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

Layer (type) Output Shape Param #

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

input\_8 (InputLayer) [(None, 224, 224, 3)] 0

block1\_conv1 (Conv2D) (None, 224, 224, 64) 1792

block1\_conv2 (Conv2D) (None, 224, 224, 64) 36928

block1\_pool (MaxPooling2D) (None, 112, 112, 64) 0

block2\_conv1 (Conv2D) (None, 112, 112, 128) 73856

block2\_conv2 (Conv2D) (None, 112, 112, 128) 147584

block2\_pool (MaxPooling2D) (None, 56, 56, 128) 0

block3\_conv1 (Conv2D) (None, 56, 56, 256) 295168

block3\_conv2 (Conv2D) (None, 56, 56, 256) 590080

block3\_conv3 (Conv2D) (None, 56, 56, 256) 590080

block3\_pool (MaxPooling2D) (None, 28, 28, 256) 0

block4\_conv1 (Conv2D) (None, 28, 28, 512) 1180160

block4\_conv2 (Conv2D) (None, 28, 28, 512) 2359808

block4\_conv3 (Conv2D) (None, 28, 28, 512) 2359808

block4\_pool (MaxPooling2D) (None, 14, 14, 512) 0

block5\_conv1 (Conv2D) (None, 14, 14, 512) 2359808

block5\_conv2 (Conv2D) (None, 14, 14, 512) 2359808

block5\_conv3 (Conv2D) (None, 14, 14, 512) 2359808

block5\_pool (MaxPooling2D) (None, 7, 7, 512) 0

flatten\_3 (Flatten) (None, 25088) 0

dense\_3 (Dense) (None, 1) 25089

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

Total params: 14,739,777

Trainable params: 25,089

Non-trainable params: 14,714,688

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

Epoch 1/100

55/55 [==============================] - 51s 919ms/step - loss: 0.8512 - accuracy: 0.4994 - val\_loss: 0.8293 - val\_accuracy: 0.4862 - lr: 0.0010

Epoch 2/100

55/55 [==============================] - 49s 899ms/step - loss: 0.8048 - accuracy: 0.4994 - val\_loss: 0.7900 - val\_accuracy: 0.4862 - lr: 0.0010

Epoch 3/100

55/55 [==============================] - 50s 900ms/step - loss: 0.7731 - accuracy: 0.4983 - val\_loss: 0.7626 - val\_accuracy: 0.4816 - lr: 0.0010

Epoch 4/100

55/55 [==============================] - 49s 899ms/step - loss: 0.7506 - accuracy: 0.4925 - val\_loss: 0.7424 - val\_accuracy: 0.4839 - lr: 0.0010

Epoch 5/100

55/55 [==============================] - 49s 889ms/step - loss: 0.7334 - accuracy: 0.4839 - val\_loss: 0.7269 - val\_accuracy: 0.4839 - lr: 0.0010

Epoch 6/100

55/55 [==============================] - 49s 894ms/step - loss: 0.7194 - accuracy: 0.4827 - val\_loss: 0.7138 - val\_accuracy: 0.4700 - lr: 0.0010

Epoch 7/100

55/55 [==============================] - 49s 891ms/step - loss: 0.7075 - accuracy: 0.4948 - val\_loss: 0.7029 - val\_accuracy: 0.4977 - lr: 0.0010

Epoch 8/100

55/55 [==============================] - 50s 904ms/step - loss: 0.6967 - accuracy: 0.5161 - val\_loss: 0.6928 - val\_accuracy: 0.5161 - lr: 0.0010

Epoch 9/100

55/55 [==============================] - 50s 912ms/step - loss: 0.6868 - accuracy: 0.5409 - val\_loss: 0.6835 - val\_accuracy: 0.5668 - lr: 0.0010

Epoch 10/100

55/55 [==============================] - 50s 908ms/step - loss: 0.6774 - accuracy: 0.5732 - val\_loss: 0.6747 - val\_accuracy: 0.6037 - lr: 0.0010

Epoch 11/100

55/55 [==============================] - 50s 915ms/step - loss: 0.6683 - accuracy: 0.6118 - val\_loss: 0.6666 - val\_accuracy: 0.6267 - lr: 0.0010

