Model: "model"

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Layer (type) Output Shape Param # Connected to

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

input\_1 (InputLayer) [(None, 224, 224, 3) 0

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conv1\_pad (ZeroPadding2D) (None, 230, 230, 3) 0 input\_1[0][0]

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conv1\_conv (Conv2D) (None, 112, 112, 64) 9472 conv1\_pad[0][0]

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pool1\_pad (ZeroPadding2D) (None, 114, 114, 64) 0 conv1\_conv[0][0]

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pool1\_pool (MaxPooling2D) (None, 56, 56, 64) 0 pool1\_pad[0][0]

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conv2\_block1\_preact\_bn (BatchNo (None, 56, 56, 64) 256 pool1\_pool[0][0]

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conv2\_block1\_preact\_relu (Activ (None, 56, 56, 64) 0 conv2\_block1\_preact\_bn[0][0]

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conv2\_block1\_1\_conv (Conv2D) (None, 56, 56, 64) 4096 conv2\_block1\_preact\_relu[0][0]

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conv2\_block1\_1\_bn (BatchNormali (None, 56, 56, 64) 256 conv2\_block1\_1\_conv[0][0]

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conv2\_block1\_1\_relu (Activation (None, 56, 56, 64) 0 conv2\_block1\_1\_bn[0][0]

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conv2\_block1\_2\_pad (ZeroPadding (None, 58, 58, 64) 0 conv2\_block1\_1\_relu[0][0]

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conv2\_block1\_2\_conv (Conv2D) (None, 56, 56, 64) 36864 conv2\_block1\_2\_pad[0][0]

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conv2\_block1\_2\_bn (BatchNormali (None, 56, 56, 64) 256 conv2\_block1\_2\_conv[0][0]

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conv2\_block1\_2\_relu (Activation (None, 56, 56, 64) 0 conv2\_block1\_2\_bn[0][0]

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conv2\_block1\_0\_conv (Conv2D) (None, 56, 56, 256) 16640 conv2\_block1\_preact\_relu[0][0]

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conv2\_block1\_3\_conv (Conv2D) (None, 56, 56, 256) 16640 conv2\_block1\_2\_relu[0][0]

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conv2\_block1\_out (Add) (None, 56, 56, 256) 0 conv2\_block1\_0\_conv[0][0]

conv2\_block1\_3\_conv[0][0]

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conv2\_block2\_preact\_bn (BatchNo (None, 56, 56, 256) 1024 conv2\_block1\_out[0][0]

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conv2\_block2\_preact\_relu (Activ (None, 56, 56, 256) 0 conv2\_block2\_preact\_bn[0][0]

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conv2\_block2\_1\_conv (Conv2D) (None, 56, 56, 64) 16384 conv2\_block2\_preact\_relu[0][0]

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conv2\_block2\_1\_bn (BatchNormali (None, 56, 56, 64) 256 conv2\_block2\_1\_conv[0][0]

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conv2\_block2\_1\_relu (Activation (None, 56, 56, 64) 0 conv2\_block2\_1\_bn[0][0]

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conv2\_block2\_2\_pad (ZeroPadding (None, 58, 58, 64) 0 conv2\_block2\_1\_relu[0][0]

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conv2\_block2\_2\_conv (Conv2D) (None, 56, 56, 64) 36864 conv2\_block2\_2\_pad[0][0]

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conv2\_block2\_2\_bn (BatchNormali (None, 56, 56, 64) 256 conv2\_block2\_2\_conv[0][0]

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conv2\_block2\_2\_relu (Activation (None, 56, 56, 64) 0 conv2\_block2\_2\_bn[0][0]

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conv2\_block2\_3\_conv (Conv2D) (None, 56, 56, 256) 16640 conv2\_block2\_2\_relu[0][0]

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conv2\_block2\_out (Add) (None, 56, 56, 256) 0 conv2\_block1\_out[0][0]

conv2\_block2\_3\_conv[0][0]

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conv2\_block3\_preact\_bn (BatchNo (None, 56, 56, 256) 1024 conv2\_block2\_out[0][0]

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conv2\_block3\_preact\_relu (Activ (None, 56, 56, 256) 0 conv2\_block3\_preact\_bn[0][0]

