\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Layer (type) Output Shape Param #

=================================================================

input\_6 (InputLayer) [(None, 224, 224, 3)] 0

conv1 (Conv2D) (None, 112, 112, 32) 864

conv1\_bn (BatchNormalizatio (None, 112, 112, 32) 128

n)

conv1\_relu (ReLU) (None, 112, 112, 32) 0

conv\_dw\_1 (DepthwiseConv2D) (None, 112, 112, 32) 288

conv\_dw\_1\_bn (BatchNormaliz (None, 112, 112, 32) 128

ation)

conv\_dw\_1\_relu (ReLU) (None, 112, 112, 32) 0

conv\_pw\_1 (Conv2D) (None, 112, 112, 64) 2048

conv\_pw\_1\_bn (BatchNormaliz (None, 112, 112, 64) 256

ation)

conv\_pw\_1\_relu (ReLU) (None, 112, 112, 64) 0

conv\_pad\_2 (ZeroPadding2D) (None, 113, 113, 64) 0

conv\_dw\_2 (DepthwiseConv2D) (None, 56, 56, 64) 576

conv\_dw\_2\_bn (BatchNormaliz (None, 56, 56, 64) 256

ation)

conv\_dw\_2\_relu (ReLU) (None, 56, 56, 64) 0

conv\_pw\_2 (Conv2D) (None, 56, 56, 128) 8192

conv\_pw\_2\_bn (BatchNormaliz (None, 56, 56, 128) 512

ation)

conv\_pw\_2\_relu (ReLU) (None, 56, 56, 128) 0

conv\_dw\_3 (DepthwiseConv2D) (None, 56, 56, 128) 1152

conv\_dw\_3\_bn (BatchNormaliz (None, 56, 56, 128) 512

ation)

conv\_dw\_3\_relu (ReLU) (None, 56, 56, 128) 0

conv\_pw\_3 (Conv2D) (None, 56, 56, 128) 16384

conv\_pw\_3\_bn (BatchNormaliz (None, 56, 56, 128) 512

ation)

conv\_pw\_3\_relu (ReLU) (None, 56, 56, 128) 0

conv\_pad\_4 (ZeroPadding2D) (None, 57, 57, 128) 0

conv\_dw\_4 (DepthwiseConv2D) (None, 28, 28, 128) 1152

conv\_dw\_4\_bn (BatchNormaliz (None, 28, 28, 128) 512

ation)

conv\_dw\_4\_relu (ReLU) (None, 28, 28, 128) 0

conv\_pw\_4 (Conv2D) (None, 28, 28, 256) 32768

conv\_pw\_4\_bn (BatchNormaliz (None, 28, 28, 256) 1024

ation)

conv\_pw\_4\_relu (ReLU) (None, 28, 28, 256) 0

conv\_dw\_5 (DepthwiseConv2D) (None, 28, 28, 256) 2304

conv\_dw\_5\_bn (BatchNormaliz (None, 28, 28, 256) 1024

ation)

conv\_dw\_5\_relu (ReLU) (None, 28, 28, 256) 0

conv\_pw\_5 (Conv2D) (None, 28, 28, 256) 65536

conv\_pw\_5\_bn (BatchNormaliz (None, 28, 28, 256) 1024

ation)

conv\_pw\_5\_relu (ReLU) (None, 28, 28, 256) 0

conv\_pad\_6 (ZeroPadding2D) (None, 29, 29, 256) 0

conv\_dw\_6 (DepthwiseConv2D) (None, 14, 14, 256) 2304

conv\_dw\_6\_bn (BatchNormaliz (None, 14, 14, 256) 1024

ation)

conv\_dw\_6\_relu (ReLU) (None, 14, 14, 256) 0

conv\_pw\_6 (Conv2D) (None, 14, 14, 512) 131072

conv\_pw\_6\_bn (BatchNormaliz (None, 14, 14, 512) 2048

ation)

