In [1]:
```
cd G:
```

```
G:\
```

In [2]:
```
cd smart_bridge
```

```
G:\smart_bridge
```

In [3]:
```
from keras.models import Sequential
from keras.layers import Dense
from keras.layers import Convolution2D
from keras.layers import MaxPooling2D
from keras.layers import Flatten
```

```
Using TensorFlow backend.
```

In [4]:
```
 model = Sequential()
```

```
WARNING:tensorflow:From C:\Users\Admin\Anaconda3\lib\site-packages\keras\backen
d\tensorflow_backend.py:74: The name tf.get_default_graph is deprecated. Please
use tf.compat.v1.get_default_graph instead.
```

In [5]:
```
model.add(Convolution2D(32,(3,3),input_shape = (64,64,3),activation = 'relu'))
```

```
WARNING:tensorflow:From C:\Users\Admin\Anaconda3\lib\site-packages\keras\backen
d\tensorflow_backend.py:517: The name tf.placeholder is deprecated. Please use
tf.compat.v1.placeholder instead.

WARNING:tensorflow:From C:\Users\Admin\Anaconda3\lib\site-packages\keras\backen
d\tensorflow_backend.py:4138: The name tf.random_uniform is deprecated. Please
use tf.random.uniform instead.
```

In [6]:
```
model.add(MaxPooling2D(pool_size=(2,2)))
```

```
WARNING:tensorflow:From C:\Users\Admin\Anaconda3\lib\site-packages\keras\backen
d\tensorflow_backend.py:3976: The name tf.nn.max_pool is deprecated. Please use
tf.nn.max_pool2d instead.
```

In [7]:
```
model.add(Flatten())
```

In [8]:
```
model.add(Dense(output_dim = 128,init = 'uniform',activation = 'relu'))
```

```
C:\Users\Admin\Anaconda3\lib\site-packages\ipykernel_launcher.py:1: UserWarnin
g: Update your `Dense` call to the Keras 2 API: `Dense(activation="relu", units
=128, kernel_initializer="uniform")`
  """Entry point for launching an IPython kernel.
```

In [9]:
```
model.add(Dense(output_dim = 1,activation = 'sigmoid',init = 'uniform'))
```

```
C:\Users\Admin\Anaconda3\lib\site-packages\ipykernel_launcher.py:1: UserWarnin
g: Update your `Dense` call to the Keras 2 API: `Dense(activation="sigmoid", un
its=1, kernel_initializer="uniform")`
  """Entry point for launching an IPython kernel.
```

In [10]:
```
from keras.preprocessing.image import ImageDataGenerator
train_datagen = ImageDataGenerator(rescale = 1./255,shear_range = 0.2,zoom_range
test_datagen = ImageDataGenerator(rescale =1 )
```

In [11]:
```
x_train = train_datagen.flow_from_directory(r'dataset\dataset\training_set',targ
x_test = test_datagen.flow_from_directory(r'dataset\dataset\testing_set',target_
```

```
Found 8010 images belonging to 2 classes.
Found 2002 images belonging to 2 classes.
```

In [12]:
```
x_train.class_indices
```

Out[12]:
```
{'cats': 0, 'dogs': 1}
```

In [13]:
```
print(x_train.class_indices)
```

```
{'cats': 0, 'dogs': 1}
```

In [14]:
```
model.compile(loss = 'binary_crossentropy',optimizer = "adam",metrics= ["accurac
```

```
WARNING:tensorflow:From C:\Users\Admin\Anaconda3\lib\site-packages\keras\optimi
zers.py:790: The name tf.train.Optimizer is deprecated. Please use tf.compat.v
1.train.Optimizer instead.

WARNING:tensorflow:From C:\Users\Admin\Anaconda3\lib\site-packages\keras\backen
d\tensorflow_backend.py:3376: The name tf.log is deprecated. Please use tf.mat
h.log instead.

WARNING:tensorflow:From C:\Users\Admin\Anaconda3\lib\site-packages\tensorflow\p
ython\ops\nn_impl.py:180: add_dispatch_support.<locals>.wrapper (from tensorflo
w.python.ops.array_ops) is deprecated and will be removed in a future version.
Instructions for updating:
Use tf.where in 2.0, which has the same broadcast rule as np.where
```

In [15]:
```
model.fit_generator(x_train, steps_per_epoch = 50,epochs = 10,validation_data = x
```

```
WARNING:tensorflow:From C:\Users\Admin\Anaconda3\lib\site-packages\keras\backen
d\tensorflow_backend.py:986: The name tf.assign_add is deprecated. Please use t
f.compat.v1.assign_add instead.

Epoch 1/10
50/50 [==============================] - 161s 3s/step - loss: 0.7285 - acc: 0.4
956 - val_loss: 7.8383 - val_acc: 0.5005
Epoch 2/10
50/50 [==============================] - 114s 2s/step - loss: 0.6862 - acc: 0.5
744 - val_loss: 4.7980 - val_acc: 0.6064
Epoch 3/10
50/50 [==============================] - 59s 1s/step - loss: 0.6694 - acc: 0.58
50 - val_loss: 7.2449 - val_acc: 0.5310
Epoch 4/10
50/50 [==============================] - 50s 1s/step - loss: 0.6602 - acc: 0.61
06 - val_loss: 6.3050 - val_acc: 0.5834
Epoch 5/10
50/50 [==============================] - 56s 1s/step - loss: 0.6404 - acc: 0.64
25 - val_loss: 7.9496 - val_acc: 0.5010
Epoch 6/10
50/50 [==============================] - 39s 789ms/step - loss: 0.6362 - acc:
0.6496 - val_loss: 7.0313 - val_acc: 0.5524
Epoch 7/10
50/50 [==============================] - 36s 715ms/step - loss: 0.6280 - acc:
0.6500 - val_loss: 6.6803 - val_acc: 0.5719
Epoch 8/10
50/50 [==============================] - 45s 894ms/step - loss: 0.6057 - acc:
0.6688 - val_loss: 7.3800 - val_acc: 0.5320
Epoch 9/10
50/50 [==============================] - 148s 3s/step - loss: 0.6059 - acc: 0.6
769 - val_loss: 7.3392 - val_acc: 0.5345
Epoch 10/10
50/50 [==============================] - 51s 1s/step - loss: 0.5926 - acc: 0.68
94 - val_loss: 6.9060 - val_acc: 0.5639
```

Out[15]:
```
<keras.callbacks.History at 0x2d492fdaa48>
```

In [18]:
```
model.save("cnn.h5")
```