: 24.95474624633789, Test accuracy: 0.19565217196941376

staring training VGG16

Epoch 1/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 2s/step - accuracy: 0.6362 - loss: 1.5593

Epoch 1: val\_loss improved from inf to 1.09071, saving model to VGG16\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 26s 2s/step - accuracy: 0.6468 - loss: 1.5171 - val\_accuracy: 0.6630 - val\_loss: 1.0907 - learning\_rate: 0.0100

Epoch 2/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 2s/step - accuracy: 0.9038 - loss: 0.3597

Epoch 2: val\_loss did not improve from 1.09071

12/12 ━━━━━━━━━━━━━━━━━━━━ 24s 2s/step - accuracy: 0.9047 - loss: 0.3557 - val\_accuracy: 0.7391 - val\_loss: 2.4815 - learning\_rate: 0.0100

Epoch 3/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 2s/step - accuracy: 0.9250 - loss: 0.2847

Epoch 3: ReduceLROnPlateau reducing learning rate to 0.0009999999776482583.

Epoch 3: val\_loss did not improve from 1.09071

12/12 ━━━━━━━━━━━━━━━━━━━━ 25s 2s/step - accuracy: 0.9259 - loss: 0.2823 - val\_accuracy: 0.7283 - val\_loss: 1.5849 - learning\_rate: 0.0100

Epoch 4/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 2s/step - accuracy: 0.9710 - loss: 0.1295

Epoch 4: val\_loss improved from 1.09071 to 0.84447, saving model to VGG16\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 25s 2s/step - accuracy: 0.9708 - loss: 0.1295 - val\_accuracy: 0.7717 - val\_loss: 0.8445 - learning\_rate: 1.0000e-03

Epoch 5/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 2s/step - accuracy: 0.9826 - loss: 0.0653

Epoch 5: val\_loss improved from 0.84447 to 0.54974, saving model to VGG16\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 24s 2s/step - accuracy: 0.9829 - loss: 0.0636 - val\_accuracy: 0.8370 - val\_loss: 0.5497 - learning\_rate: 1.0000e-03

Epoch 6/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 2s/step - accuracy: 0.9620 - loss: 0.1394

Epoch 6: val\_loss improved from 0.54974 to 0.39287, saving model to VGG16\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 24s 2s/step - accuracy: 0.9625 - loss: 0.1365 - val\_accuracy: 0.8913 - val\_loss: 0.3929 - learning\_rate: 1.0000e-03

Epoch 7/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 2s/step - accuracy: 0.9918 - loss: 0.0237

Epoch 7: val\_loss improved from 0.39287 to 0.30652, saving model to VGG16\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 24s 2s/step - accuracy: 0.9917 - loss: 0.0237 - val\_accuracy: 0.9130 - val\_loss: 0.3065 - learning\_rate: 1.0000e-03

Epoch 8/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 2s/step - accuracy: 0.9681 - loss: 0.0933

Epoch 8: val\_loss improved from 0.30652 to 0.21625, saving model to VGG16\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 25s 2s/step - accuracy: 0.9679 - loss: 0.0942 - val\_accuracy: 0.9457 - val\_loss: 0.2163 - learning\_rate: 1.0000e-03

Epoch 9/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 2s/step - accuracy: 0.9704 - loss: 0.0491

Epoch 9: val\_loss improved from 0.21625 to 0.14724, saving model to VGG16\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 25s 2s/step - accuracy: 0.9708 - loss: 0.0494 - val\_accuracy: 0.9565 - val\_loss: 0.1472 - learning\_rate: 1.0000e-03

Epoch 10/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 2s/step - accuracy: 0.9953 - loss: 0.0182

Epoch 10: val\_loss improved from 0.14724 to 0.07419, saving model to VGG16\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 25s 2s/step - accuracy: 0.9945 - loss: 0.0198 - val\_accuracy: 0.9783 - val\_loss: 0.0742 - learning\_rate: 1.0000e-03

Epoch 11/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 2s/step - accuracy: 0.9962 - loss: 0.0169

Epoch 11: val\_loss improved from 0.07419 to 0.04392, saving model to VGG16\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 26s 2s/step - accuracy: 0.9956 - loss: 0.0179 - val\_accuracy: 0.9891 - val\_loss: 0.0439 - learning\_rate: 1.0000e-03

