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

```
G:\
```

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

```
G:\smart_bridge
```

In [3]:
```
cd Crop-animal data
```

```
G:\smart_bridge\Crop-animal data
```

In [4]:
```
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 [5]:
```
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 [6]:
```
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 [7]:
```
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 [8]:
```
model.add(Flatten())
```

In [9]:
```
model.add(Dense(output_dim=150,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
=150, kernel_initializer="uniform")`
  """Entry point for launching an IPython kernel.
```

In [10]:
```
model.add(Dense(output_dim=5,init = 'uniform',activation = 'softmax'))
```

```
C:\Users\Admin\Anaconda3\lib\site-packages\ipykernel_launcher.py:1: UserWarnin
g: Update your `Dense` call to the Keras 2 API: `Dense(activation="softmax", un
its=5, kernel_initializer="uniform")`
  """Entry point for launching an IPython kernel.
```

In [24]:
```
from keras.preprocessing.image import ImageDataGenerator
train_datagen = ImageDataGenerator(rescale = 1./255,shear_range = 0.2,zoom_range
test_datagen = ImageDataGenerator(rescale =1 )
```

In [12]:
```
x_train = train_datagen.flow_from_directory(r'x_training',target_size = (64,64),
x_test = test_datagen.flow_from_directory(r'x_testing',target_size = (64,64),bat
```

```
Found 1178 images belonging to 5 classes.
Found 317 images belonging to 5 classes.
```

In [13]:
```
x_train.class_indices
```

Out[13]:
```
{'bears': 0, 'crows': 1, 'elephants': 2, 'racoons': 3, 'rats': 4}
```

In [ ]:
```

```

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

```
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:3295: The name tf.log is deprecated. Please use tf.mat
h.log instead.
```

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

```
50/50 [==============================] - 37s 740ms/step - loss: 0.1550 - acc:
0.9542 - val_loss: 4.8050 - val_acc: 0.7003
Epoch 28/50
50/50 [==============================] - 35s 706ms/step - loss: 0.1392 - acc:
0.9599 - val_loss: 4.4259 - val_acc: 0.7187
Epoch 29/50
50/50 [==============================] - 36s 727ms/step - loss: 0.1058 - acc:
0.9712 - val_loss: 5.0879 - val_acc: 0.6782
Epoch 30/50
50/50 [==============================] - 41s 820ms/step - loss: 0.1198 - acc:
0.9614 - val_loss: 4.1423 - val_acc: 0.7378
Epoch 31/50
50/50 [==============================] - 39s 784ms/step - loss: 0.0995 - acc:
0.9711 - val_loss: 4.2419 - val_acc: 0.7287
Epoch 32/50
50/50 [==============================] - 36s 729ms/step - loss: 0.1102 - acc:
0.9710 - val_loss: 5.0161 - val_acc: 0.6862
Epoch 33/50
50/50 [==============================] - 36s 722ms/step - loss: 0.0972 - acc:
0.9702 - val_loss: 5.0552 - val_acc: 0.6847
```

In [ ]:

In [21]:
```
#y_pred = model.predict(x_train)
#y_pred = (y_pred>0.5)
#from sklearn.metrics import confusion_matrix
#cn = confusion_matrix(y_train,y_pred)
```

In [22]:
```
model.save("animal.h5")
```

In [ ]: