Model: "model"

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

Layer (type) Output Shape Param # Connected to

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

input\_1 (InputLayer) [(None, 64, 321, 1)] 0 []

conv2d\_1 (Conv2D) (None, 64, 321, 8) 256 ['input\_1[0][0]']

batch\_normalization\_3 (Bat (None, 64, 321, 8) 32 ['conv2d\_1[0][0]']

chNormalization)

conv2d (Conv2D) (None, 64, 321, 4) 64 ['input\_1[0][0]']

depthwise\_conv2d\_1 (Depthw (None, 1, 321, 16) 1024 ['batch\_normalization\_3[0][0]'

iseConv2D) ]

batch\_normalization (Batch (None, 64, 321, 4) 16 ['conv2d[0][0]']

Normalization)

batch\_normalization\_4 (Bat (None, 1, 321, 16) 64 ['depthwise\_conv2d\_1[0][0]']

chNormalization)

depthwise\_conv2d (Depthwis (None, 1, 321, 8) 512 ['batch\_normalization[0][0]']

eConv2D)

activation\_2 (Activation) (None, 1, 321, 16) 0 ['batch\_normalization\_4[0][0]'

]

batch\_normalization\_1 (Bat (None, 1, 321, 8) 32 ['depthwise\_conv2d[0][0]']

chNormalization)

average\_pooling2d\_2 (Avera (None, 1, 80, 16) 0 ['activation\_2[0][0]']

gePooling2D)

activation (Activation) (None, 1, 321, 8) 0 ['batch\_normalization\_1[0][0]'

]

dropout (Dropout) (None, 1, 80, 16) 0 ['average\_pooling2d\_2[0][0]']

average\_pooling2d (Average (None, 1, 80, 8) 0 ['activation[0][0]']

Pooling2D)

separable\_conv2d\_1 (Separa (None, 1, 80, 16) 512 ['dropout[0][0]']

bleConv2D)

separable\_conv2d (Separabl (None, 1, 80, 8) 192 ['average\_pooling2d[0][0]']

eConv2D)

batch\_normalization\_5 (Bat (None, 1, 80, 16) 64 ['separable\_conv2d\_1[0][0]']

chNormalization)

batch\_normalization\_2 (Bat (None, 1, 80, 8) 32 ['separable\_conv2d[0][0]']

chNormalization)

activation\_3 (Activation) (None, 1, 80, 16) 0 ['batch\_normalization\_5[0][0]'

]

activation\_1 (Activation) (None, 1, 80, 8) 0 ['batch\_normalization\_2[0][0]'

]

average\_pooling2d\_3 (Avera (None, 1, 10, 16) 0 ['activation\_3[0][0]']

gePooling2D)

average\_pooling2d\_1 (Avera (None, 1, 10, 8) 0 ['activation\_1[0][0]']

gePooling2D)

dropout\_1 (Dropout) (None, 1, 10, 16) 0 ['average\_pooling2d\_3[0][0]']

concatenate (Concatenate) (None, 1, 10, 24) 0 ['average\_pooling2d\_1[0][0]',

'dropout\_1[0][0]']

flatten (Flatten) (None, 240) 0 ['concatenate[0][0]']

dense (Dense) (None, 4) 964 ['flatten[0][0]']

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Total params: 3764 (14.70 KB)

Trainable params: 3644 (14.23 KB)

Non-trainable params: 120 (480.00 Byte)

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Epoch 1/10

353/353 - 33s - loss: 1.1920 - accuracy: 0.4831 - val\_loss: 1.1503 - val\_accuracy: 0.5117 - 33s/epoch - 93ms/step

Epoch 2/10

353/353 - 31s - loss: 1.1026 - accuracy: 0.5508 - val\_loss: 1.0797 - val\_accuracy: 0.5478 - 31s/epoch - 87ms/step

Epoch 3/10

353/353 - 30s - loss: 1.0714 - accuracy: 0.5696 - val\_loss: 1.0634 - val\_accuracy: 0.5443 - 30s/epoch - 86ms/step

Epoch 4/10

353/353 - 31s - loss: 1.0515 - accuracy: 0.5713 - val\_loss: 1.0620 - val\_accuracy: 0.5585 - 31s/epoch - 87ms/step

