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Layer (type) Output Shape Param #

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input\_1 (InputLayer) (None, 128, 128, 3) 0

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block1\_conv1 (Conv2D) (None, 128, 128, 64) 1792

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block1\_conv2 (Conv2D) (None, 128, 128, 64) 36928

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block1\_pool (MaxPooling2D) (None, 64, 64, 64) 0

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block2\_conv1 (Conv2D) (None, 64, 64, 128) 73856

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block2\_conv2 (Conv2D) (None, 64, 64, 128) 147584

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block2\_pool (MaxPooling2D) (None, 32, 32, 128) 0

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block3\_conv1 (Conv2D) (None, 32, 32, 256) 295168

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block3\_conv2 (Conv2D) (None, 32, 32, 256) 590080

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block3\_conv3 (Conv2D) (None, 32, 32, 256) 590080

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block3\_conv4 (Conv2D) (None, 32, 32, 256) 590080

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block3\_pool (MaxPooling2D) (None, 16, 16, 256) 0

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block4\_conv1 (Conv2D) (None, 16, 16, 512) 1180160

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block4\_conv2 (Conv2D) (None, 16, 16, 512) 2359808

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block4\_conv3 (Conv2D) (None, 16, 16, 512) 2359808

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block4\_conv4 (Conv2D) (None, 16, 16, 512) 2359808

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block4\_pool (MaxPooling2D) (None, 8, 8, 512) 0

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block5\_conv1 (Conv2D) (None, 8, 8, 512) 2359808

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block5\_conv2 (Conv2D) (None, 8, 8, 512) 2359808

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block5\_conv3 (Conv2D) (None, 8, 8, 512) 2359808

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block5\_conv4 (Conv2D) (None, 8, 8, 512) 2359808

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block5\_pool (MaxPooling2D) (None, 4, 4, 512) 0

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global\_average\_pooling2d\_1 ( (None, 512) 0

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dense\_1 (Dense) (None, 128) 65664

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dropout\_1 (Dropout) (None, 128) 0

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dense\_2 (Dense) (None, 128) 16512

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dropout\_2 (Dropout) (None, 128) 0

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dense\_3 (Dense) (None, 128) 16512

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dropout\_3 (Dropout) (None, 128) 0

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dense\_4 (Dense) (None, 128) 16512

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dense\_5 (Dense) (None, 24) 3096

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Total params: 20,142,680

Trainable params: 118,296

Non-trainable params: 20,024,384

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Found 26547 images belonging to 24 classes.

Found 26445 images belonging to 24 classes.

WARNING:tensorflow:From C:\Users\ASUS-PC\AppData\Local\Programs\Python\Python36\lib\site-packages\tensorflow\python\ops\math\_ops.py:3066: to\_int32 (from tensorflow.python.ops.math\_ops) is deprecated and will be removed in a future version.

Instructions for updating:

Use tf.cast instead.

Epoch 1/10

2019-03-11 15:26:20.538547: I tensorflow/stream\_executor/dso\_loader.cc:152] successfully opened CUDA library cublas64\_100.dll locally

265/265 [==============================] - 169s 637ms/step - loss: 2.4857 - acc: 0.2192 - val\_loss: 2.1990 - val\_acc: 0.2756

Epoch 2/10

265/265 [==============================] - 124s 468ms/step - loss: 1.5841 - acc: 0.4633 - val\_loss: 2.1179 - val\_acc: 0.3311

Epoch 3/10

265/265 [==============================] - 122s 460ms/step - loss: 1.3129 - acc: 0.5533 - val\_loss: 1.9537 - val\_acc: 0.4068

Epoch 4/10

265/265 [==============================] - 122s 459ms/step - loss: 1.1622 - acc: 0.6118 - val\_loss: 1.9912 - val\_acc: 0.4133

Epoch 5/10

265/265 [==============================] - 122s 459ms/step - loss: 1.0792 - acc: 0.6404 - val\_loss: 1.9781 - val\_acc: 0.4341

Epoch 6/10

265/265 [==============================] - 123s 463ms/step - loss: 1.0082 - acc: 0.6698 - val\_loss: 1.9736 - val\_acc: 0.4541

Epoch 7/10

265/265 [==============================] - 122s 459ms/step - loss: 0.9560 - acc: 0.6897 - val\_loss: 2.0526 - val\_acc: 0.4365

Epoch 8/10

265/265 [==============================] - 122s 459ms/step - loss: 0.9254 - acc: 0.6975 - val\_loss: 2.0817 - val\_acc: 0.4290

Epoch 00008: ReduceLROnPlateau reducing learning rate to 0.00020000000949949026.

