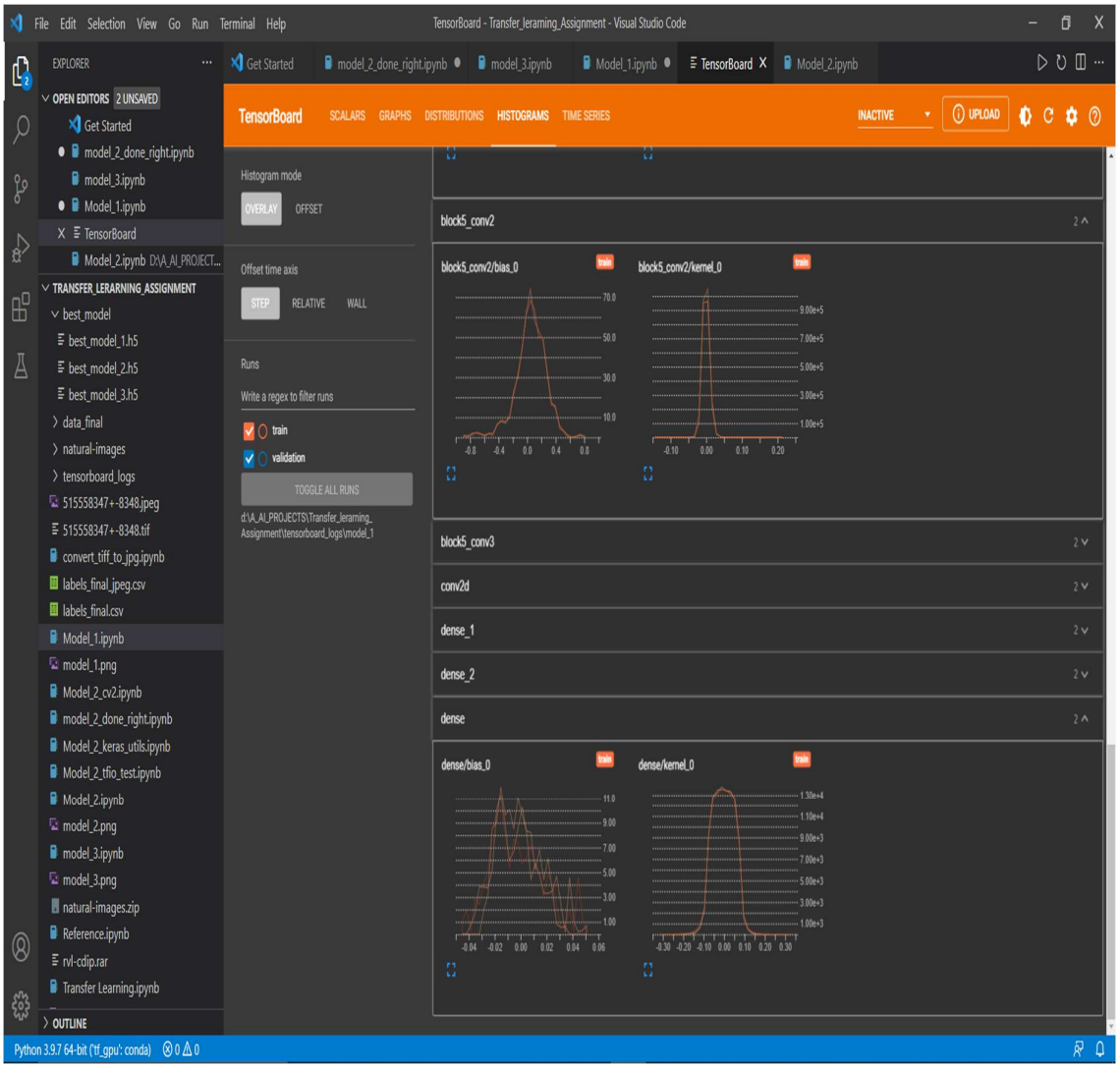
Model 1.