Epoch 12/100

55/55 [==============================] - 50s 911ms/step - loss: 0.6598 - accuracy: 0.6457 - val\_loss: 0.6588 - val\_accuracy: 0.6429 - lr: 0.0010

Epoch 13/100

55/55 [==============================] - 50s 908ms/step - loss: 0.6514 - accuracy: 0.6642 - val\_loss: 0.6510 - val\_accuracy: 0.6613 - lr: 0.0010

Epoch 14/100

55/55 [==============================] - 50s 904ms/step - loss: 0.6432 - accuracy: 0.6878 - val\_loss: 0.6436 - val\_accuracy: 0.6843 - lr: 0.0010

Epoch 15/100

55/55 [==============================] - 50s 902ms/step - loss: 0.6352 - accuracy: 0.7149 - val\_loss: 0.6363 - val\_accuracy: 0.6982 - lr: 0.0010

Epoch 16/100

55/55 [==============================] - 50s 903ms/step - loss: 0.6273 - accuracy: 0.7362 - val\_loss: 0.6292 - val\_accuracy: 0.7143 - lr: 0.0010

Epoch 17/100

55/55 [==============================] - 49s 884ms/step - loss: 0.6197 - accuracy: 0.7500 - val\_loss: 0.6221 - val\_accuracy: 0.7258 - lr: 0.0010

Epoch 18/100

55/55 [==============================] - 50s 899ms/step - loss: 0.6120 - accuracy: 0.7690 - val\_loss: 0.6153 - val\_accuracy: 0.7396 - lr: 0.0010

Epoch 19/100

55/55 [==============================] - 49s 893ms/step - loss: 0.6046 - accuracy: 0.7782 - val\_loss: 0.6085 - val\_accuracy: 0.7535 - lr: 0.0010

Epoch 20/100

55/55 [==============================] - 50s 901ms/step - loss: 0.5974 - accuracy: 0.7897 - val\_loss: 0.6018 - val\_accuracy: 0.7673 - lr: 0.0010

Epoch 21/100

55/55 [==============================] - 49s 896ms/step - loss: 0.5903 - accuracy: 0.8036 - val\_loss: 0.5955 - val\_accuracy: 0.7696 - lr: 0.0010

Epoch 22/100

55/55 [==============================] - 50s 902ms/step - loss: 0.5834 - accuracy: 0.8128 - val\_loss: 0.5892 - val\_accuracy: 0.7765 - lr: 0.0010

Epoch 23/100

55/55 [==============================] - 50s 900ms/step - loss: 0.5765 - accuracy: 0.8226 - val\_loss: 0.5829 - val\_accuracy: 0.7903 - lr: 0.0010

Epoch 24/100

55/55 [==============================] - 50s 910ms/step - loss: 0.5699 - accuracy: 0.8295 - val\_loss: 0.5768 - val\_accuracy: 0.7972 - lr: 0.0010

Epoch 25/100

55/55 [==============================] - 50s 910ms/step - loss: 0.5633 - accuracy: 0.8358 - val\_loss: 0.5709 - val\_accuracy: 0.8018 - lr: 0.0010

Epoch 26/100

55/55 [==============================] - 50s 904ms/step - loss: 0.5569 - accuracy: 0.8410 - val\_loss: 0.5652 - val\_accuracy: 0.8018 - lr: 0.0010

Epoch 27/100

55/55 [==============================] - 50s 908ms/step - loss: 0.5507 - accuracy: 0.8433 - val\_loss: 0.5596 - val\_accuracy: 0.8111 - lr: 0.0010

Epoch 28/100

55/55 [==============================] - 50s 892ms/step - loss: 0.5447 - accuracy: 0.8485 - val\_loss: 0.5541 - val\_accuracy: 0.8134 - lr: 0.0010

Epoch 29/100

55/55 [==============================] - 50s 916ms/step - loss: 0.5388 - accuracy: 0.8531 - val\_loss: 0.5487 - val\_accuracy: 0.8272 - lr: 0.0010