Epoch 12/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 2s/step - accuracy: 0.9868 - loss: 0.0275

Epoch 12: val\_loss improved from 0.04392 to 0.02980, saving model to VGG16\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 25s 2s/step - accuracy: 0.9863 - loss: 0.0284 - val\_accuracy: 0.9891 - val\_loss: 0.0298 - learning\_rate: 1.0000e-03

Epoch 13/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 2s/step - accuracy: 1.0000 - loss: 0.0112

Epoch 13: val\_loss improved from 0.02980 to 0.02482, saving model to VGG16\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 25s 2s/step - accuracy: 1.0000 - loss: 0.0114 - val\_accuracy: 1.0000 - val\_loss: 0.0248 - learning\_rate: 1.0000e-03

Epoch 14/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 2s/step - accuracy: 0.9961 - loss: 0.0087

Epoch 14: val\_loss improved from 0.02482 to 0.02002, saving model to VGG16\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 24s 2s/step - accuracy: 0.9956 - loss: 0.0100 - val\_accuracy: 1.0000 - val\_loss: 0.0200 - learning\_rate: 1.0000e-03

Epoch 15/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 2s/step - accuracy: 0.9973 - loss: 0.0105

Epoch 15: val\_loss improved from 0.02002 to 0.01637, saving model to VGG16\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 24s 2s/step - accuracy: 0.9969 - loss: 0.0110 - val\_accuracy: 0.9891 - val\_loss: 0.0164 - learning\_rate: 1.0000e-03

Epoch 16/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 2s/step - accuracy: 0.9979 - loss: 0.0141

Epoch 16: val\_loss improved from 0.01637 to 0.00986, saving model to VGG16\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 24s 2s/step - accuracy: 0.9974 - loss: 0.0145 - val\_accuracy: 1.0000 - val\_loss: 0.0099 - learning\_rate: 1.0000e-03

Epoch 17/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 1s/step - accuracy: 0.9916 - loss: 0.0239

Epoch 17: val\_loss did not improve from 0.00986

12/12 ━━━━━━━━━━━━━━━━━━━━ 23s 2s/step - accuracy: 0.9914 - loss: 0.0244 - val\_accuracy: 1.0000 - val\_loss: 0.0112 - learning\_rate: 1.0000e-03

Epoch 18/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 1s/step - accuracy: 0.9854 - loss: 0.0621

Epoch 18: val\_loss improved from 0.00986 to 0.00798, saving model to VGG16\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 23s 2s/step - accuracy: 0.9852 - loss: 0.0619 - val\_accuracy: 1.0000 - val\_loss: 0.0080 - learning\_rate: 1.0000e-03

Epoch 19/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 1s/step - accuracy: 0.9748 - loss: 0.0681

Epoch 19: val\_loss did not improve from 0.00798

12/12 ━━━━━━━━━━━━━━━━━━━━ 23s 2s/step - accuracy: 0.9747 - loss: 0.0681 - val\_accuracy: 1.0000 - val\_loss: 0.0094 - learning\_rate: 1.0000e-03

Epoch 20/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 1s/step - accuracy: 0.9919 - loss: 0.0152

Epoch 20: ReduceLROnPlateau reducing learning rate to 0.0001.

Epoch 20: val\_loss did not improve from 0.00798

12/12 ━━━━━━━━━━━━━━━━━━━━ 23s 2s/step - accuracy: 0.9910 - loss: 0.0170 - val\_accuracy: 0.9891 - val\_loss: 0.0099 - learning\_rate: 1.0000e-03

Epoch 21/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 1s/step - accuracy: 0.9934 - loss: 0.0238

Epoch 21: val\_loss did not improve from 0.00798

12/12 ━━━━━━━━━━━━━━━━━━━━ 23s 2s/step - accuracy: 0.9933 - loss: 0.0242 - val\_accuracy: 1.0000 - val\_loss: 0.0091 - learning\_rate: 1.0000e-04

Epoch 22/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 1s/step - accuracy: 0.9883 - loss: 0.0173

Epoch 22: val\_loss did not improve from 0.00798

12/12 ━━━━━━━━━━━━━━━━━━━━ 23s 2s/step - accuracy: 0.9881 - loss: 0.0187 - val\_accuracy: 1.0000 - val\_loss: 0.0083 - learning\_rate: 1.0000e-04