File Edit Selection View Go Run Terminal Help
TensorBoard - Transfer_leraring_Assignment - Visual Studio Code
EXPLORER
OPEN EDITORS 2 UNSAVED
Get Started
model_2_done_right.ipynb
model_3.ipynb
Model_1.ipynb
TensorBoard
Model_2.ipynb D:\A_AI_PROJECT...
TRANSFER_LERARNING_ASSIGNMENT
best_model
best_model_1.h5
best_model_2.h5
best_model_3.h5
data_final
natural-images
tensorboard_logs
515558347+-8348.jpeg
515558347+-8348.tif
convert_tiff_to_jpg.ipynb
labels_final.jpeg.csv
labels_final.csv
Model_1.ipynb
model_1.png
Model_2_cv2.ipynb
model_2_done_right.ipynb
Model_2_keras_utils.ipynb
Model_2_tfio_test.ipynb
Model_2.ipynb
model_2.png
model_3.ipynb
model_3.png
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Reference.ipynb
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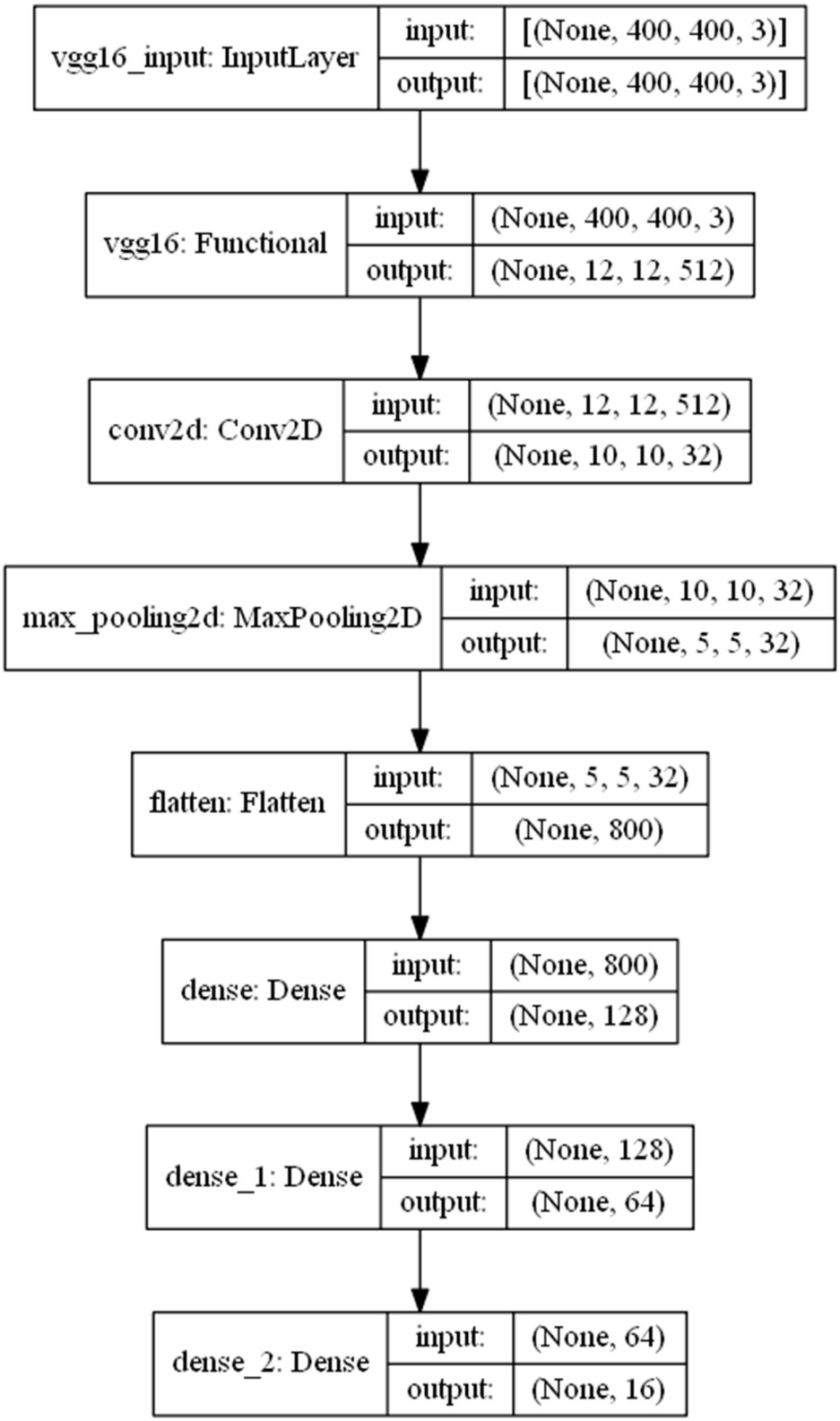
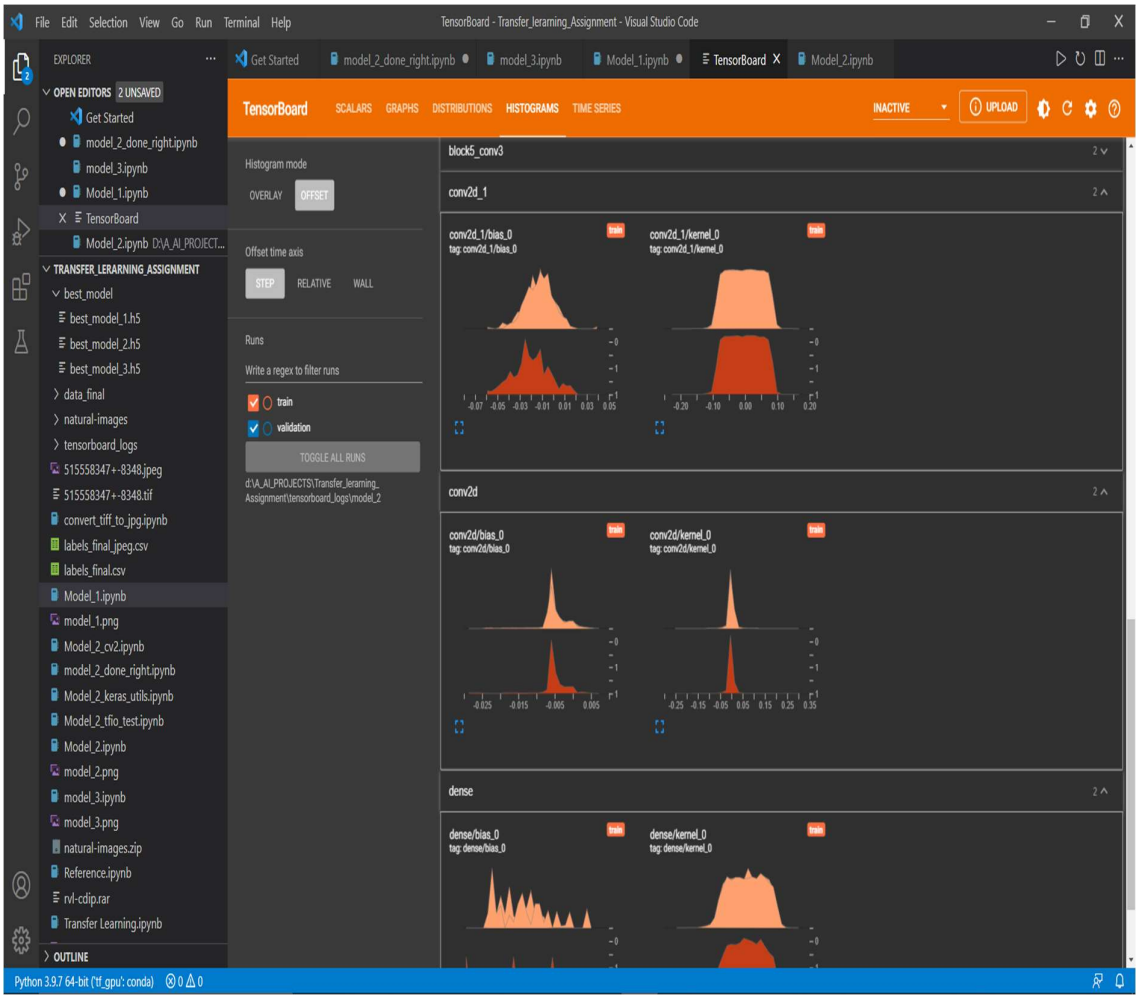
TensorBoard SCALARS GRAPHS DISTRIBUTIONS HISTOGRAMS TIME SERIES
INACTIVE
UPLOAD
Histogram mode
OVERLAY OFFSET
Offset time axis
STEP RELATIVE WALL
Runs
Write a regex to filter runs
train
validation
TOGGLE ALL RUNS
d:\A_AI_PROJECTS\Transfer_leraring_Assignment\tensorboard_logs\model_1
block5_conv2
block5_conv2/bias_0
block5_conv2/kernel_0
block5_conv3
conv2d
dense_1
dense_2
dense
dense/bias_0
dense/kernel_0
Python 3.9.7 64-bit ('tf_gpu': conda)


vgg16_input: InputLayer
input: [(None, 400, 400, 3)]
output: [(None, 400, 400, 3)]
vgg16: Functional
input: (None, 400, 400, 3)
output: (None, 12, 12, 512)