Epoch 30/100

55/55 [==============================] - 50s 904ms/step - loss: 0.5329 - accuracy: 0.8560 - val\_loss: 0.5434 - val\_accuracy: 0.8272 - lr: 0.0010

Epoch 31/100

55/55 [==============================] - 50s 903ms/step - loss: 0.5272 - accuracy: 0.8560 - val\_loss: 0.5381 - val\_accuracy: 0.8341 - lr: 0.0010

Epoch 32/100

55/55 [==============================] - 50s 913ms/step - loss: 0.5218 - accuracy: 0.8623 - val\_loss: 0.5330 - val\_accuracy: 0.8410 - lr: 0.0010

Epoch 33/100

55/55 [==============================] - 50s 896ms/step - loss: 0.5163 - accuracy: 0.8623 - val\_loss: 0.5282 - val\_accuracy: 0.8433 - lr: 0.0010

Epoch 34/100

55/55 [==============================] - 50s 911ms/step - loss: 0.5111 - accuracy: 0.8641 - val\_loss: 0.5234 - val\_accuracy: 0.8433 - lr: 0.0010

Epoch 35/100

55/55 [==============================] - 50s 913ms/step - loss: 0.5060 - accuracy: 0.8675 - val\_loss: 0.5186 - val\_accuracy: 0.8502 - lr: 0.0010

Epoch 36/100

55/55 [==============================] - 50s 915ms/step - loss: 0.5010 - accuracy: 0.8710 - val\_loss: 0.5141 - val\_accuracy: 0.8502 - lr: 0.0010

Epoch 37/100

55/55 [==============================] - 50s 911ms/step - loss: 0.4960 - accuracy: 0.8710 - val\_loss: 0.5097 - val\_accuracy: 0.8502 - lr: 0.0010

Epoch 38/100

55/55 [==============================] - 50s 911ms/step - loss: 0.4913 - accuracy: 0.8721 - val\_loss: 0.5053 - val\_accuracy: 0.8525 - lr: 0.0010

Epoch 39/100

55/55 [==============================] - 50s 918ms/step - loss: 0.4866 - accuracy: 0.8710 - val\_loss: 0.5008 - val\_accuracy: 0.8525 - lr: 0.0010

Epoch 40/100

55/55 [==============================] - 50s 912ms/step - loss: 0.4820 - accuracy: 0.8733 - val\_loss: 0.4966 - val\_accuracy: 0.8548 - lr: 0.0010

Epoch 41/100

55/55 [==============================] - 50s 917ms/step - loss: 0.4774 - accuracy: 0.8721 - val\_loss: 0.4923 - val\_accuracy: 0.8571 - lr: 0.0010

Epoch 42/100

55/55 [==============================] - 50s 894ms/step - loss: 0.4729 - accuracy: 0.8738 - val\_loss: 0.4882 - val\_accuracy: 0.8548 - lr: 0.0010

Epoch 43/100

55/55 [==============================] - 50s 916ms/step - loss: 0.4685 - accuracy: 0.8762 - val\_loss: 0.4841 - val\_accuracy: 0.8571 - lr: 0.0010

Epoch 44/100

55/55 [==============================] - 49s 893ms/step - loss: 0.4641 - accuracy: 0.8756 - val\_loss: 0.4801 - val\_accuracy: 0.8571 - lr: 0.0010

Epoch 45/100

55/55 [==============================] - 49s 889ms/step - loss: 0.4600 - accuracy: 0.8767 - val\_loss: 0.4762 - val\_accuracy: 0.8618 - lr: 0.0010

Epoch 46/100

55/55 [==============================] - 50s 910ms/step - loss: 0.4560 - accuracy: 0.8790 - val\_loss: 0.4725 - val\_accuracy: 0.8618 - lr: 0.0010

Epoch 47/100

55/55 [==============================] - 50s 901ms/step - loss: 0.4521 - accuracy: 0.8802 - val\_loss: 0.4688 - val\_accuracy: 0.8641 - lr: 0.0010

Epoch 48/100

55/55 [==============================] - 50s 902ms/step - loss: 0.4481 - accuracy: 0.8785 - val\_loss: 0.4652 - val\_accuracy: 0.8664 - lr: 0.0010