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conv2\_block3\_1\_conv (Conv2D) (None, 56, 56, 64) 16384 conv2\_block3\_preact\_relu[0][0]

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conv2\_block3\_1\_bn (BatchNormali (None, 56, 56, 64) 256 conv2\_block3\_1\_conv[0][0]

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conv2\_block3\_1\_relu (Activation (None, 56, 56, 64) 0 conv2\_block3\_1\_bn[0][0]

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conv2\_block3\_2\_pad (ZeroPadding (None, 58, 58, 64) 0 conv2\_block3\_1\_relu[0][0]

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conv2\_block3\_2\_conv (Conv2D) (None, 28, 28, 64) 36864 conv2\_block3\_2\_pad[0][0]

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conv2\_block3\_2\_bn (BatchNormali (None, 28, 28, 64) 256 conv2\_block3\_2\_conv[0][0]

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conv2\_block3\_2\_relu (Activation (None, 28, 28, 64) 0 conv2\_block3\_2\_bn[0][0]

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max\_pooling2d (MaxPooling2D) (None, 28, 28, 256) 0 conv2\_block2\_out[0][0]

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conv2\_block3\_3\_conv (Conv2D) (None, 28, 28, 256) 16640 conv2\_block3\_2\_relu[0][0]

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conv2\_block3\_out (Add) (None, 28, 28, 256) 0 max\_pooling2d[0][0]

conv2\_block3\_3\_conv[0][0]

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conv3\_block1\_preact\_bn (BatchNo (None, 28, 28, 256) 1024 conv2\_block3\_out[0][0]

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conv3\_block1\_preact\_relu (Activ (None, 28, 28, 256) 0 conv3\_block1\_preact\_bn[0][0]

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conv3\_block1\_1\_conv (Conv2D) (None, 28, 28, 128) 32768 conv3\_block1\_preact\_relu[0][0]

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conv3\_block1\_1\_bn (BatchNormali (None, 28, 28, 128) 512 conv3\_block1\_1\_conv[0][0]

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conv3\_block1\_1\_relu (Activation (None, 28, 28, 128) 0 conv3\_block1\_1\_bn[0][0]

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conv3\_block1\_2\_pad (ZeroPadding (None, 30, 30, 128) 0 conv3\_block1\_1\_relu[0][0]

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conv3\_block1\_2\_conv (Conv2D) (None, 28, 28, 128) 147456 conv3\_block1\_2\_pad[0][0]

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conv3\_block1\_2\_bn (BatchNormali (None, 28, 28, 128) 512 conv3\_block1\_2\_conv[0][0]

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conv3\_block1\_2\_relu (Activation (None, 28, 28, 128) 0 conv3\_block1\_2\_bn[0][0]

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conv3\_block1\_0\_conv (Conv2D) (None, 28, 28, 512) 131584 conv3\_block1\_preact\_relu[0][0]

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conv3\_block1\_3\_conv (Conv2D) (None, 28, 28, 512) 66048 conv3\_block1\_2\_relu[0][0]

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conv3\_block1\_out (Add) (None, 28, 28, 512) 0 conv3\_block1\_0\_conv[0][0]

conv3\_block1\_3\_conv[0][0]

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conv3\_block2\_preact\_bn (BatchNo (None, 28, 28, 512) 2048 conv3\_block1\_out[0][0]

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conv3\_block2\_preact\_relu (Activ (None, 28, 28, 512) 0 conv3\_block2\_preact\_bn[0][0]

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conv3\_block2\_1\_conv (Conv2D) (None, 28, 28, 128) 65536 conv3\_block2\_preact\_relu[0][0]

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conv3\_block2\_1\_bn (BatchNormali (None, 28, 28, 128) 512 conv3\_block2\_1\_conv[0][0]

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conv3\_block2\_1\_relu (Activation (None, 28, 28, 128) 0 conv3\_block2\_1\_bn[0][0]

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conv3\_block2\_2\_pad (ZeroPadding (None, 30, 30, 128) 0 conv3\_block2\_1\_relu[0][0]

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conv3\_block2\_2\_conv (Conv2D) (None, 28, 28, 128) 147456 conv3\_block2\_2\_pad[0][0]