Epoch 5/10

353/353 - 30s - loss: 1.0408 - accuracy: 0.5825 - val\_loss: 1.0492 - val\_accuracy: 0.5712 - 30s/epoch - 86ms/step

Epoch 6/10

353/353 - 30s - loss: 1.0268 - accuracy: 0.5862 - val\_loss: 1.0573 - val\_accuracy: 0.5514 - 30s/epoch - 86ms/step

Epoch 7/10

353/353 - 31s - loss: 1.0170 - accuracy: 0.5898 - val\_loss: 1.0344 - val\_accuracy: 0.5755 - 31s/epoch - 86ms/step

Epoch 8/10

353/353 - 30s - loss: 1.0102 - accuracy: 0.5940 - val\_loss: 1.0454 - val\_accuracy: 0.5705 - 30s/epoch - 86ms/step

Epoch 9/10

353/353 - 30s - loss: 1.0017 - accuracy: 0.6000 - val\_loss: 1.0417 - val\_accuracy: 0.5762 - 30s/epoch - 86ms/step

Epoch 10/10

353/353 - 30s - loss: 0.9935 - accuracy: 0.5990 - val\_loss: 1.0146 - val\_accuracy: 0.5840 - 30s/epoch - 86ms/step

56/56 - 2s - loss: 0.9863 - accuracy: 0.6026 - 2s/epoch - 37ms/step

Test loss: 0.9862942099571228

Test accuracy: 0.6026077270507812

56/56 [==============================] - 2s 40ms/step

Model: "model\_1"

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

Layer (type) Output Shape Param # Connected to

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

input\_2 (InputLayer) [(None, 64, 321, 1)] 0 []

conv2d\_3 (Conv2D) (None, 64, 321, 8) 256 ['input\_2[0][0]']

batch\_normalization\_9 (Bat (None, 64, 321, 8) 32 ['conv2d\_3[0][0]']

chNormalization)

conv2d\_2 (Conv2D) (None, 64, 321, 4) 64 ['input\_2[0][0]']

depthwise\_conv2d\_3 (Depthw (None, 1, 321, 16) 1024 ['batch\_normalization\_9[0][0]'

iseConv2D) ]

batch\_normalization\_6 (Bat (None, 64, 321, 4) 16 ['conv2d\_2[0][0]']

chNormalization)

batch\_normalization\_10 (Ba (None, 1, 321, 16) 64 ['depthwise\_conv2d\_3[0][0]']

tchNormalization)

depthwise\_conv2d\_2 (Depthw (None, 1, 321, 8) 512 ['batch\_normalization\_6[0][0]'

iseConv2D) ]

activation\_6 (Activation) (None, 1, 321, 16) 0 ['batch\_normalization\_10[0][0]

']

batch\_normalization\_7 (Bat (None, 1, 321, 8) 32 ['depthwise\_conv2d\_2[0][0]']

chNormalization)

average\_pooling2d\_6 (Avera (None, 1, 80, 16) 0 ['activation\_6[0][0]']

gePooling2D)

activation\_4 (Activation) (None, 1, 321, 8) 0 ['batch\_normalization\_7[0][0]'

]

dropout\_2 (Dropout) (None, 1, 80, 16) 0 ['average\_pooling2d\_6[0][0]']

average\_pooling2d\_4 (Avera (None, 1, 80, 8) 0 ['activation\_4[0][0]']

gePooling2D)

separable\_conv2d\_3 (Separa (None, 1, 80, 16) 512 ['dropout\_2[0][0]']

bleConv2D)

separable\_conv2d\_2 (Separa (None, 1, 80, 8) 192 ['average\_pooling2d\_4[0][0]']

bleConv2D)

batch\_normalization\_11 (Ba (None, 1, 80, 16) 64 ['separable\_conv2d\_3[0][0]']

tchNormalization)

batch\_normalization\_8 (Bat (None, 1, 80, 8) 32 ['separable\_conv2d\_2[0][0]']

chNormalization)

activation\_7 (Activation) (None, 1, 80, 16) 0 ['batch\_normalization\_11[0][0]

']

activation\_5 (Activation) (None, 1, 80, 8) 0 ['batch\_normalization\_8[0][0]'

