# train

Found 49198 images belonging to 2 classes.

Found 6080 images belonging to 2 classes.

Model: "sequential"

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Layer (type) Output Shape Param #

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flatten (Flatten) (None, 100010) 0

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batch\_normalization (BatchNo (None, 100010) 400040

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dense (Dense) (None, 2048) 204822528

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dropout (Dropout) (None, 2048) 0

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dense\_1 (Dense) (None, 2048) 4196352

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dropout\_1 (Dropout) (None, 2048) 0

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dense\_2 (Dense) (None, 2048) 4196352

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dropout\_2 (Dropout) (None, 2048) 0

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dense\_3 (Dense) (None, 2048) 4196352

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dropout\_3 (Dropout) (None, 2048) 0

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dense\_4 (Dense) (None, 1000) 2049000

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dense\_5 (Dense) (None, 2) 2002

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Total params: 219,862,626

Trainable params: 219,662,606

Non-trainable params: 200,020

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Epoch 1/300

1537/1537 [==============================] - 245s 159ms/step - loss: 0.7504 - accuracy: 0.6125 - val\_loss: 0.8905 - val\_accuracy: 0.7125

Epoch 2/300

1537/1537 [==============================] - 74s 48ms/step - loss: 0.5735 - accuracy: 0.7758 - val\_loss: 0.6691 - val\_accuracy: 0.7638

Epoch 3/300

1537/1537 [==============================] - 73s 47ms/step - loss: 0.4061 - accuracy: 0.8581 - val\_loss: 0.6595 - val\_accuracy: 0.7563

Epoch 4/300

1537/1537 [==============================] - 73s 47ms/step - loss: 0.3025 - accuracy: 0.9040 - val\_loss: 1.2086 - val\_accuracy: 0.7408

Epoch 5/300

1537/1537 [==============================] - 73s 47ms/step - loss: 0.2180 - accuracy: 0.9374 - val\_loss: 0.8801 - val\_accuracy: 0.7525

Epoch 6/300

1537/1537 [==============================] - 73s 47ms/step - loss: 0.1711 - accuracy: 0.9564 - val\_loss: 1.0711 - val\_accuracy: 0.7474

Epoch 7/300

1537/1537 [==============================] - 73s 47ms/step - loss: 0.1372 - accuracy: 0.9679 - val\_loss: 1.2045 - val\_accuracy: 0.7487

Epoch 8/300

1537/1537 [==============================] - 73s 47ms/step - loss: 0.1108 - accuracy: 0.9740 - val\_loss: 1.1686 - val\_accuracy: 0.7495

Epoch 9/300

1537/1537 [==============================] - 73s 47ms/step - loss: 0.1230 - accuracy: 0.9776 - val\_loss: 1.1056 - val\_accuracy: 0.7484

Epoch 10/300

1537/1537 [==============================] - 73s 47ms/step - loss: 0.0999 - accuracy: 0.9811 - val\_loss: 1.1227 - val\_accuracy: 0.7480

Epoch 11/300

1537/1537 [==============================] - 73s 47ms/step - loss: 0.0939 - accuracy: 0.9832 - val\_loss: 0.9890 - val\_accuracy: 0.7421

Epoch 12/300

1537/1537 [==============================] - 73s 47ms/step - loss: 0.0670 - accuracy: 0.9858 - val\_loss: 1.3445 - val\_accuracy: 0.7454

Epoch 13/300

1537/1537 [==============================] - 73s 47ms/step - loss: 0.0920 - accuracy: 0.9880 - val\_loss: 1.0251 - val\_accuracy: 0.7396

Epoch 14/300

1537/1537 [==============================] - 73s 47ms/step - loss: 0.0904 - accuracy: 0.9884 - val\_loss: 0.8798 - val\_accuracy: 0.7454

Epoch 15/300

1537/1537 [==============================] - 73s 47ms/step - loss: 0.0790 - accuracy: 0.9882 - val\_loss: 1.5018 - val\_accuracy: 0.7459

Epoch 16/300

1537/1537 [==============================] - 73s 47ms/step - loss: 0.0636 - accuracy: 0.9912 - val\_loss: 1.1323 - val\_accuracy: 0.7400

Epoch 17/300

1537/1537 [==============================] - 73s 47ms/step - loss: 0.0784 - accuracy: 0.9900 - val\_loss: 0.9338 - val\_accuracy: 0.7493

Epoch 18/300

1537/1537 [==============================] - 73s 47ms/step - loss: 0.0577 - accuracy: 0.9918 - val\_loss: 1.0210 - val\_accuracy: 0.7480

Epoch 19/300

1537/1537 [==============================] - 73s 47ms/step - loss: 0.0690 - accuracy: 0.9917 - val\_loss: 1.1868 - val\_accuracy: 0.7485

Epoch 20/300

1537/1537 [==============================] - 73s 47ms/step - loss: 0.0612 - accuracy: 0.9924 - val\_loss: 1.1127 - val\_accuracy: 0.7446

Epoch 21/300

1537/1537 [==============================] - 73s 47ms/step - loss: 0.0494 - accuracy: 0.9925 - val\_loss: 1.1569 - val\_accuracy: 0.7563

Epoch 22/300

1537/1537 [==============================] - 73s 47ms/step - loss: 0.0511 - accuracy: 0.9932 - val\_loss: 1.4947 - val\_accuracy: 0.7459

Process finished with exit code 0

# test

Found 6144 images belonging to 2 classes.

########################################

loss & acc

[0.8611955046653748, 0.7596028447151184]

########################################

........................................

y\_prob

[[0.7283078 0.27169228]

[0.70686495 0.29313505]

[0.631834 0.36816603]

...

[0.12173064 0.8782694 ]

[0.61677754 0.38322246]

[0.38454443 0.61545557]]

........................................

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y\_prob.shape

(6144, 2)

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........................................

label\_test

[[1. 0.]

[1. 0.]

[1. 0.]

...

[0. 1.]

[0. 1.]

[0. 1.]]

........................................

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label\_test.shape

(6144, 2)

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########################################

n\_classes

2

########################################

########################################

fpr

{0: array([0. , 0. , 0. , ..., 0.98925781, 0.99869792,

1. ]), 1: array([0. , 0.00130208, 0.00130208, ..., 0.99641927, 0.99641927,

1. ])}

########################################

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tpr

{0: array([0.00000000e+00, 3.25520833e-04, 3.58072917e-03, ...,

9.98697917e-01, 9.98697917e-01, 1.00000000e+00]), 1: array([0. , 0.00130208, 0.01074219, ..., 0.99967448, 1. ,

1. ])}

########################################

########################################

cnn\_roc\_auc

{0: 0.8350600136650933, 1: 0.8350600136650934}

########################################

Process finished with exit code 0