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conv3\_block2\_2\_bn (BatchNormali (None, 28, 28, 128) 512 conv3\_block2\_2\_conv[0][0]

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conv3\_block2\_2\_relu (Activation (None, 28, 28, 128) 0 conv3\_block2\_2\_bn[0][0]

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conv3\_block2\_3\_conv (Conv2D) (None, 28, 28, 512) 66048 conv3\_block2\_2\_relu[0][0]

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conv3\_block2\_out (Add) (None, 28, 28, 512) 0 conv3\_block1\_out[0][0]

conv3\_block2\_3\_conv[0][0]

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conv3\_block3\_preact\_bn (BatchNo (None, 28, 28, 512) 2048 conv3\_block2\_out[0][0]

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conv3\_block3\_preact\_relu (Activ (None, 28, 28, 512) 0 conv3\_block3\_preact\_bn[0][0]

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conv3\_block3\_1\_conv (Conv2D) (None, 28, 28, 128) 65536 conv3\_block3\_preact\_relu[0][0]

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conv3\_block3\_1\_bn (BatchNormali (None, 28, 28, 128) 512 conv3\_block3\_1\_conv[0][0]

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conv3\_block3\_1\_relu (Activation (None, 28, 28, 128) 0 conv3\_block3\_1\_bn[0][0]

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conv3\_block3\_2\_pad (ZeroPadding (None, 30, 30, 128) 0 conv3\_block3\_1\_relu[0][0]

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conv3\_block3\_2\_conv (Conv2D) (None, 28, 28, 128) 147456 conv3\_block3\_2\_pad[0][0]

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conv3\_block3\_2\_bn (BatchNormali (None, 28, 28, 128) 512 conv3\_block3\_2\_conv[0][0]

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conv3\_block3\_2\_relu (Activation (None, 28, 28, 128) 0 conv3\_block3\_2\_bn[0][0]

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conv3\_block3\_3\_conv (Conv2D) (None, 28, 28, 512) 66048 conv3\_block3\_2\_relu[0][0]

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conv3\_block3\_out (Add) (None, 28, 28, 512) 0 conv3\_block2\_out[0][0]

conv3\_block3\_3\_conv[0][0]

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conv3\_block4\_preact\_bn (BatchNo (None, 28, 28, 512) 2048 conv3\_block3\_out[0][0]

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conv3\_block4\_preact\_relu (Activ (None, 28, 28, 512) 0 conv3\_block4\_preact\_bn[0][0]

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conv3\_block4\_1\_conv (Conv2D) (None, 28, 28, 128) 65536 conv3\_block4\_preact\_relu[0][0]

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conv3\_block4\_1\_bn (BatchNormali (None, 28, 28, 128) 512 conv3\_block4\_1\_conv[0][0]

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conv3\_block4\_1\_relu (Activation (None, 28, 28, 128) 0 conv3\_block4\_1\_bn[0][0]

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conv3\_block4\_2\_pad (ZeroPadding (None, 30, 30, 128) 0 conv3\_block4\_1\_relu[0][0]

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conv3\_block4\_2\_conv (Conv2D) (None, 14, 14, 128) 147456 conv3\_block4\_2\_pad[0][0]

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conv3\_block4\_2\_bn (BatchNormali (None, 14, 14, 128) 512 conv3\_block4\_2\_conv[0][0]

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conv3\_block4\_2\_relu (Activation (None, 14, 14, 128) 0 conv3\_block4\_2\_bn[0][0]

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max\_pooling2d\_1 (MaxPooling2D) (None, 14, 14, 512) 0 conv3\_block3\_out[0][0]

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conv3\_block4\_3\_conv (Conv2D) (None, 14, 14, 512) 66048 conv3\_block4\_2\_relu[0][0]

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conv3\_block4\_out (Add) (None, 14, 14, 512) 0 max\_pooling2d\_1[0][0]

conv3\_block4\_3\_conv[0][0]

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conv4\_block1\_preact\_bn (BatchNo (None, 14, 14, 512) 2048 conv3\_block4\_out[0][0]

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conv4\_block1\_preact\_relu (Activ (None, 14, 14, 512) 0 conv4\_block1\_preact\_bn[0][0]

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conv4\_block1\_1\_conv (Conv2D) (None, 14, 14, 256) 131072 conv4\_block1\_preact\_relu[0][0]