Epoch 9/10

265/265 [==============================] - 122s 460ms/step - loss: 0.8137 - acc: 0.7359 - val\_loss: 2.0411 - val\_acc: 0.4355

Epoch 10/10

265/265 [==============================] - 122s 462ms/step - loss: 0.8004 - acc: 0.7423 - val\_loss: 2.0967 - val\_acc: 0.4379

Epoch 00010: ReduceLROnPlateau reducing learning rate to 4.0000001899898055e-05.

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Layer (type) Output Shape Param #

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input\_1 (InputLayer) (None, 128, 128, 3) 0

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block1\_conv1 (Conv2D) (None, 128, 128, 64) 1792

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block1\_conv2 (Conv2D) (None, 128, 128, 64) 36928

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block1\_pool (MaxPooling2D) (None, 64, 64, 64) 0

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block2\_conv1 (Conv2D) (None, 64, 64, 128) 73856

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block2\_conv2 (Conv2D) (None, 64, 64, 128) 147584

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block2\_pool (MaxPooling2D) (None, 32, 32, 128) 0

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block3\_conv1 (Conv2D) (None, 32, 32, 256) 295168

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block3\_conv2 (Conv2D) (None, 32, 32, 256) 590080

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block3\_conv3 (Conv2D) (None, 32, 32, 256) 590080

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block3\_conv4 (Conv2D) (None, 32, 32, 256) 590080

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block3\_pool (MaxPooling2D) (None, 16, 16, 256) 0

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block4\_conv1 (Conv2D) (None, 16, 16, 512) 1180160

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block4\_conv2 (Conv2D) (None, 16, 16, 512) 2359808

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block4\_conv3 (Conv2D) (None, 16, 16, 512) 2359808

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block4\_conv4 (Conv2D) (None, 16, 16, 512) 2359808

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block4\_pool (MaxPooling2D) (None, 8, 8, 512) 0

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block5\_conv1 (Conv2D) (None, 8, 8, 512) 2359808

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block5\_conv2 (Conv2D) (None, 8, 8, 512) 2359808

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block5\_conv3 (Conv2D) (None, 8, 8, 512) 2359808

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block5\_conv4 (Conv2D) (None, 8, 8, 512) 2359808

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block5\_pool (MaxPooling2D) (None, 4, 4, 512) 0

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global\_average\_pooling2d\_1 ( (None, 512) 0

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dense\_1 (Dense) (None, 128) 65664

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dropout\_1 (Dropout) (None, 128) 0

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dense\_2 (Dense) (None, 128) 16512

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dropout\_2 (Dropout) (None, 128) 0

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dense\_3 (Dense) (None, 128) 16512

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dropout\_3 (Dropout) (None, 128) 0

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dense\_4 (Dense) (None, 128) 16512

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dense\_5 (Dense) (None, 24) 3096

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Total params: 20,142,680

Trainable params: 17,817,112

Non-trainable params: 2,325,568

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Epoch 1/30

265/265 [==============================] - 126s 477ms/step - loss: 15.4060 - acc: 0.0439 - val\_loss: 15.4870 - val\_acc: 0.0396

Epoch 2/30

265/265 [==============================] - 123s 464ms/step - loss: 15.4231 - acc: 0.0435 - val\_loss: 15.4807 - val\_acc: 0.0399

Epoch 3/30

265/265 [==============================] - 123s 463ms/step - loss: 15.4483 - acc: 0.0419 - val\_loss: 15.4778 - val\_acc: 0.0400

Epoch 4/30

265/265 [==============================] - 123s 466ms/step - loss: 15.4593 - acc: 0.0411 - val\_loss: 15.4788 - val\_acc: 0.0399

Epoch 5/30

265/265 [==============================] - 122s 462ms/step - loss: 15.4634 - acc: 0.0408 - val\_loss: 15.4604 - val\_acc: 0.0410

Epoch 6/30

265/265 [==============================] - 122s 460ms/step - loss: 15.4495 - acc: 0.0417 - val\_loss: 15.4592 - val\_acc: 0.0410

Epoch 7/30

265/265 [==============================] - 122s 459ms/step - loss: 15.4493 - acc: 0.0416 - val\_loss: 15.4636 - val\_acc: 0.0407

Epoch 00007: ReduceLROnPlateau reducing learning rate to 0.00020000000949949026.