conv2d: Conv2D
input: (None, 12, 12, 512)
output: (None, 10, 10, 32)
max_pooling2d: MaxPooling2D
input: (None, 10, 10, 32)
output: (None, 5, 5, 32)
flatten: Flatten
input: (None, 5, 5, 32)
output: (None, 800)
dense: Dense
input: (None, 800)
output: (None, 128)
dense_1: Dense
input: (None, 128)
output: (None, 64)
dense_2: Dense
input: (None, 64)
output: (None, 16)

Model 2.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OPEN EDITORS 2 UNSAVED
Get Started
model_2_done_right.ipynb
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Model_1.ipynb
TensorBoard
Model_2.ipynb D:\A_AI_PROJECT...
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Model_2_tfio_test.ipynb
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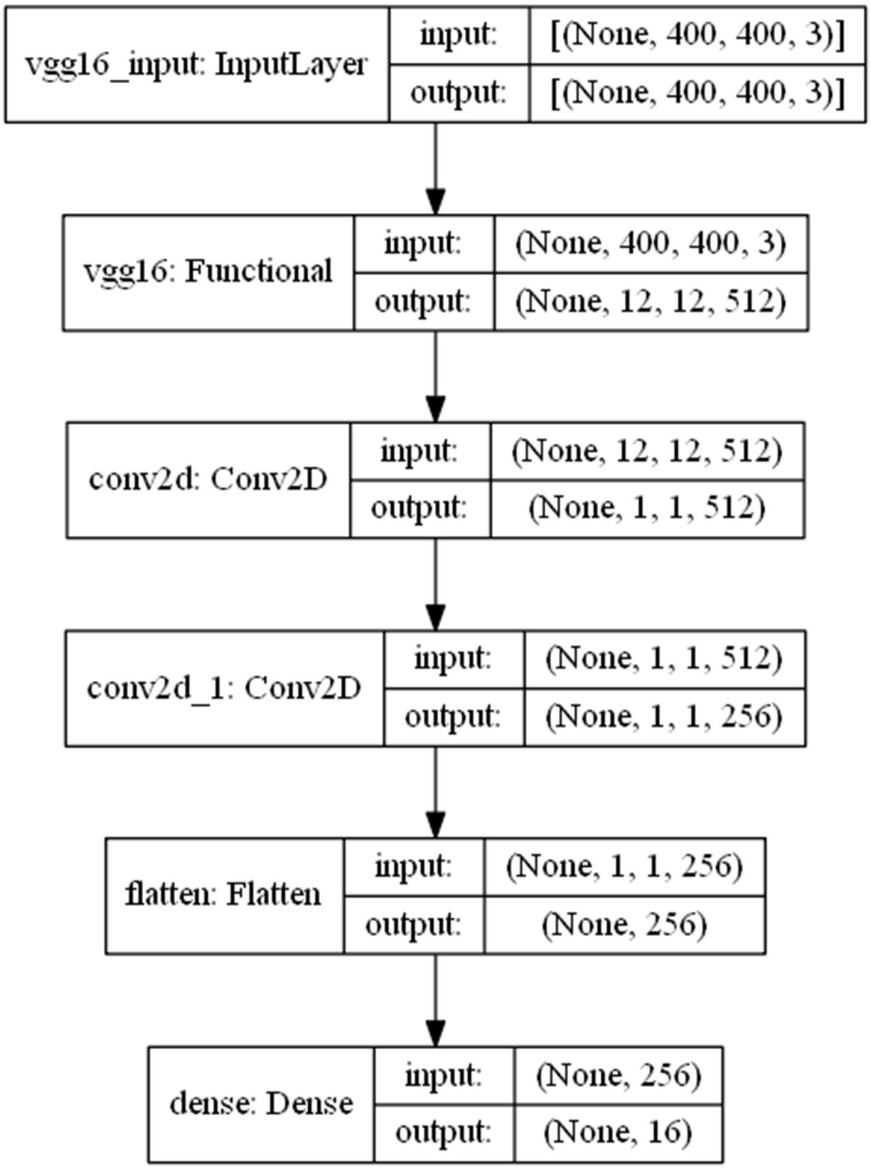