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conv4\_block1\_1\_bn (BatchNormali (None, 14, 14, 256) 1024 conv4\_block1\_1\_conv[0][0]

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conv4\_block1\_1\_relu (Activation (None, 14, 14, 256) 0 conv4\_block1\_1\_bn[0][0]

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conv4\_block1\_2\_pad (ZeroPadding (None, 16, 16, 256) 0 conv4\_block1\_1\_relu[0][0]

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conv4\_block1\_2\_conv (Conv2D) (None, 14, 14, 256) 589824 conv4\_block1\_2\_pad[0][0]

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conv4\_block1\_2\_bn (BatchNormali (None, 14, 14, 256) 1024 conv4\_block1\_2\_conv[0][0]

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conv4\_block1\_2\_relu (Activation (None, 14, 14, 256) 0 conv4\_block1\_2\_bn[0][0]

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conv4\_block1\_0\_conv (Conv2D) (None, 14, 14, 1024) 525312 conv4\_block1\_preact\_relu[0][0]

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conv4\_block1\_3\_conv (Conv2D) (None, 14, 14, 1024) 263168 conv4\_block1\_2\_relu[0][0]

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conv4\_block1\_out (Add) (None, 14, 14, 1024) 0 conv4\_block1\_0\_conv[0][0]

conv4\_block1\_3\_conv[0][0]

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conv4\_block2\_preact\_bn (BatchNo (None, 14, 14, 1024) 4096 conv4\_block1\_out[0][0]

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conv4\_block2\_preact\_relu (Activ (None, 14, 14, 1024) 0 conv4\_block2\_preact\_bn[0][0]

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conv4\_block2\_1\_conv (Conv2D) (None, 14, 14, 256) 262144 conv4\_block2\_preact\_relu[0][0]

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conv4\_block2\_1\_bn (BatchNormali (None, 14, 14, 256) 1024 conv4\_block2\_1\_conv[0][0]

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conv4\_block2\_1\_relu (Activation (None, 14, 14, 256) 0 conv4\_block2\_1\_bn[0][0]

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conv4\_block2\_2\_pad (ZeroPadding (None, 16, 16, 256) 0 conv4\_block2\_1\_relu[0][0]

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conv4\_block2\_2\_conv (Conv2D) (None, 14, 14, 256) 589824 conv4\_block2\_2\_pad[0][0]

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conv4\_block2\_2\_bn (BatchNormali (None, 14, 14, 256) 1024 conv4\_block2\_2\_conv[0][0]

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conv4\_block2\_2\_relu (Activation (None, 14, 14, 256) 0 conv4\_block2\_2\_bn[0][0]

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conv4\_block2\_3\_conv (Conv2D) (None, 14, 14, 1024) 263168 conv4\_block2\_2\_relu[0][0]

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conv4\_block2\_out (Add) (None, 14, 14, 1024) 0 conv4\_block1\_out[0][0]

conv4\_block2\_3\_conv[0][0]

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conv4\_block3\_preact\_bn (BatchNo (None, 14, 14, 1024) 4096 conv4\_block2\_out[0][0]

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conv4\_block3\_preact\_relu (Activ (None, 14, 14, 1024) 0 conv4\_block3\_preact\_bn[0][0]

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conv4\_block3\_1\_conv (Conv2D) (None, 14, 14, 256) 262144 conv4\_block3\_preact\_relu[0][0]

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conv4\_block3\_1\_bn (BatchNormali (None, 14, 14, 256) 1024 conv4\_block3\_1\_conv[0][0]

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conv4\_block3\_1\_relu (Activation (None, 14, 14, 256) 0 conv4\_block3\_1\_bn[0][0]

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conv4\_block3\_2\_pad (ZeroPadding (None, 16, 16, 256) 0 conv4\_block3\_1\_relu[0][0]

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conv4\_block3\_2\_conv (Conv2D) (None, 14, 14, 256) 589824 conv4\_block3\_2\_pad[0][0]

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conv4\_block3\_2\_bn (BatchNormali (None, 14, 14, 256) 1024 conv4\_block3\_2\_conv[0][0]