Epoch 8/30

265/265 [==============================] - 123s 464ms/step - loss: 15.4448 - acc: 0.0419 - val\_loss: 15.4323 - val\_acc: 0.0427

Epoch 9/30

265/265 [==============================] - 122s 460ms/step - loss: 15.4393 - acc: 0.0422 - val\_loss: 15.4671 - val\_acc: 0.0405

Epoch 10/30

265/265 [==============================] - 122s 460ms/step - loss: 15.4207 - acc: 0.0434 - val\_loss: 15.4493 - val\_acc: 0.0416

Epoch 00010: ReduceLROnPlateau reducing learning rate to 4.0000001899898055e-05.

Epoch 11/30

265/265 [==============================] - 122s 460ms/step - loss: 15.4627 - acc: 0.0408 - val\_loss: 15.4658 - val\_acc: 0.0406

Epoch 12/30

265/265 [==============================] - 122s 460ms/step - loss: 15.4506 - acc: 0.0415 - val\_loss: 15.4474 - val\_acc: 0.0417

Epoch 00012: ReduceLROnPlateau reducing learning rate to 8.000000525498762e-06.

Epoch 13/30

265/265 [==============================] - 123s 463ms/step - loss: 15.4517 - acc: 0.0414 - val\_loss: 15.4584 - val\_acc: 0.0410

Epoch 14/30

265/265 [==============================] - 122s 462ms/step - loss: 15.4440 - acc: 0.0419 - val\_loss: 15.4468 - val\_acc: 0.0418

Epoch 00014: ReduceLROnPlateau reducing learning rate to 1.6000001778593287e-06.

Epoch 15/30

265/265 [==============================] - 123s 463ms/step - loss: 15.4769 - acc: 0.0399 - val\_loss: 15.4602 - val\_acc: 0.0409

Epoch 16/30

265/265 [==============================] - 123s 464ms/step - loss: 15.4579 - acc: 0.0411 - val\_loss: 15.4523 - val\_acc: 0.0414

Epoch 00016: ReduceLROnPlateau reducing learning rate to 3.200000264769187e-07.

Epoch 17/30

265/265 [==============================] - 125s 473ms/step - loss: 15.4396 - acc: 0.0422 - val\_loss: 15.4627 - val\_acc: 0.0408

Epoch 18/30

265/265 [==============================] - 126s 475ms/step - loss: 15.4638 - acc: 0.0407 - val\_loss: 15.4437 - val\_acc: 0.0419

Epoch 00018: ReduceLROnPlateau reducing learning rate to 6.400000529538374e-08.

Epoch 19/30

265/265 [==============================] - 131s 496ms/step - loss: 15.4352 - acc: 0.0425 - val\_loss: 15.4596 - val\_acc: 0.0410

Epoch 20/30

265/265 [==============================] - 127s 480ms/step - loss: 15.4731 - acc: 0.0401 - val\_loss: 15.4480 - val\_acc: 0.0417

Epoch 00020: ReduceLROnPlateau reducing learning rate to 1.2800001059076749e-08.

Epoch 21/30

265/265 [==============================] - 130s 490ms/step - loss: 15.4562 - acc: 0.0412 - val\_loss: 15.4621 - val\_acc: 0.0408

Epoch 22/30

265/265 [==============================] - 126s 475ms/step - loss: 15.4494 - acc: 0.0416 - val\_loss: 15.4462 - val\_acc: 0.0418

Epoch 00022: ReduceLROnPlateau reducing learning rate to 2.5600002118153498e-09.

Epoch 23/30

265/265 [==============================] - 131s 493ms/step - loss: 15.4553 - acc: 0.0412 - val\_loss: 15.4670 - val\_acc: 0.0405

Epoch 24/30

265/265 [==============================] - 130s 489ms/step - loss: 15.4670 - acc: 0.0405 - val\_loss: 15.4560 - val\_acc: 0.0412

Epoch 00024: ReduceLROnPlateau reducing learning rate to 5.1200004236307e-10.