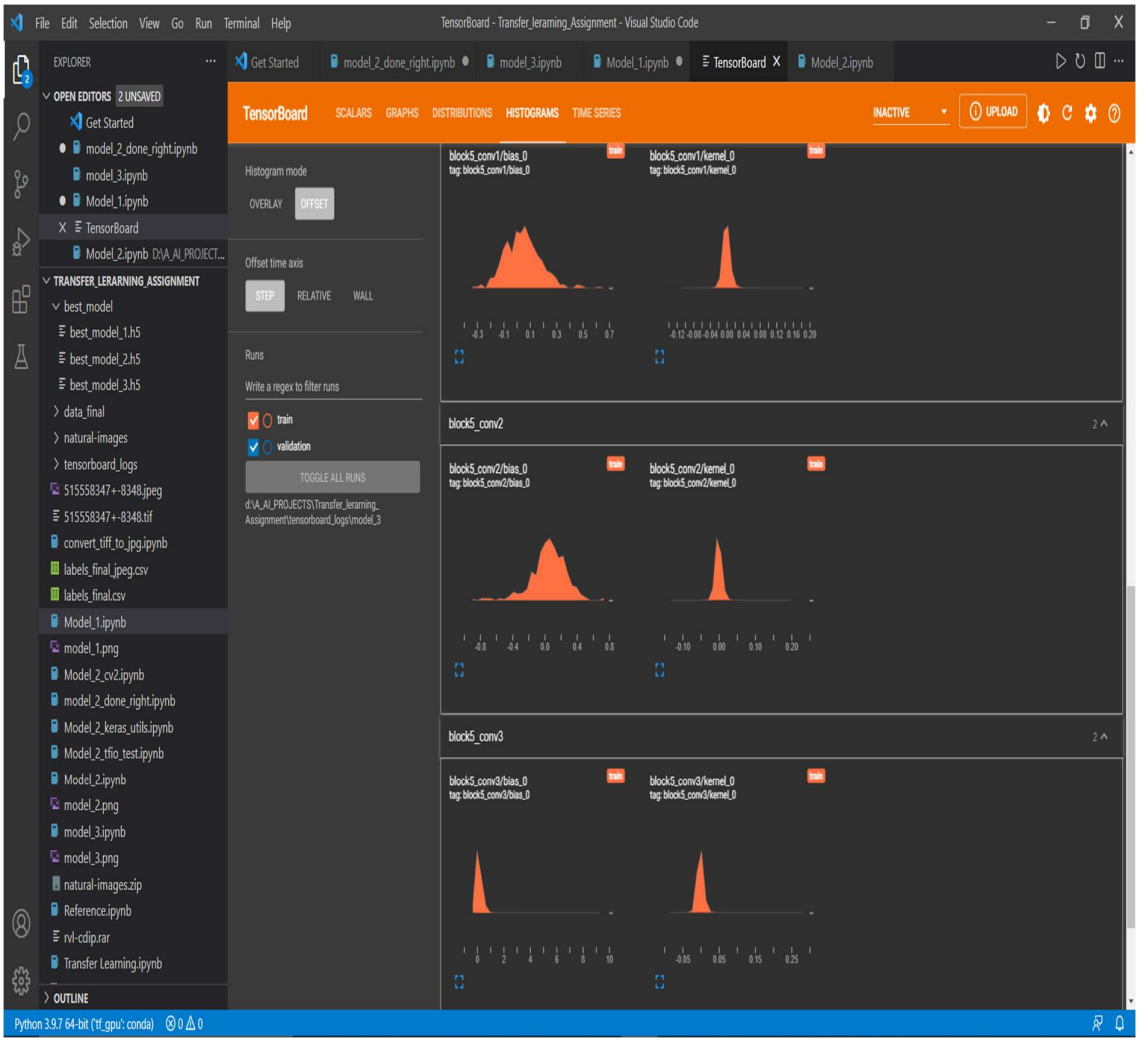
STEP
RELATIVE
WALL
Runs
Write a regex to filter runs
train
validation
TOGGLE ALL RUNS
d:\A_AI_PROJECTS\Transfer_lerarning_Assignment\tensorboard_logs\model_2
block5_conv3
conv2d_1
conv2d_1/bias_0
tag: conv2d_1/bias_0
conv2d_1/kernel_0
tag: conv2d_1/kernel_0
conv2d
conv2d/bias_0
tag: conv2d/bias_0
conv2d/kernel_0
tag: conv2d/kernel_0
dense
dense/bias_0
tag: dense/bias_0
dense/kernel_0
tag: dense/kernel_0
Python 3.9.7 64-bit ('tf_gpu': conda)


vgg16_input: InputLayer
input: [(None, 400, 400, 3)]
output: [(None, 400, 400, 3)]
vgg16: Functional
input: (None, 400, 400, 3)
output: (None, 12, 12, 512)
conv2d: Conv2D
input: (None, 12, 12, 512)