Epoch 23/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 1s/step - accuracy: 0.9893 - loss: 0.0140

Epoch 23: val\_loss improved from 0.00798 to 0.00625, saving model to VGG16\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 23s 2s/step - accuracy: 0.9888 - loss: 0.0152 - val\_accuracy: 1.0000 - val\_loss: 0.0063 - learning\_rate: 1.0000e-04

Epoch 24/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 1s/step - accuracy: 0.9909 - loss: 0.0203

Epoch 24: val\_loss improved from 0.00625 to 0.00513, saving model to VGG16\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 23s 2s/step - accuracy: 0.9905 - loss: 0.0212 - val\_accuracy: 1.0000 - val\_loss: 0.0051 - learning\_rate: 1.0000e-04

Epoch 25/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 1s/step - accuracy: 0.9976 - loss: 0.0092

Epoch 25: val\_loss improved from 0.00513 to 0.00346, saving model to VGG16\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 23s 2s/step - accuracy: 0.9974 - loss: 0.0095 - val\_accuracy: 1.0000 - val\_loss: 0.0035 - learning\_rate: 1.0000e-04

Epoch 26/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 1s/step - accuracy: 0.9828 - loss: 0.0452

Epoch 26: val\_loss improved from 0.00346 to 0.00256, saving model to VGG16\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 23s 2s/step - accuracy: 0.9828 - loss: 0.0455 - val\_accuracy: 1.0000 - val\_loss: 0.0026 - learning\_rate: 1.0000e-04

Epoch 27/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 2s/step - accuracy: 0.9935 - loss: 0.0118

Epoch 27: val\_loss improved from 0.00256 to 0.00225, saving model to VGG16\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 25s 2s/step - accuracy: 0.9934 - loss: 0.0124 - val\_accuracy: 1.0000 - val\_loss: 0.0023 - learning\_rate: 1.0000e-04

Epoch 28/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 2s/step - accuracy: 0.9935 - loss: 0.0198

Epoch 28: val\_loss improved from 0.00225 to 0.00184, saving model to VGG16\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 26s 2s/step - accuracy: 0.9934 - loss: 0.0200 - val\_accuracy: 1.0000 - val\_loss: 0.0018 - learning\_rate: 1.0000e-04

Epoch 29/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 2s/step - accuracy: 0.9934 - loss: 0.0145

Epoch 29: val\_loss improved from 0.00184 to 0.00158, saving model to VGG16\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 24s 2s/step - accuracy: 0.9930 - loss: 0.0152 - val\_accuracy: 1.0000 - val\_loss: 0.0016 - learning\_rate: 1.0000e-04

Epoch 30/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 1s/step - accuracy: 0.9964 - loss: 0.0128

Epoch 30: val\_loss improved from 0.00158 to 0.00142, saving model to VGG16\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 23s 2s/step - accuracy: 0.9958 - loss: 0.0136 - val\_accuracy: 1.0000 - val\_loss: 0.0014 - learning\_rate: 1.0000e-04

Epoch 31/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 2s/step - accuracy: 0.9898 - loss: 0.0263

Epoch 31: val\_loss improved from 0.00142 to 0.00138, saving model to VGG16\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 24s 2s/step - accuracy: 0.9900 - loss: 0.0258 - val\_accuracy: 1.0000 - val\_loss: 0.0014 - learning\_rate: 1.0000e-04

Epoch 32/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 2s/step - accuracy: 0.9842 - loss: 0.0453

Epoch 32: val\_loss improved from 0.00138 to 0.00132, saving model to VGG16\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 24s 2s/step - accuracy: 0.9841 - loss: 0.0444 - val\_accuracy: 1.0000 - val\_loss: 0.0013 - learning\_rate: 1.0000e-04

Epoch 33/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 2s/step - accuracy: 0.9912 - loss: 0.0209

Epoch 33: val\_loss improved from 0.00132 to 0.00121, saving model to VGG16\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 24s 2s/step - accuracy: 0.9912 - loss: 0.0208 - val\_accuracy: 1.0000 - val\_loss: 0.0012 - learning\_rate: 1.0000e-04