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conv4\_block3\_2\_relu (Activation (None, 14, 14, 256) 0 conv4\_block3\_2\_bn[0][0]

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conv4\_block3\_3\_conv (Conv2D) (None, 14, 14, 1024) 263168 conv4\_block3\_2\_relu[0][0]

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conv4\_block3\_out (Add) (None, 14, 14, 1024) 0 conv4\_block2\_out[0][0]

conv4\_block3\_3\_conv[0][0]

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conv4\_block4\_preact\_bn (BatchNo (None, 14, 14, 1024) 4096 conv4\_block3\_out[0][0]

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conv4\_block4\_preact\_relu (Activ (None, 14, 14, 1024) 0 conv4\_block4\_preact\_bn[0][0]

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conv4\_block4\_1\_conv (Conv2D) (None, 14, 14, 256) 262144 conv4\_block4\_preact\_relu[0][0]

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conv4\_block4\_1\_bn (BatchNormali (None, 14, 14, 256) 1024 conv4\_block4\_1\_conv[0][0]

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conv4\_block4\_1\_relu (Activation (None, 14, 14, 256) 0 conv4\_block4\_1\_bn[0][0]

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conv4\_block4\_2\_pad (ZeroPadding (None, 16, 16, 256) 0 conv4\_block4\_1\_relu[0][0]

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conv4\_block4\_2\_conv (Conv2D) (None, 14, 14, 256) 589824 conv4\_block4\_2\_pad[0][0]

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conv4\_block4\_2\_bn (BatchNormali (None, 14, 14, 256) 1024 conv4\_block4\_2\_conv[0][0]

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conv4\_block4\_2\_relu (Activation (None, 14, 14, 256) 0 conv4\_block4\_2\_bn[0][0]

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conv4\_block4\_3\_conv (Conv2D) (None, 14, 14, 1024) 263168 conv4\_block4\_2\_relu[0][0]

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conv4\_block4\_out (Add) (None, 14, 14, 1024) 0 conv4\_block3\_out[0][0]

conv4\_block4\_3\_conv[0][0]

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conv4\_block5\_preact\_bn (BatchNo (None, 14, 14, 1024) 4096 conv4\_block4\_out[0][0]

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conv4\_block5\_preact\_relu (Activ (None, 14, 14, 1024) 0 conv4\_block5\_preact\_bn[0][0]

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conv4\_block5\_1\_conv (Conv2D) (None, 14, 14, 256) 262144 conv4\_block5\_preact\_relu[0][0]

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conv4\_block5\_1\_bn (BatchNormali (None, 14, 14, 256) 1024 conv4\_block5\_1\_conv[0][0]

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conv4\_block5\_1\_relu (Activation (None, 14, 14, 256) 0 conv4\_block5\_1\_bn[0][0]

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conv4\_block5\_2\_pad (ZeroPadding (None, 16, 16, 256) 0 conv4\_block5\_1\_relu[0][0]

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conv4\_block5\_2\_conv (Conv2D) (None, 14, 14, 256) 589824 conv4\_block5\_2\_pad[0][0]

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conv4\_block5\_2\_bn (BatchNormali (None, 14, 14, 256) 1024 conv4\_block5\_2\_conv[0][0]

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conv4\_block5\_2\_relu (Activation (None, 14, 14, 256) 0 conv4\_block5\_2\_bn[0][0]

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conv4\_block5\_3\_conv (Conv2D) (None, 14, 14, 1024) 263168 conv4\_block5\_2\_relu[0][0]

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conv4\_block5\_out (Add) (None, 14, 14, 1024) 0 conv4\_block4\_out[0][0]

conv4\_block5\_3\_conv[0][0]

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conv4\_block6\_preact\_bn (BatchNo (None, 14, 14, 1024) 4096 conv4\_block5\_out[0][0]

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conv4\_block6\_preact\_relu (Activ (None, 14, 14, 1024) 0 conv4\_block6\_preact\_bn[0][0]

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conv4\_block6\_1\_conv (Conv2D) (None, 14, 14, 256) 262144 conv4\_block6\_preact\_relu[0][0]

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conv4\_block6\_1\_bn (BatchNormali (None, 14, 14, 256) 1024 conv4\_block6\_1\_conv[0][0]