output: (None, 1, 1, 512)
conv2d_1: Conv2D
input: (None, 1, 1, 512)
output: (None, 1, 1, 256)
flatten: Flatten
input: (None, 1, 1, 256)
output: (None, 256)
dense: Dense
input: (None, 256)
output: (None, 16)

Model 3.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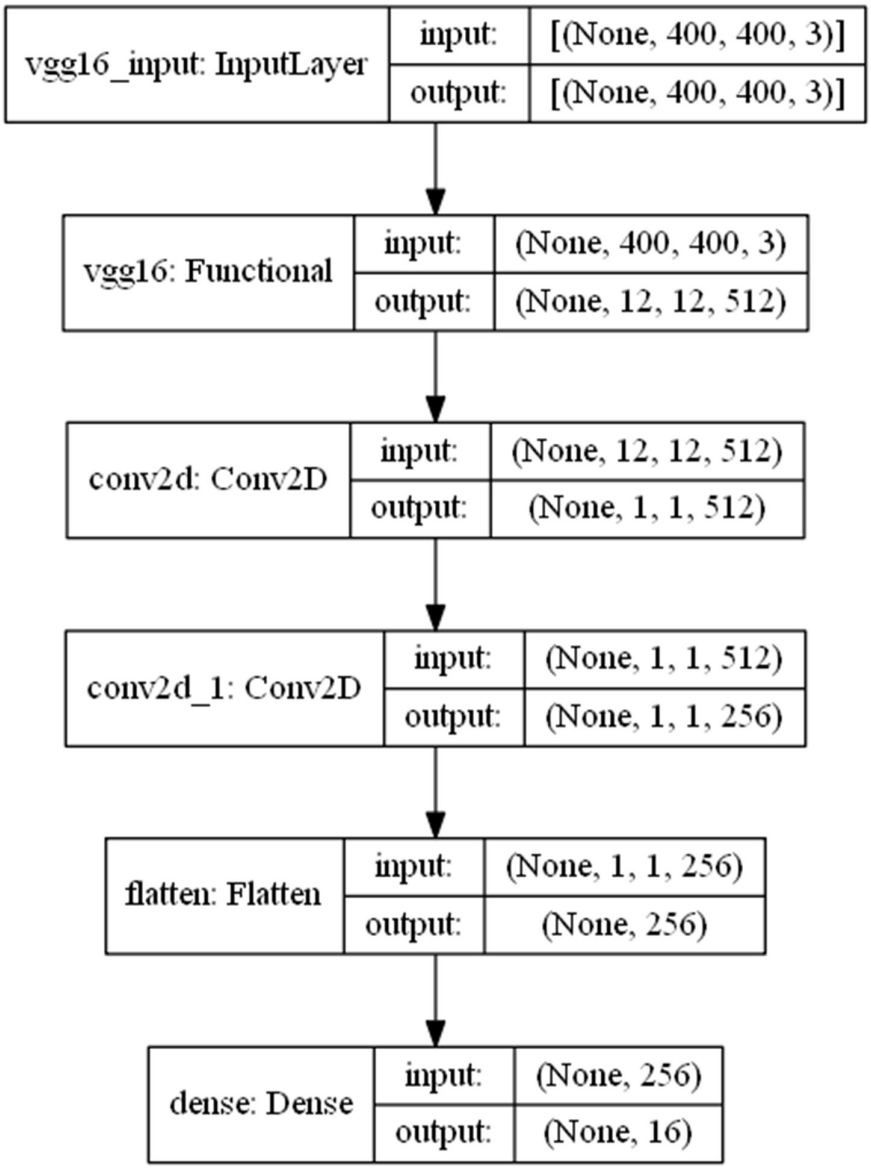
d:\A_AI_PROJECTS\Transfer_leraning_Assignment\tensorboard_logs\model_3
block5_conv1/bias_0
tag: block5_conv1/bias_0
block5_conv1/kernel_0
tag: block5_conv1/kernel_0
block5_conv2
block5_conv2/bias_0
tag: block5_conv2/bias_0
block5_conv2/kernel_0
tag: block5_conv2/kernel_0
block5_conv3
block5_conv3/bias_0
tag: block5_conv3/bias_0
block5_conv3/kernel_0
tag: block5_conv3/kernel_0
Python 3.9.7 64-bit ('tf_gpu': conda)


vgg16_input: InputLayer
input: [(None, 400, 400, 3)]
output: [(None, 400, 400, 3)]
vgg16: Functional
input: (None, 400, 400, 3)
output: (None, 12, 12, 512)
conv2d: Conv2D
input: (None, 12, 12, 512)
output: (None, 1, 1, 512)
conv2d_1: Conv2D
input: (None, 1, 1, 512)
output: (None, 1, 1, 256)
flatten: Flatten
input: (None, 1, 1, 256)
output: (None, 256)
dense: Dense
input: (None, 256)
output: (None, 16)

Observations.

- Model 1 and 2 performed similarly, both gained an accuracy of around 55% in the first epoch itself.
- Model 2 was a bit faster to train than Model 1.
- Model 3 took more time to train and was less accurate.
- Using ImageDataGenerator from Keras results in data-starvation to the GPU. Using tf.data module cuts time in half.