]

average\_pooling2d\_7 (Avera (None, 1, 10, 16) 0 ['activation\_7[0][0]']

gePooling2D)

average\_pooling2d\_5 (Avera (None, 1, 10, 8) 0 ['activation\_5[0][0]']

gePooling2D)

dropout\_3 (Dropout) (None, 1, 10, 16) 0 ['average\_pooling2d\_7[0][0]']

concatenate\_1 (Concatenate (None, 1, 10, 24) 0 ['average\_pooling2d\_5[0][0]',

) 'dropout\_3[0][0]']

flatten\_1 (Flatten) (None, 240) 0 ['concatenate\_1[0][0]']

dense\_1 (Dense) (None, 4) 964 ['flatten\_1[0][0]']

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Total params: 3764 (14.70 KB)

Trainable params: 3644 (14.23 KB)

Non-trainable params: 120 (480.00 Byte)

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Epoch 1/10

353/353 - 32s - loss: 1.1985 - accuracy: 0.4774 - val\_loss: 1.1432 - val\_accuracy: 0.5408 - 32s/epoch - 92ms/step

Epoch 2/10

353/353 - 31s - loss: 1.0979 - accuracy: 0.5474 - val\_loss: 1.1225 - val\_accuracy: 0.5138 - 31s/epoch - 87ms/step

Epoch 3/10

353/353 - 30s - loss: 1.0739 - accuracy: 0.5669 - val\_loss: 1.0879 - val\_accuracy: 0.5535 - 30s/epoch - 86ms/step

Epoch 4/10

353/353 - 31s - loss: 1.0540 - accuracy: 0.5747 - val\_loss: 1.0652 - val\_accuracy: 0.5641 - 31s/epoch - 87ms/step

Epoch 5/10

353/353 - 31s - loss: 1.0423 - accuracy: 0.5770 - val\_loss: 1.0648 - val\_accuracy: 0.5606 - 31s/epoch - 87ms/step

Epoch 6/10

353/353 - 31s - loss: 1.0257 - accuracy: 0.5878 - val\_loss: 1.0304 - val\_accuracy: 0.5783 - 31s/epoch - 87ms/step

Epoch 7/10

353/353 - 30s - loss: 1.0125 - accuracy: 0.5924 - val\_loss: 1.0261 - val\_accuracy: 0.5840 - 30s/epoch - 86ms/step

Epoch 8/10

353/353 - 30s - loss: 0.9971 - accuracy: 0.6000 - val\_loss: 1.0626 - val\_accuracy: 0.5641 - 30s/epoch - 86ms/step

Epoch 9/10

353/353 - 31s - loss: 0.9915 - accuracy: 0.6027 - val\_loss: 1.0461 - val\_accuracy: 0.5656 - 31s/epoch - 87ms/step

Epoch 10/10

353/353 - 31s - loss: 0.9818 - accuracy: 0.6085 - val\_loss: 1.0064 - val\_accuracy: 0.6038 - 31s/epoch - 87ms/step

56/56 - 2s - loss: 1.0428 - accuracy: 0.5850 - 2s/epoch - 38ms/step

Test loss: 1.0427682399749756

Test accuracy: 0.5850340127944946

56/56 [==============================] - 2s 39ms/step

Model: "model\_2"

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

Layer (type) Output Shape Param # Connected to

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

input\_3 (InputLayer) [(None, 64, 321, 1)] 0 []

conv2d\_5 (Conv2D) (None, 64, 321, 8) 256 ['input\_3[0][0]']

batch\_normalization\_15 (Ba (None, 64, 321, 8) 32 ['conv2d\_5[0][0]']

tchNormalization)

conv2d\_4 (Conv2D) (None, 64, 321, 4) 64 ['input\_3[0][0]']

depthwise\_conv2d\_5 (Depthw (None, 1, 321, 16) 1024 ['batch\_normalization\_15[0][0]

iseConv2D) ']

batch\_normalization\_12 (Ba (None, 64, 321, 4) 16 ['conv2d\_4[0][0]']

tchNormalization)

batch\_normalization\_16 (Ba (None, 1, 321, 16) 64 ['depthwise\_conv2d\_5[0][0]']

tchNormalization)

depthwise\_conv2d\_4 (Depthw (None, 1, 321, 8) 512 ['batch\_normalization\_12[0][0]

iseConv2D) ']

activation\_10 (Activation) (None, 1, 321, 16) 0 ['batch\_normalization\_16[0][0]