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conv4\_block6\_1\_relu (Activation (None, 14, 14, 256) 0 conv4\_block6\_1\_bn[0][0]

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conv4\_block6\_2\_pad (ZeroPadding (None, 16, 16, 256) 0 conv4\_block6\_1\_relu[0][0]

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conv4\_block6\_2\_conv (Conv2D) (None, 7, 7, 256) 589824 conv4\_block6\_2\_pad[0][0]

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conv4\_block6\_2\_bn (BatchNormali (None, 7, 7, 256) 1024 conv4\_block6\_2\_conv[0][0]

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conv4\_block6\_2\_relu (Activation (None, 7, 7, 256) 0 conv4\_block6\_2\_bn[0][0]

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max\_pooling2d\_2 (MaxPooling2D) (None, 7, 7, 1024) 0 conv4\_block5\_out[0][0]

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conv4\_block6\_3\_conv (Conv2D) (None, 7, 7, 1024) 263168 conv4\_block6\_2\_relu[0][0]

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conv4\_block6\_out (Add) (None, 7, 7, 1024) 0 max\_pooling2d\_2[0][0]

conv4\_block6\_3\_conv[0][0]

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conv5\_block1\_preact\_bn (BatchNo (None, 7, 7, 1024) 4096 conv4\_block6\_out[0][0]

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conv5\_block1\_preact\_relu (Activ (None, 7, 7, 1024) 0 conv5\_block1\_preact\_bn[0][0]

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conv5\_block1\_1\_conv (Conv2D) (None, 7, 7, 512) 524288 conv5\_block1\_preact\_relu[0][0]

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conv5\_block1\_1\_bn (BatchNormali (None, 7, 7, 512) 2048 conv5\_block1\_1\_conv[0][0]

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conv5\_block1\_1\_relu (Activation (None, 7, 7, 512) 0 conv5\_block1\_1\_bn[0][0]

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conv5\_block1\_2\_pad (ZeroPadding (None, 9, 9, 512) 0 conv5\_block1\_1\_relu[0][0]

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conv5\_block1\_2\_conv (Conv2D) (None, 7, 7, 512) 2359296 conv5\_block1\_2\_pad[0][0]

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conv5\_block1\_2\_bn (BatchNormali (None, 7, 7, 512) 2048 conv5\_block1\_2\_conv[0][0]

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conv5\_block1\_2\_relu (Activation (None, 7, 7, 512) 0 conv5\_block1\_2\_bn[0][0]

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conv5\_block1\_0\_conv (Conv2D) (None, 7, 7, 2048) 2099200 conv5\_block1\_preact\_relu[0][0]

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conv5\_block1\_3\_conv (Conv2D) (None, 7, 7, 2048) 1050624 conv5\_block1\_2\_relu[0][0]

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conv5\_block1\_out (Add) (None, 7, 7, 2048) 0 conv5\_block1\_0\_conv[0][0]

conv5\_block1\_3\_conv[0][0]

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conv5\_block2\_preact\_bn (BatchNo (None, 7, 7, 2048) 8192 conv5\_block1\_out[0][0]

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conv5\_block2\_preact\_relu (Activ (None, 7, 7, 2048) 0 conv5\_block2\_preact\_bn[0][0]

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conv5\_block2\_1\_conv (Conv2D) (None, 7, 7, 512) 1048576 conv5\_block2\_preact\_relu[0][0]

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conv5\_block2\_1\_bn (BatchNormali (None, 7, 7, 512) 2048 conv5\_block2\_1\_conv[0][0]

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conv5\_block2\_1\_relu (Activation (None, 7, 7, 512) 0 conv5\_block2\_1\_bn[0][0]

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conv5\_block2\_2\_pad (ZeroPadding (None, 9, 9, 512) 0 conv5\_block2\_1\_relu[0][0]

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

conv5\_block2\_2\_conv (Conv2D) (None, 7, 7, 512) 2359296 conv5\_block2\_2\_pad[0][0]

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conv5\_block2\_2\_bn (BatchNormali (None, 7, 7, 512) 2048 conv5\_block2\_2\_conv[0][0]

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conv5\_block2\_2\_relu (Activation (None, 7, 7, 512) 0 conv5\_block2\_2\_bn[0][0]