Epoch 49/100

55/55 [==============================] - 49s 892ms/step - loss: 0.4442 - accuracy: 0.8813 - val\_loss: 0.4615 - val\_accuracy: 0.8710 - lr: 0.0010

Epoch 50/100

55/55 [==============================] - 49s 890ms/step - loss: 0.4404 - accuracy: 0.8819 - val\_loss: 0.4580 - val\_accuracy: 0.8710 - lr: 0.0010

Epoch 51/100

55/55 [==============================] - 49s 879ms/step - loss: 0.4367 - accuracy: 0.8819 - val\_loss: 0.4546 - val\_accuracy: 0.8687 - lr: 0.0010

Epoch 52/100

55/55 [==============================] - 49s 882ms/step - loss: 0.4330 - accuracy: 0.8836 - val\_loss: 0.4513 - val\_accuracy: 0.8710 - lr: 0.0010

Epoch 53/100

55/55 [==============================] - 49s 891ms/step - loss: 0.4295 - accuracy: 0.8831 - val\_loss: 0.4479 - val\_accuracy: 0.8710 - lr: 0.0010

Epoch 54/100

55/55 [==============================] - 49s 898ms/step - loss: 0.4260 - accuracy: 0.8831 - val\_loss: 0.4445 - val\_accuracy: 0.8733 - lr: 0.0010

Epoch 55/100

55/55 [==============================] - 49s 892ms/step - loss: 0.4225 - accuracy: 0.8865 - val\_loss: 0.4412 - val\_accuracy: 0.8733 - lr: 0.0010

Epoch 56/100

55/55 [==============================] - 49s 890ms/step - loss: 0.4191 - accuracy: 0.8854 - val\_loss: 0.4380 - val\_accuracy: 0.8756 - lr: 0.0010

Epoch 57/100

55/55 [==============================] - 50s 902ms/step - loss: 0.4159 - accuracy: 0.8877 - val\_loss: 0.4349 - val\_accuracy: 0.8779 - lr: 0.0010

Epoch 58/100

55/55 [==============================] - 50s 907ms/step - loss: 0.4126 - accuracy: 0.8877 - val\_loss: 0.4318 - val\_accuracy: 0.8802 - lr: 0.0010

Epoch 59/100

55/55 [==============================] - 50s 903ms/step - loss: 0.4094 - accuracy: 0.8894 - val\_loss: 0.4289 - val\_accuracy: 0.8825 - lr: 0.0010

Epoch 60/100

55/55 [==============================] - 49s 897ms/step - loss: 0.4063 - accuracy: 0.8888 - val\_loss: 0.4260 - val\_accuracy: 0.8825 - lr: 0.0010

Epoch 61/100

55/55 [==============================] - 49s 894ms/step - loss: 0.4032 - accuracy: 0.8894 - val\_loss: 0.4231 - val\_accuracy: 0.8825 - lr: 0.0010

Epoch 62/100

55/55 [==============================] - 49s 899ms/step - loss: 0.4003 - accuracy: 0.8888 - val\_loss: 0.4202 - val\_accuracy: 0.8825 - lr: 0.0010

Epoch 63/100

55/55 [==============================] - 49s 896ms/step - loss: 0.3973 - accuracy: 0.8911 - val\_loss: 0.4173 - val\_accuracy: 0.8825 - lr: 0.0010

Epoch 64/100

55/55 [==============================] - 50s 900ms/step - loss: 0.3944 - accuracy: 0.8900 - val\_loss: 0.4145 - val\_accuracy: 0.8825 - lr: 0.0010

Epoch 65/100

55/55 [==============================] - 50s 907ms/step - loss: 0.3915 - accuracy: 0.8900 - val\_loss: 0.4118 - val\_accuracy: 0.8825 - lr: 0.0010

Epoch 66/100

55/55 [==============================] - 50s 917ms/step - loss: 0.3887 - accuracy: 0.8900 - val\_loss: 0.4090 - val\_accuracy: 0.8848 - lr: 0.0010

Epoch 67/100

55/55 [==============================] - 50s 915ms/step - loss: 0.3858 - accuracy: 0.8929 - val\_loss: 0.4063 - val\_accuracy: 0.8848 - lr: 0.0010