conv\_pw\_6\_relu (ReLU) (None, 14, 14, 512) 0

conv\_dw\_7 (DepthwiseConv2D) (None, 14, 14, 512) 4608

conv\_dw\_7\_bn (BatchNormaliz (None, 14, 14, 512) 2048

ation)

conv\_dw\_7\_relu (ReLU) (None, 14, 14, 512) 0

conv\_pw\_7 (Conv2D) (None, 14, 14, 512) 262144

conv\_pw\_7\_bn (BatchNormaliz (None, 14, 14, 512) 2048

ation)

conv\_pw\_7\_relu (ReLU) (None, 14, 14, 512) 0

conv\_dw\_8 (DepthwiseConv2D) (None, 14, 14, 512) 4608

conv\_dw\_8\_bn (BatchNormaliz (None, 14, 14, 512) 2048

ation)

conv\_dw\_8\_relu (ReLU) (None, 14, 14, 512) 0

conv\_pw\_8 (Conv2D) (None, 14, 14, 512) 262144

conv\_pw\_8\_bn (BatchNormaliz (None, 14, 14, 512) 2048

ation)

conv\_pw\_8\_relu (ReLU) (None, 14, 14, 512) 0

conv\_dw\_9 (DepthwiseConv2D) (None, 14, 14, 512) 4608

conv\_dw\_9\_bn (BatchNormaliz (None, 14, 14, 512) 2048

ation)

conv\_dw\_9\_relu (ReLU) (None, 14, 14, 512) 0

conv\_pw\_9 (Conv2D) (None, 14, 14, 512) 262144

conv\_pw\_9\_bn (BatchNormaliz (None, 14, 14, 512) 2048

ation)

conv\_pw\_9\_relu (ReLU) (None, 14, 14, 512) 0

conv\_dw\_10 (DepthwiseConv2D (None, 14, 14, 512) 4608

)

conv\_dw\_10\_bn (BatchNormali (None, 14, 14, 512) 2048

zation)

conv\_dw\_10\_relu (ReLU) (None, 14, 14, 512) 0

conv\_pw\_10 (Conv2D) (None, 14, 14, 512) 262144

conv\_pw\_10\_bn (BatchNormali (None, 14, 14, 512) 2048

zation)

conv\_pw\_10\_relu (ReLU) (None, 14, 14, 512) 0

conv\_dw\_11 (DepthwiseConv2D (None, 14, 14, 512) 4608

)

conv\_dw\_11\_bn (BatchNormali (None, 14, 14, 512) 2048

zation)

conv\_dw\_11\_relu (ReLU) (None, 14, 14, 512) 0

conv\_pw\_11 (Conv2D) (None, 14, 14, 512) 262144

conv\_pw\_11\_bn (BatchNormali (None, 14, 14, 512) 2048

zation)

conv\_pw\_11\_relu (ReLU) (None, 14, 14, 512) 0

conv\_pad\_12 (ZeroPadding2D) (None, 15, 15, 512) 0

conv\_dw\_12 (DepthwiseConv2D (None, 7, 7, 512) 4608

)

conv\_dw\_12\_bn (BatchNormali (None, 7, 7, 512) 2048

zation)

conv\_dw\_12\_relu (ReLU) (None, 7, 7, 512) 0

conv\_pw\_12 (Conv2D) (None, 7, 7, 1024) 524288

conv\_pw\_12\_bn (BatchNormali (None, 7, 7, 1024) 4096

zation)

conv\_pw\_12\_relu (ReLU) (None, 7, 7, 1024) 0

conv\_dw\_13 (DepthwiseConv2D (None, 7, 7, 1024) 9216

)

conv\_dw\_13\_bn (BatchNormali (None, 7, 7, 1024) 4096

zation)

conv\_dw\_13\_relu (ReLU) (None, 7, 7, 1024) 0

conv\_pw\_13 (Conv2D) (None, 7, 7, 1024) 1048576

conv\_pw\_13\_bn (BatchNormali (None, 7, 7, 1024) 4096

zation)