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conv5\_block2\_3\_conv (Conv2D) (None, 7, 7, 2048) 1050624 conv5\_block2\_2\_relu[0][0]

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conv5\_block2\_out (Add) (None, 7, 7, 2048) 0 conv5\_block1\_out[0][0]

conv5\_block2\_3\_conv[0][0]

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conv5\_block3\_preact\_bn (BatchNo (None, 7, 7, 2048) 8192 conv5\_block2\_out[0][0]

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conv5\_block3\_preact\_relu (Activ (None, 7, 7, 2048) 0 conv5\_block3\_preact\_bn[0][0]

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conv5\_block3\_1\_conv (Conv2D) (None, 7, 7, 512) 1048576 conv5\_block3\_preact\_relu[0][0]

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conv5\_block3\_1\_bn (BatchNormali (None, 7, 7, 512) 2048 conv5\_block3\_1\_conv[0][0]

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conv5\_block3\_1\_relu (Activation (None, 7, 7, 512) 0 conv5\_block3\_1\_bn[0][0]

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conv5\_block3\_2\_pad (ZeroPadding (None, 9, 9, 512) 0 conv5\_block3\_1\_relu[0][0]

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

conv5\_block3\_2\_conv (Conv2D) (None, 7, 7, 512) 2359296 conv5\_block3\_2\_pad[0][0]

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conv5\_block3\_2\_bn (BatchNormali (None, 7, 7, 512) 2048 conv5\_block3\_2\_conv[0][0]

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conv5\_block3\_2\_relu (Activation (None, 7, 7, 512) 0 conv5\_block3\_2\_bn[0][0]

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conv5\_block3\_3\_conv (Conv2D) (None, 7, 7, 2048) 1050624 conv5\_block3\_2\_relu[0][0]

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conv5\_block3\_out (Add) (None, 7, 7, 2048) 0 conv5\_block2\_out[0][0]

conv5\_block3\_3\_conv[0][0]

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post\_bn (BatchNormalization) (None, 7, 7, 2048) 8192 conv5\_block3\_out[0][0]

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

post\_relu (Activation) (None, 7, 7, 2048) 0 post\_bn[0][0]

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

flatten (Flatten) (None, 100352) 0 post\_relu[0][0]

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

dense (Dense) (None, 6) 602118 flatten[0][0]

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

Total params: 24,166,918

Trainable params: 602,118

Non-trainable params: 23,564,800

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

Found 899 images belonging to 6 classes.

Found 222 images belonging to 6 classes.

/usr/local/lib/python3.7/dist-packages/tensorflow/python/keras/engine/training.py:1940: UserWarning: `Model.fit\_generator` is deprecated and will be removed in a future version. Please use `Model.fit`, which supports generators.

warnings.warn('`Model.fit\_generator` is deprecated and '

Epoch 1/20

8/8 [==============================] - 168s 21s/step - loss: 4.1724 - accuracy: 0.5795 - val\_loss: 3.0822 - val\_accuracy: 0.7387

/usr/local/lib/python3.7/dist-packages/tensorflow/python/keras/utils/generic\_utils.py:497: CustomMaskWarning: Custom mask layers require a config and must override get\_config. When loading, the custom mask layer must be passed to the custom\_objects argument.

category=CustomMaskWarning)

Epoch 2/20

8/8 [==============================] - 155s 20s/step - loss: 1.7175 - accuracy: 0.8398 - val\_loss: 1.5374 - val\_accuracy: 0.8514

Epoch 3/20

8/8 [==============================] - 154s 19s/step - loss: 0.6719 - accuracy: 0.9321 - val\_loss: 1.3687 - val\_accuracy: 0.8874

Epoch 4/20

8/8 [==============================] - 155s 19s/step - loss: 0.3262 - accuracy: 0.9644 - val\_loss: 1.2180 - val\_accuracy: 0.8964

Epoch 5/20

8/8 [==============================] - 155s 19s/step - loss: 0.1007 - accuracy: 0.9855 - val\_loss: 0.9911 - val\_accuracy: 0.9099

Epoch 6/20

8/8 [==============================] - 156s 20s/step - loss: 0.0648 - accuracy: 0.9878 - val\_loss: 0.6854 - val\_accuracy: 0.9414