']

batch\_normalization\_13 (Ba (None, 1, 321, 8) 32 ['depthwise\_conv2d\_4[0][0]']

tchNormalization)

average\_pooling2d\_10 (Aver (None, 1, 80, 16) 0 ['activation\_10[0][0]']

agePooling2D)

activation\_8 (Activation) (None, 1, 321, 8) 0 ['batch\_normalization\_13[0][0]

']

dropout\_4 (Dropout) (None, 1, 80, 16) 0 ['average\_pooling2d\_10[0][0]']

average\_pooling2d\_8 (Avera (None, 1, 80, 8) 0 ['activation\_8[0][0]']

gePooling2D)

separable\_conv2d\_5 (Separa (None, 1, 80, 16) 512 ['dropout\_4[0][0]']

bleConv2D)

separable\_conv2d\_4 (Separa (None, 1, 80, 8) 192 ['average\_pooling2d\_8[0][0]']

bleConv2D)

batch\_normalization\_17 (Ba (None, 1, 80, 16) 64 ['separable\_conv2d\_5[0][0]']

tchNormalization)

batch\_normalization\_14 (Ba (None, 1, 80, 8) 32 ['separable\_conv2d\_4[0][0]']

tchNormalization)

activation\_11 (Activation) (None, 1, 80, 16) 0 ['batch\_normalization\_17[0][0]

']

activation\_9 (Activation) (None, 1, 80, 8) 0 ['batch\_normalization\_14[0][0]

']

average\_pooling2d\_11 (Aver (None, 1, 10, 16) 0 ['activation\_11[0][0]']

agePooling2D)

average\_pooling2d\_9 (Avera (None, 1, 10, 8) 0 ['activation\_9[0][0]']

gePooling2D)

dropout\_5 (Dropout) (None, 1, 10, 16) 0 ['average\_pooling2d\_11[0][0]']

concatenate\_2 (Concatenate (None, 1, 10, 24) 0 ['average\_pooling2d\_9[0][0]',

) 'dropout\_5[0][0]']

flatten\_2 (Flatten) (None, 240) 0 ['concatenate\_2[0][0]']

dense\_2 (Dense) (None, 4) 964 ['flatten\_2[0][0]']

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Total params: 3764 (14.70 KB)

Trainable params: 3644 (14.23 KB)

Non-trainable params: 120 (480.00 Byte)

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Epoch 1/10

353/353 - 33s - loss: 1.2089 - accuracy: 0.4707 - val\_loss: 1.1675 - val\_accuracy: 0.5018 - 33s/epoch - 93ms/step

Epoch 2/10

353/353 - 30s - loss: 1.1221 - accuracy: 0.5244 - val\_loss: 1.0981 - val\_accuracy: 0.5514 - 30s/epoch - 86ms/step

Epoch 3/10

353/353 - 30s - loss: 1.0882 - accuracy: 0.5509 - val\_loss: 1.0995 - val\_accuracy: 0.5507 - 30s/epoch - 86ms/step

Epoch 4/10

353/353 - 30s - loss: 1.0629 - accuracy: 0.5733 - val\_loss: 1.0651 - val\_accuracy: 0.5634 - 30s/epoch - 86ms/step

Epoch 5/10

353/353 - 31s - loss: 1.0478 - accuracy: 0.5761 - val\_loss: 1.0745 - val\_accuracy: 0.5656 - 31s/epoch - 87ms/step

Epoch 6/10

353/353 - 30s - loss: 1.0332 - accuracy: 0.5820 - val\_loss: 1.0676 - val\_accuracy: 0.5769 - 30s/epoch - 86ms/step

Epoch 7/10

353/353 - 31s - loss: 1.0274 - accuracy: 0.5912 - val\_loss: 1.0489 - val\_accuracy: 0.5755 - 31s/epoch - 87ms/step

Epoch 8/10

353/353 - 31s - loss: 1.0167 - accuracy: 0.6013 - val\_loss: 1.0486 - val\_accuracy: 0.5762 - 31s/epoch - 87ms/step