Epoch 68/100

55/55 [==============================] - 50s 905ms/step - loss: 0.3831 - accuracy: 0.8940 - val\_loss: 0.4037 - val\_accuracy: 0.8848 - lr: 0.0010

Epoch 69/100

55/55 [==============================] - 49s 895ms/step - loss: 0.3805 - accuracy: 0.8929 - val\_loss: 0.4012 - val\_accuracy: 0.8848 - lr: 0.0010

Epoch 70/100

55/55 [==============================] - 50s 901ms/step - loss: 0.3779 - accuracy: 0.8946 - val\_loss: 0.3987 - val\_accuracy: 0.8848 - lr: 0.0010

Epoch 71/100

55/55 [==============================] - 49s 885ms/step - loss: 0.3753 - accuracy: 0.8940 - val\_loss: 0.3963 - val\_accuracy: 0.8848 - lr: 0.0010

Epoch 72/100

55/55 [==============================] - 49s 896ms/step - loss: 0.3728 - accuracy: 0.8940 - val\_loss: 0.3938 - val\_accuracy: 0.8848 - lr: 0.0010

Epoch 73/100

55/55 [==============================] - 49s 886ms/step - loss: 0.3703 - accuracy: 0.8946 - val\_loss: 0.3914 - val\_accuracy: 0.8848 - lr: 0.0010

Epoch 74/100

55/55 [==============================] - 49s 900ms/step - loss: 0.3678 - accuracy: 0.8957 - val\_loss: 0.3890 - val\_accuracy: 0.8848 - lr: 0.0010

Epoch 75/100

55/55 [==============================] - 49s 898ms/step - loss: 0.3654 - accuracy: 0.8940 - val\_loss: 0.3867 - val\_accuracy: 0.8848 - lr: 0.0010

Epoch 76/100

55/55 [==============================] - 49s 897ms/step - loss: 0.3630 - accuracy: 0.8940 - val\_loss: 0.3844 - val\_accuracy: 0.8848 - lr: 0.0010

Epoch 77/100

55/55 [==============================] - 50s 902ms/step - loss: 0.3607 - accuracy: 0.8969 - val\_loss: 0.3821 - val\_accuracy: 0.8848 - lr: 0.0010

Epoch 78/100

55/55 [==============================] - 49s 897ms/step - loss: 0.3584 - accuracy: 0.8969 - val\_loss: 0.3799 - val\_accuracy: 0.8871 - lr: 0.0010

Epoch 79/100

55/55 [==============================] - 49s 892ms/step - loss: 0.3562 - accuracy: 0.8969 - val\_loss: 0.3778 - val\_accuracy: 0.8848 - lr: 0.0010

Epoch 80/100

55/55 [==============================] - 49s 887ms/step - loss: 0.3540 - accuracy: 0.8963 - val\_loss: 0.3757 - val\_accuracy: 0.8871 - lr: 0.0010

Epoch 81/100

55/55 [==============================] - 50s 903ms/step - loss: 0.3518 - accuracy: 0.8975 - val\_loss: 0.3736 - val\_accuracy: 0.8871 - lr: 0.0010

Epoch 82/100

55/55 [==============================] - 50s 910ms/step - loss: 0.3498 - accuracy: 0.8980 - val\_loss: 0.3715 - val\_accuracy: 0.8871 - lr: 0.0010

Epoch 83/100

55/55 [==============================] - 50s 905ms/step - loss: 0.3477 - accuracy: 0.8992 - val\_loss: 0.3695 - val\_accuracy: 0.8871 - lr: 0.0010

Epoch 84/100

55/55 [==============================] - 50s 901ms/step - loss: 0.3456 - accuracy: 0.8986 - val\_loss: 0.3675 - val\_accuracy: 0.8871 - lr: 0.0010

Epoch 85/100

55/55 [==============================] - 50s 902ms/step - loss: 0.3436 - accuracy: 0.8998 - val\_loss: 0.3655 - val\_accuracy: 0.8871 - lr: 0.0010