Epoch 7/20

8/8 [==============================] - 157s 20s/step - loss: 0.0095 - accuracy: 0.9956 - val\_loss: 0.6345 - val\_accuracy: 0.9369

Epoch 8/20

8/8 [==============================] - 156s 20s/step - loss: 0.0444 - accuracy: 0.9944 - val\_loss: 0.5850 - val\_accuracy: 0.9414

Epoch 9/20

8/8 [==============================] - 158s 20s/step - loss: 0.0053 - accuracy: 0.9978 - val\_loss: 0.6299 - val\_accuracy: 0.9369

Epoch 10/20

8/8 [==============================] - 160s 20s/step - loss: 0.0017 - accuracy: 0.9989 - val\_loss: 0.6185 - val\_accuracy: 0.9414

Epoch 11/20

8/8 [==============================] - 168s 21s/step - loss: 1.1442e-04 - accuracy: 1.0000 - val\_loss: 0.5923 - val\_accuracy: 0.9414

Epoch 12/20

8/8 [==============================] - 160s 20s/step - loss: 8.8994e-06 - accuracy: 1.0000 - val\_loss: 0.5843 - val\_accuracy: 0.9414

Epoch 13/20

8/8 [==============================] - 157s 20s/step - loss: 0.0143 - accuracy: 0.9989 - val\_loss: 0.5809 - val\_accuracy: 0.9414

Epoch 14/20

8/8 [==============================] - 158s 20s/step - loss: 1.1997e-05 - accuracy: 1.0000 - val\_loss: 0.5888 - val\_accuracy: 0.9369

Epoch 15/20

8/8 [==============================] - 160s 20s/step - loss: 6.6369e-05 - accuracy: 1.0000 - val\_loss: 0.5982 - val\_accuracy: 0.9369

Epoch 16/20

8/8 [==============================] - 171s 22s/step - loss: 3.4211e-05 - accuracy: 1.0000 - val\_loss: 0.6011 - val\_accuracy: 0.9369

Epoch 17/20

8/8 [==============================] - 162s 20s/step - loss: 1.3893e-05 - accuracy: 1.0000 - val\_loss: 0.6020 - val\_accuracy: 0.9369

Epoch 18/20

8/8 [==============================] - 160s 20s/step - loss: 1.0452e-05 - accuracy: 1.0000 - val\_loss: 0.6022 - val\_accuracy: 0.9369

Epoch 19/20

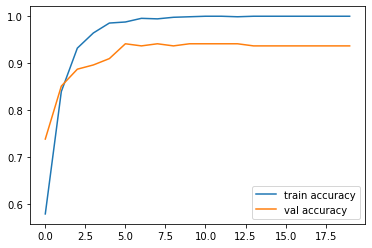
8/8 [==============================] - 164s 23s/step - loss: 6.2781e-06 - accuracy: 1.0000 - val\_loss: 0.6021 - val\_accuracy: 0.9369

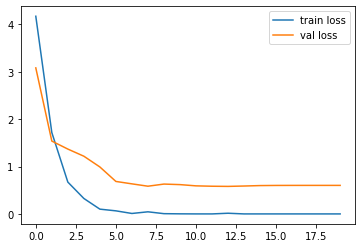
Epoch 20/20

8/8 [==============================] - 163s 21s/step - loss: 9.3546e-06 - accuracy: 1.0000 - val\_loss: 0.6022 - val\_accuracy: 0.9369

Time: 3635.6 sec.

Time to run all : 1:00:35.597158





[[30 3 0 0 4 0]

[ 1 35 0 0 1 0]

[ 0 0 37 0 0 0]

[ 0 1 0 36 0 0]

[ 3 2 0 0 32 0]

[ 0 0 0 0 0 37]]

Accuracy: 0.932432

Error rate: 0.067568

classification\_report

precision recall f1-score support

0 0.88 0.81 0.85 37

1 0.85 0.95 0.90 37

2 1.00 1.00 1.00 37

3 1.00 0.97 0.99 37

4 0.86 0.86 0.86 37

5 1.00 1.00 1.00 37

accuracy 0.93 222

macro avg 0.93 0.93 0.93 222

weighted avg 0.93 0.93 0.93 222

Cohens kappa: 0.918919