Epoch 25/30

265/265 [==============================] - 127s 480ms/step - loss: 15.4531 - acc: 0.0414 - val\_loss: 15.4517 - val\_acc: 0.0414

Epoch 26/30

265/265 [==============================] - 128s 484ms/step - loss: 15.4767 - acc: 0.0399 - val\_loss: 15.4566 - val\_acc: 0.0411

Epoch 00026: ReduceLROnPlateau reducing learning rate to 1.0240001069306004e-10.

Epoch 27/30

265/265 [==============================] - 128s 481ms/step - loss: 15.4693 - acc: 0.0404 - val\_loss: 15.4388 - val\_acc: 0.0422

Epoch 28/30

265/265 [==============================] - 129s 486ms/step - loss: 15.4440 - acc: 0.0419 - val\_loss: 15.4651 - val\_acc: 0.0406

Epoch 00028: ReduceLROnPlateau reducing learning rate to 2.0480002416167767e-11.

Epoch 29/30

265/265 [==============================] - 128s 483ms/step - loss: 15.4670 - acc: 0.0405 - val\_loss: 15.4602 - val\_acc: 0.0409

Epoch 30/30

265/265 [==============================] - 129s 486ms/step - loss: 15.4475 - acc: 0.0417 - val\_loss: 15.4437 - val\_acc: 0.0419

Epoch 00030: ReduceLROnPlateau reducing learning rate to 4.096000622011431e-12.

run: =

Found 240 images belonging to 24 classes.

loss: 1544.82%

acc: 4.17%

Took 5 seconds to evaluate this set.

Took 1 seconds to get predictions on this set.

[ 0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 1 1 1 1 1 2 2 2 2

2 2 2 2 2 2 3 3 3 3 3 3 3 3 3 3 4 4 4 4 4 4 4 4

4 4 5 5 5 5 5 5 5 5 5 5 6 6 6 6 6 6 6 6 6 6 7 7

7 7 7 7 7 7 7 7 8 8 8 8 8 8 8 8 8 8 9 9 9 9 9 9

9 9 9 9 10 10 10 10 10 10 10 10 10 10 11 11 11 11 11 11 11 11 11 11

12 12 12 12 12 12 12 12 12 12 13 13 13 13 13 13 13 13 13 13 14 14 14 14

14 14 14 14 14 14 15 15 15 15 15 15 15 15 15 15 16 16 16 16 16 16 16 16

16 16 17 17 17 17 17 17 17 17 17 17 18 18 18 18 18 18 18 18 18 18 19 19

19 19 19 19 19 19 19 19 20 20 20 20 20 20 20 20 20 20 21 21 21 21 21 21

21 21 21 21 22 22 22 22 22 22 22 22 22 22 23 23 23 23 23 23 23 23 23 23] = [1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

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1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1]

C:\Users\ASUS-PC\AppData\Local\Programs\Python\Python36\lib\site-packages\sklearn\metrics\classification.py:1143: UndefinedMetricWarning: Precision and F-score are ill-defined and being set to 0.0 in labels with no predicted samples.

'precision', 'predicted', average, warn\_for)

precision recall f1-score support

a 0.00 0.00 0.00 10

b 0.04 1.00 0.08 10

c 0.00 0.00 0.00 10

d 0.00 0.00 0.00 10

e 0.00 0.00 0.00 10

f 0.00 0.00 0.00 10

g 0.00 0.00 0.00 10

h 0.00 0.00 0.00 10

i 0.00 0.00 0.00 10

k 0.00 0.00 0.00 10

l 0.00 0.00 0.00 10

m 0.00 0.00 0.00 10

n 0.00 0.00 0.00 10

o 0.00 0.00 0.00 10

p 0.00 0.00 0.00 10

q 0.00 0.00 0.00 10

r 0.00 0.00 0.00 10

s 0.00 0.00 0.00 10

t 0.00 0.00 0.00 10

u 0.00 0.00 0.00 10

v 0.00 0.00 0.00 10

w 0.00 0.00 0.00 10

x 0.00 0.00 0.00 10

y 0.00 0.00 0.00 10

micro avg 0.04 0.04 0.04 240

macro avg 0.00 0.04 0.00 240

weighted avg 0.00 0.04 0.00 240

c:\r\transfer learning>