Epoch 34/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 2s/step - accuracy: 0.9988 - loss: 0.0072

Epoch 34: val\_loss improved from 0.00121 to 0.00119, saving model to VGG16\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 24s 2s/step - accuracy: 0.9983 - loss: 0.0080 - val\_accuracy: 1.0000 - val\_loss: 0.0012 - learning\_rate: 1.0000e-04

Epoch 35/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 2s/step - accuracy: 0.9998 - loss: 0.0113

Epoch 35: val\_loss did not improve from 0.00119

12/12 ━━━━━━━━━━━━━━━━━━━━ 24s 2s/step - accuracy: 0.9996 - loss: 0.0114 - val\_accuracy: 1.0000 - val\_loss: 0.0014 - learning\_rate: 1.0000e-04

Epoch 36/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 2s/step - accuracy: 0.9859 - loss: 0.0242

Epoch 36: val\_loss did not improve from 0.00119

12/12 ━━━━━━━━━━━━━━━━━━━━ 24s 2s/step - accuracy: 0.9859 - loss: 0.0244 - val\_accuracy: 1.0000 - val\_loss: 0.0013 - learning\_rate: 1.0000e-04

Epoch 37/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 2s/step - accuracy: 0.9947 - loss: 0.0237

Epoch 37: val\_loss did not improve from 0.00119

12/12 ━━━━━━━━━━━━━━━━━━━━ 24s 2s/step - accuracy: 0.9945 - loss: 0.0239 - val\_accuracy: 1.0000 - val\_loss: 0.0013 - learning\_rate: 1.0000e-04

Epoch 38/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 2s/step - accuracy: 1.0000 - loss: 0.0052

Epoch 38: val\_loss did not improve from 0.00119

12/12 ━━━━━━━━━━━━━━━━━━━━ 25s 2s/step - accuracy: 1.0000 - loss: 0.0054 - val\_accuracy: 1.0000 - val\_loss: 0.0013 - learning\_rate: 1.0000e-04

Epoch 39/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 2s/step - accuracy: 0.9910 - loss: 0.0371

Epoch 39: val\_loss did not improve from 0.00119

12/12 ━━━━━━━━━━━━━━━━━━━━ 24s 2s/step - accuracy: 0.9908 - loss: 0.0369 - val\_accuracy: 1.0000 - val\_loss: 0.0013 - learning\_rate: 1.0000e-04

12/12 ━━━━━━━━━━━━━━━━━━━━ 19s 2s/step

3/3 ━━━━━━━━━━━━━━━━━━━━ 5s 2s/step

Training R2: 0.9999988119688172, Mean R2: 1.9382858170647556e-07

Test R2: 0.9998990348882865, Mean R2: 1.678269232151426e-05

Train loss: 0.00014494334754999727, Train accuracy: 1.0

Test loss: 0.0012552792904898524, Test accuracy: 1.0

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Database Connection Started

2024-05-15 06:27:39.269759: I tensorflow/core/util/port.cc:113] oneDNN custom operations are on. You may see slightly different numerical results due to floating-point round-off errors from different computation orders. To turn them off, set the environment variable `TF\_ENABLE\_ONEDNN\_OPTS=0`.

2024-05-15 06:27:39.960331: I tensorflow/core/util/port.cc:113] oneDNN custom operations are on. You may see slightly different numerical results due to floating-point round-off errors from different computation orders. To turn them off, set the environment variable `TF\_ENABLE\_ONEDNN\_OPTS=0`.

Starting DataPreparation

Orignal Data :

Connected to the database

Database connection closed.

Train data count: 353

Test data count: 92

Species dict: {1: 'Aloevera', 2: 'Amla', 3: 'Amruthaballi', 4: 'Arali', 5: 'Ashoka'}

Data preparation complete.

staring training DenseNet50

2024-05-15 06:27:48.644371: I tensorflow/core/platform/cpu\_feature\_guard.cc:210] This TensorFlow binary is optimized to use available CPU instructions in performance-critical operations.

To enable the following instructions: AVX2 FMA, in other operations, rebuild TensorFlow with the appropriate compiler flags.