Epoch 9/10

353/353 - 30s - loss: 1.0063 - accuracy: 0.5997 - val\_loss: 1.0389 - val\_accuracy: 0.5762 - 30s/epoch - 86ms/step

Epoch 10/10

353/353 - 30s - loss: 0.9966 - accuracy: 0.6054 - val\_loss: 1.0337 - val\_accuracy: 0.5741 - 30s/epoch - 86ms/step

56/56 - 2s - loss: 0.9905 - accuracy: 0.5986 - 2s/epoch - 37ms/step

Test loss: 0.9905299544334412

Test accuracy: 0.5986394286155701

56/56 [==============================] - 2s 39ms/step

Model: "model\_3"

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Layer (type) Output Shape Param # Connected to

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

input\_4 (InputLayer) [(None, 64, 321, 1)] 0 []

conv2d\_7 (Conv2D) (None, 64, 321, 8) 256 ['input\_4[0][0]']

batch\_normalization\_21 (Ba (None, 64, 321, 8) 32 ['conv2d\_7[0][0]']

tchNormalization)

conv2d\_6 (Conv2D) (None, 64, 321, 4) 64 ['input\_4[0][0]']

depthwise\_conv2d\_7 (Depthw (None, 1, 321, 16) 1024 ['batch\_normalization\_21[0][0]

iseConv2D) ']

batch\_normalization\_18 (Ba (None, 64, 321, 4) 16 ['conv2d\_6[0][0]']

tchNormalization)

batch\_normalization\_22 (Ba (None, 1, 321, 16) 64 ['depthwise\_conv2d\_7[0][0]']

tchNormalization)

depthwise\_conv2d\_6 (Depthw (None, 1, 321, 8) 512 ['batch\_normalization\_18[0][0]

iseConv2D) ']

activation\_14 (Activation) (None, 1, 321, 16) 0 ['batch\_normalization\_22[0][0]

']

batch\_normalization\_19 (Ba (None, 1, 321, 8) 32 ['depthwise\_conv2d\_6[0][0]']

tchNormalization)

average\_pooling2d\_14 (Aver (None, 1, 80, 16) 0 ['activation\_14[0][0]']

agePooling2D)

activation\_12 (Activation) (None, 1, 321, 8) 0 ['batch\_normalization\_19[0][0]

']

dropout\_6 (Dropout) (None, 1, 80, 16) 0 ['average\_pooling2d\_14[0][0]']

average\_pooling2d\_12 (Aver (None, 1, 80, 8) 0 ['activation\_12[0][0]']

agePooling2D)

separable\_conv2d\_7 (Separa (None, 1, 80, 16) 512 ['dropout\_6[0][0]']

bleConv2D)

separable\_conv2d\_6 (Separa (None, 1, 80, 8) 192 ['average\_pooling2d\_12[0][0]']

bleConv2D)

batch\_normalization\_23 (Ba (None, 1, 80, 16) 64 ['separable\_conv2d\_7[0][0]']

tchNormalization)

batch\_normalization\_20 (Ba (None, 1, 80, 8) 32 ['separable\_conv2d\_6[0][0]']

tchNormalization)

activation\_15 (Activation) (None, 1, 80, 16) 0 ['batch\_normalization\_23[0][0]

']

activation\_13 (Activation) (None, 1, 80, 8) 0 ['batch\_normalization\_20[0][0]

']

average\_pooling2d\_15 (Aver (None, 1, 10, 16) 0 ['activation\_15[0][0]']

agePooling2D)

average\_pooling2d\_13 (Aver (None, 1, 10, 8) 0 ['activation\_13[0][0]']

agePooling2D)

dropout\_7 (Dropout) (None, 1, 10, 16) 0 ['average\_pooling2d\_15[0][0]']

concatenate\_3 (Concatenate (None, 1, 10, 24) 0 ['average\_pooling2d\_13[0][0]',

) 'dropout\_7[0][0]']

flatten\_3 (Flatten) (None, 240) 0 ['concatenate\_3[0][0]']

dense\_3 (Dense) (None, 4) 964 ['flatten\_3[0][0]']

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

Total params: 3764 (14.70 KB)