conv\_pw\_13\_relu (ReLU) (None, 7, 7, 1024) 0

flatten\_2 (Flatten) (None, 50176) 0

dense\_2 (Dense) (None, 1) 50177

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Total params: 3,279,041

Trainable params: 50,177

Non-trainable params: 3,228,864

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Epoch 1/100

17/17 [==============================] - 7s 311ms/step - loss: 2.0578 - accuracy: 0.6406 - val\_loss: 0.9734 - val\_accuracy: 0.7687 - lr: 0.0010

Epoch 2/100

17/17 [==============================] - 4s 248ms/step - loss: 0.3219 - accuracy: 0.8994 - val\_loss: 1.3037 - val\_accuracy: 0.7463 - lr: 0.0010

Epoch 3/100

17/17 [==============================] - 4s 254ms/step - loss: 0.2411 - accuracy: 0.9330 - val\_loss: 0.8524 - val\_accuracy: 0.8060 - lr: 0.0010

Epoch 4/100

17/17 [==============================] - 4s 253ms/step - loss: 0.0466 - accuracy: 0.9795 - val\_loss: 0.5900 - val\_accuracy: 0.8731 - lr: 0.0010

Epoch 5/100

17/17 [==============================] - 4s 246ms/step - loss: 0.0073 - accuracy: 0.9981 - val\_loss: 0.6550 - val\_accuracy: 0.8507 - lr: 0.0010

Epoch 6/100

17/17 [==============================] - 4s 250ms/step - loss: 0.0022 - accuracy: 0.9981 - val\_loss: 0.6890 - val\_accuracy: 0.8582 - lr: 0.0010

Epoch 7/100

17/17 [==============================] - 4s 237ms/step - loss: 8.7446e-04 - accuracy: 1.0000 - val\_loss: 0.6655 - val\_accuracy: 0.8582 - lr: 0.0010

Epoch 8/100

17/17 [==============================] - 4s 249ms/step - loss: 5.4701e-04 - accuracy: 1.0000 - val\_loss: 0.6571 - val\_accuracy: 0.8582 - lr: 1.0000e-04

Epoch 9/100

17/17 [==============================] - 4s 253ms/step - loss: 4.5164e-04 - accuracy: 1.0000 - val\_loss: 0.6497 - val\_accuracy: 0.8582 - lr: 1.0000e-04

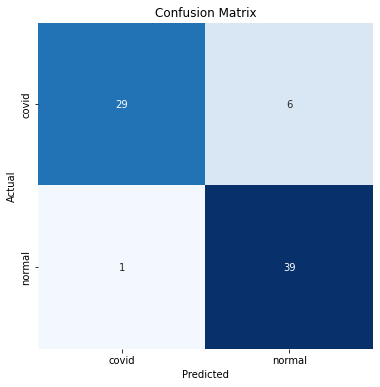
INFO:tensorflow:Assets written to: /content/drive/MyDrive/CTmobilenetSplit0.9noAug/assets

Test Loss: 0.36384

Test Accuracy: 90.67%

/usr/local/lib/python3.7/dist-packages/ipykernel\_launcher.py:123: DeprecationWarning: `np.int` is a deprecated alias for the builtin `int`. To silence this warning, use `int` by itself. Doing this will not modify any behavior and is safe. When replacing `np.int`, you may wish to use e.g. `np.int64` or `np.int32` to specify the precision. If you wish to review your current use, check the release note link for additional information.

Deprecated in NumPy 1.20; for more details and guidance: <https://numpy.org/devdocs/release/1.20.0-notes.html#deprecations>



Classification Report:

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precision recall f1-score support

covid 0.97 0.83 0.89 35

normal 0.87 0.97 0.92 40

accuracy 0.91 75

macro avg 0.92 0.90 0.90 75

weighted avg 0.91 0.91 0.91 75