Downloading data from https://storage.googleapis.com/tensorflow/keras-applications/densenet/densenet121\_weights\_tf\_dim\_ordering\_tf\_kernels\_notop.h5

29084464/29084464 ━━━━━━━━━━━━━━━━━━━━ 7s 0us/step

Epoch 1/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 1s/step - accuracy: 0.7602 - loss: 1.1815

Epoch 1: val\_loss improved from inf to 10.41031, saving model to DenseNet\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 33s 2s/step - accuracy: 0.7679 - loss: 1.1485 - val\_accuracy: 0.6522 - val\_loss: 10.4103 - learning\_rate: 0.0100

Epoch 2/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 1s/step - accuracy: 0.9758 - loss: 0.1868

Epoch 2: val\_loss improved from 10.41031 to 4.33090, saving model to DenseNet\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 20s 2s/step - accuracy: 0.9757 - loss: 0.1843 - val\_accuracy: 0.7717 - val\_loss: 4.3309 - learning\_rate: 0.0100

Epoch 3/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 1s/step - accuracy: 0.9764 - loss: 0.1153

Epoch 3: val\_loss improved from 4.33090 to 0.17207, saving model to DenseNet\_Orignal Data.keras

12/12 ━━━━━━━━━━━━━━━━━━━━ 20s 2s/step - accuracy: 0.9761 - loss: 0.1159 - val\_accuracy: 0.9783 - val\_loss: 0.1721 - learning\_rate: 0.0100

Epoch 4/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 1s/step - accuracy: 0.9851 - loss: 0.0422

Epoch 4: val\_loss did not improve from 0.17207

12/12 ━━━━━━━━━━━━━━━━━━━━ 19s 2s/step - accuracy: 0.9854 - loss: 0.0411 - val\_accuracy: 0.8587 - val\_loss: 2.1775 - learning\_rate: 0.0100

Epoch 5/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 1s/step - accuracy: 0.9901 - loss: 0.0961

Epoch 5: ReduceLROnPlateau reducing learning rate to 0.0009999999776482583.

Epoch 5: val\_loss did not improve from 0.17207

12/12 ━━━━━━━━━━━━━━━━━━━━ 19s 2s/step - accuracy: 0.9902 - loss: 0.0937 - val\_accuracy: 0.9565 - val\_loss: 0.4989 - learning\_rate: 0.0100

Epoch 6/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 1s/step - accuracy: 0.9932 - loss: 0.0334

Epoch 6: val\_loss did not improve from 0.17207

12/12 ━━━━━━━━━━━━━━━━━━━━ 18s 2s/step - accuracy: 0.9932 - loss: 0.0331 - val\_accuracy: 0.9783 - val\_loss: 0.2942 - learning\_rate: 1.0000e-03

Epoch 7/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 1s/step - accuracy: 0.9640 - loss: 0.1119

Epoch 7: ReduceLROnPlateau reducing learning rate to 0.0001.

Epoch 7: val\_loss did not improve from 0.17207

12/12 ━━━━━━━━━━━━━━━━━━━━ 18s 2s/step - accuracy: 0.9652 - loss: 0.1091 - val\_accuracy: 0.9783 - val\_loss: 0.2679 - learning\_rate: 1.0000e-03

Epoch 8/100

12/12 ━━━━━━━━━━━━━━━━━━━━ 0s 1s/step - accuracy: 0.9945 - loss: 0.0637

Epoch 8: val\_loss did not improve from 0.17207

12/12 ━━━━━━━━━━━━━━━━━━━━ 18s 2s/step - accuracy: 0.9944 - loss: 0.0626 - val\_accuracy: 0.9783 - val\_loss: 0.1904 - learning\_rate: 1.0000e-04

12/12 ━━━━━━━━━━━━━━━━━━━━ 19s 1s/step

3/3 ━━━━━━━━━━━━━━━━━━━━ 4s 1s/step

Training R2: 0.9970375135010607, Mean R2: 0.00042160949703164

Test R2: 0.944587600752223, Mean R2: 0.008636822791347504

Train loss: 0.0033410561736673117, Train accuracy: 0.9971671104431152

Test loss: 0.19038110971450806, Test accuracy: 0.97826087474823

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DenseNet\_Orignal\_Data.keras InceptionV3\_Orignal\_Data.keras Inception\_ResNet\_Orignal\_Data.keras VGG16\_Orignal\_Data.keras Majority

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