Trainable params: 3644 (14.23 KB)

Non-trainable params: 120 (480.00 Byte)

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

Epoch 1/10

353/353 - 32s - loss: 1.1656 - accuracy: 0.5026 - val\_loss: 1.1502 - val\_accuracy: 0.5032 - 32s/epoch - 92ms/step

Epoch 2/10

353/353 - 30s - loss: 1.0678 - accuracy: 0.5600 - val\_loss: 1.1084 - val\_accuracy: 0.5259 - 30s/epoch - 86ms/step

Epoch 3/10

353/353 - 30s - loss: 1.0411 - accuracy: 0.5802 - val\_loss: 1.0691 - val\_accuracy: 0.5819 - 30s/epoch - 86ms/step

Epoch 4/10

353/353 - 30s - loss: 1.0230 - accuracy: 0.5878 - val\_loss: 1.0457 - val\_accuracy: 0.5748 - 30s/epoch - 86ms/step

Epoch 5/10

353/353 - 30s - loss: 1.0044 - accuracy: 0.5960 - val\_loss: 1.0436 - val\_accuracy: 0.5741 - 30s/epoch - 85ms/step

Epoch 6/10

353/353 - 30s - loss: 0.9946 - accuracy: 0.6000 - val\_loss: 1.0240 - val\_accuracy: 0.5819 - 30s/epoch - 86ms/step

Epoch 7/10

353/353 - 30s - loss: 0.9820 - accuracy: 0.6087 - val\_loss: 1.0308 - val\_accuracy: 0.5776 - 30s/epoch - 85ms/step

Epoch 8/10

353/353 - 30s - loss: 0.9708 - accuracy: 0.6093 - val\_loss: 1.0267 - val\_accuracy: 0.5790 - 30s/epoch - 86ms/step

Epoch 9/10

353/353 - 30s - loss: 0.9625 - accuracy: 0.6176 - val\_loss: 1.0218 - val\_accuracy: 0.5840 - 30s/epoch - 86ms/step

Epoch 10/10

353/353 - 30s - loss: 0.9540 - accuracy: 0.6181 - val\_loss: 1.0160 - val\_accuracy: 0.5854 - 30s/epoch - 86ms/step

56/56 - 2s - loss: 1.1677 - accuracy: 0.5153 - 2s/epoch - 37ms/step

Test loss: 1.1676636934280396

Test accuracy: 0.5153061151504517

56/56 [==============================] - 2s 39ms/step

Model: "model\_4"

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Layer (type) Output Shape Param # Connected to

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input\_5 (InputLayer) [(None, 64, 321, 1)] 0 []

conv2d\_9 (Conv2D) (None, 64, 321, 8) 256 ['input\_5[0][0]']

batch\_normalization\_27 (Ba (None, 64, 321, 8) 32 ['conv2d\_9[0][0]']

tchNormalization)

conv2d\_8 (Conv2D) (None, 64, 321, 4) 64 ['input\_5[0][0]']

depthwise\_conv2d\_9 (Depthw (None, 1, 321, 16) 1024 ['batch\_normalization\_27[0][0]

iseConv2D) ']

batch\_normalization\_24 (Ba (None, 64, 321, 4) 16 ['conv2d\_8[0][0]']

tchNormalization)

batch\_normalization\_28 (Ba (None, 1, 321, 16) 64 ['depthwise\_conv2d\_9[0][0]']

tchNormalization)

depthwise\_conv2d\_8 (Depthw (None, 1, 321, 8) 512 ['batch\_normalization\_24[0][0]

iseConv2D) ']

activation\_18 (Activation) (None, 1, 321, 16) 0 ['batch\_normalization\_28[0][0]

']

batch\_normalization\_25 (Ba (None, 1, 321, 8) 32 ['depthwise\_conv2d\_8[0][0]']

tchNormalization)

average\_pooling2d\_18 (Aver (None, 1, 80, 16) 0 ['activation\_18[0][0]']

agePooling2D)

activation\_16 (Activation) (None, 1, 321, 8) 0 ['batch\_normalization\_25[0][0]