Epoch 86/100

55/55 [==============================] - 49s 889ms/step - loss: 0.3416 - accuracy: 0.8992 - val\_loss: 0.3635 - val\_accuracy: 0.8871 - lr: 0.0010

Epoch 87/100

55/55 [==============================] - 49s 886ms/step - loss: 0.3396 - accuracy: 0.9003 - val\_loss: 0.3616 - val\_accuracy: 0.8871 - lr: 0.0010

Epoch 88/100

55/55 [==============================] - 49s 885ms/step - loss: 0.3377 - accuracy: 0.8998 - val\_loss: 0.3596 - val\_accuracy: 0.8871 - lr: 0.0010

Epoch 89/100

55/55 [==============================] - 49s 885ms/step - loss: 0.3358 - accuracy: 0.9015 - val\_loss: 0.3577 - val\_accuracy: 0.8871 - lr: 0.0010

Epoch 90/100

55/55 [==============================] - 49s 892ms/step - loss: 0.3339 - accuracy: 0.9009 - val\_loss: 0.3559 - val\_accuracy: 0.8871 - lr: 0.0010

Epoch 91/100

55/55 [==============================] - 49s 889ms/step - loss: 0.3321 - accuracy: 0.9015 - val\_loss: 0.3541 - val\_accuracy: 0.8871 - lr: 0.0010

Epoch 92/100

55/55 [==============================] - 49s 892ms/step - loss: 0.3303 - accuracy: 0.9038 - val\_loss: 0.3524 - val\_accuracy: 0.8871 - lr: 0.0010

Epoch 93/100

55/55 [==============================] - 49s 895ms/step - loss: 0.3285 - accuracy: 0.9032 - val\_loss: 0.3506 - val\_accuracy: 0.8871 - lr: 0.0010

Epoch 94/100

55/55 [==============================] - 49s 891ms/step - loss: 0.3267 - accuracy: 0.9026 - val\_loss: 0.3490 - val\_accuracy: 0.8871 - lr: 0.0010

Epoch 95/100

55/55 [==============================] - 49s 891ms/step - loss: 0.3250 - accuracy: 0.9021 - val\_loss: 0.3472 - val\_accuracy: 0.8871 - lr: 0.0010

Epoch 96/100

55/55 [==============================] - 50s 907ms/step - loss: 0.3233 - accuracy: 0.9026 - val\_loss: 0.3455 - val\_accuracy: 0.8871 - lr: 0.0010

Epoch 97/100

55/55 [==============================] - 51s 917ms/step - loss: 0.3216 - accuracy: 0.9026 - val\_loss: 0.3439 - val\_accuracy: 0.8871 - lr: 0.0010

Epoch 98/100

55/55 [==============================] - 49s 895ms/step - loss: 0.3201 - accuracy: 0.9032 - val\_loss: 0.3422 - val\_accuracy: 0.8871 - lr: 0.0010

Epoch 99/100

55/55 [==============================] - 49s 891ms/step - loss: 0.3184 - accuracy: 0.9067 - val\_loss: 0.3406 - val\_accuracy: 0.8871 - lr: 0.0010

Epoch 100/100

55/55 [==============================] - 50s 907ms/step - loss: 0.3169 - accuracy: 0.9055 - val\_loss: 0.3391 - val\_accuracy: 0.8871 - lr: 0.0010

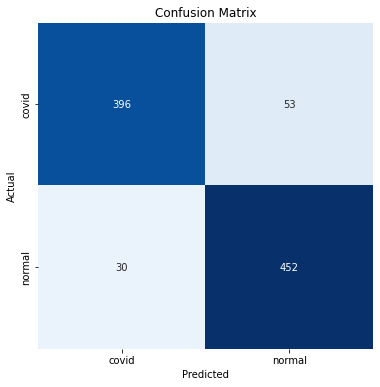
INFO:tensorflow:Assets written to: /content/drive/MyDrive/AdadeltaVGG16Split0.7noAug/assets

Test Loss: 0.32070

Test Accuracy: 91.08%

/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 0.93 0.88 0.91 449

normal 0.90 0.94 0.92 482

accuracy 0.91 931

macro avg 0.91 0.91 0.91 931

weighted avg 0.91 0.91 0.91 931