']

dropout\_8 (Dropout) (None, 1, 80, 16) 0 ['average\_pooling2d\_18[0][0]']

average\_pooling2d\_16 (Aver (None, 1, 80, 8) 0 ['activation\_16[0][0]']

agePooling2D)

separable\_conv2d\_9 (Separa (None, 1, 80, 16) 512 ['dropout\_8[0][0]']

bleConv2D)

separable\_conv2d\_8 (Separa (None, 1, 80, 8) 192 ['average\_pooling2d\_16[0][0]']

bleConv2D)

batch\_normalization\_29 (Ba (None, 1, 80, 16) 64 ['separable\_conv2d\_9[0][0]']

tchNormalization)

batch\_normalization\_26 (Ba (None, 1, 80, 8) 32 ['separable\_conv2d\_8[0][0]']

tchNormalization)

activation\_19 (Activation) (None, 1, 80, 16) 0 ['batch\_normalization\_29[0][0]

']

activation\_17 (Activation) (None, 1, 80, 8) 0 ['batch\_normalization\_26[0][0]

']

average\_pooling2d\_19 (Aver (None, 1, 10, 16) 0 ['activation\_19[0][0]']

agePooling2D)

average\_pooling2d\_17 (Aver (None, 1, 10, 8) 0 ['activation\_17[0][0]']

agePooling2D)

dropout\_9 (Dropout) (None, 1, 10, 16) 0 ['average\_pooling2d\_19[0][0]']

concatenate\_4 (Concatenate (None, 1, 10, 24) 0 ['average\_pooling2d\_17[0][0]',

) 'dropout\_9[0][0]']

flatten\_4 (Flatten) (None, 240) 0 ['concatenate\_4[0][0]']

dense\_4 (Dense) (None, 4) 964 ['flatten\_4[0][0]']

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

Total params: 3764 (14.70 KB)

Trainable params: 3644 (14.23 KB)

Non-trainable params: 120 (480.00 Byte)

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Epoch 1/10

353/353 - 32s - loss: 1.1824 - accuracy: 0.4807 - val\_loss: 1.1500 - val\_accuracy: 0.5042 - 32s/epoch - 92ms/step

Epoch 2/10

353/353 - 30s - loss: 1.0937 - accuracy: 0.5498 - val\_loss: 1.1066 - val\_accuracy: 0.5475 - 30s/epoch - 86ms/step

Epoch 3/10

353/353 - 31s - loss: 1.0612 - accuracy: 0.5700 - val\_loss: 1.0934 - val\_accuracy: 0.5552 - 31s/epoch - 87ms/step

Epoch 4/10

353/353 - 30s - loss: 1.0456 - accuracy: 0.5758 - val\_loss: 1.0933 - val\_accuracy: 0.5531 - 30s/epoch - 86ms/step

Epoch 5/10

353/353 - 30s - loss: 1.0334 - accuracy: 0.5751 - val\_loss: 1.0875 - val\_accuracy: 0.5595 - 30s/epoch - 86ms/step

Epoch 6/10

353/353 - 30s - loss: 1.0194 - accuracy: 0.5889 - val\_loss: 1.0657 - val\_accuracy: 0.5744 - 30s/epoch - 86ms/step

Epoch 7/10

353/353 - 30s - loss: 1.0165 - accuracy: 0.5914 - val\_loss: 1.0684 - val\_accuracy: 0.5807 - 30s/epoch - 86ms/step

Epoch 8/10

353/353 - 30s - loss: 1.0043 - accuracy: 0.5925 - val\_loss: 1.0610 - val\_accuracy: 0.5708 - 30s/epoch - 86ms/step

Epoch 9/10

353/353 - 31s - loss: 0.9950 - accuracy: 0.6086 - val\_loss: 1.0667 - val\_accuracy: 0.5517 - 31s/epoch - 87ms/step

Epoch 10/10

353/353 - 31s - loss: 0.9877 - accuracy: 0.6033 - val\_loss: 1.0471 - val\_accuracy: 0.5793 - 31s/epoch - 87ms/step

56/56 - 2s - loss: 1.0408 - accuracy: 0.5789 - 2s/epoch - 38ms/step

Test loss: 1.0408105850219727

Test accuracy: 0.5788876414299011

56/56 [==============================] - 2s 39ms/step

Mean loss: 1.0456133365631104

Mean accuracy: 0.5760949850082397