

Instructions for updating:  
Call initializer instance with the dtype argument instead of passing it to the constructor

```
In [4]: img = image.load_img("cycle.jpg",target_size = (64,64))
```

```
In [5]: type(img)
```

```
Out[5]: PIL.Image.Image
```

```
In [6]: x = image.img_to_array(img)
```

```
In [7]: type(x)
```

```
Out[7]: numpy.ndarray
```

```
In [8]: x.shape
```

```
Out[8]: (64, 64, 3)
```

```
In [9]: x = np.expand_dims(x,axis = 0)
```

```
In [10]: x.shape
```

```
Out[10]: (1, 64, 64, 3)
```

```
In [11]: pred = model.predict_classes(x)
```

```
In [12]: pred[0]
```

```
Out[12]: 3
```

```
In [13]: print(index[pred[0]])
```

```
cycles
```

```
In [9]: x = np.expand_dims(x,axis = 0)
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In [10]: x.shape
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Out[10]: (1, 64, 64, 3)
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```
In [11]: pred = model.predict_classes(x)
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```
In [12]: pred[0]
```

```
Out[12]: 3
```

```
In [13]: print(index[pred[0]])
```

cycles

```
In [14]: pred
```

```
Out[14]: array([3], dtype=int64)
```

```
In [ ]:
```

```
In [1]: from tensorflow.keras.models import Sequential
from tensorflow.keras.layers import Dense
from tensorflow.keras.layers import Convolution2D
from tensorflow.keras.layers import MaxPooling2D
from tensorflow.keras.layers import Flatten
```

```
In [2]: from keras.preprocessing.image import ImageDataGenerator
train_datagen = ImageDataGenerator(rescale = 1./255, shear_range = 0.2, zoom_range = 0.2, horizontal_flip = True)
test_datagen = ImageDataGenerator(rescale = 1./255)
```

Using TensorFlow backend.

```
In [3]: x_train = train_datagen.flow_from_directory(r"D:\externship files\things data\trainset", target_size = (64,64), batch_size = 32, class_mode = 'categorical')
x_test = test_datagen.flow_from_directory(r"D:\externship files\things data\testset", target_size = (64,64), batch_size = 32, class_mode = 'categorical')
```

Found 100 images belonging to 5 classes.  
Found 50 images belonging to 5 classes.

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

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

WARNING:tensorflow:From C:\Users\suman\AppData\Local\Continuum\anaconda3\lib\site-packages\tensorflow\python\ops\init\_ops.py:1251: calling VarianceScaling.\_\_init\_\_ (from tensorflow.python.ops.init\_ops) with dtype is deprecated and will be removed in a future version.

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

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



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

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

In [8]: `model.add(Dense(units = 512,activation = "relu",kernel_initializer = "random_uniform"))`

WARNING:tensorflow:From C:\Users\suman\AppData\Local\Continuum\anaconda3\lib\site-packages\tensorflow\python\keras\initializer.py:119: calling RandomUniform.\_\_init\_\_ (from tensorflow.python.ops.init\_ops) with dtype is deprecated and will be removed in a future version.

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In [9]: `model.add(Dense(units = 5,activation = "softmax",kernel_initializer = "random_uniform"))`

In [10]: `model.compile("sgd",loss = "categorical_crossentropy",metrics = ["accuracy"])`

In [11]: `model.fit_generator(x_train,steps_per_epoch = 47,epochs = 30,validation_data = x_test,validation_steps = 20)`

```
Epoch 1/30
47/47 [=====] - 5s 111ms/step - loss: 1.5436 - acc: 0.3185 - val_loss: 1.6356 - val_acc: 0.2400
Epoch 2/30
47/47 [=====] - 5s 112ms/step - loss: 1.3411 - acc: 0.5217 - val_loss: 1.2872 - val_acc: 0.5800
Epoch 3/30
47/47 [=====] - 5s 108ms/step - loss: 1.1614 - acc: 0.6002 - val_loss: 1.2251 - val_acc: 0.5200
Epoch 4/30
47/47 [=====] - 5s 109ms/step - loss: 0.9646 - acc: 0.6695 - val_loss: 1.1527 - val_acc: 0.5200
Epoch 5/30
47/47 [=====] - 5s 106ms/step - loss: 0.9507 - acc: 0.6935 - val_loss: 1.1263 - val_acc: 0.5200
Epoch 6/30
47/47 [=====] - 5s 113ms/step - loss: 0.8162 - acc: 0.7303 - val_loss: 1.4945 - val_acc: 0.4000
Epoch 7/30
47/47 [=====] - 5s 109ms/step - loss: 0.7201 - acc: 0.7525 - val_loss: 0.9986 - val_acc: 0.6000
```

```
47/47 [=====] - 5s 106ms/step - loss: 0.0729 - acc: 0.4729
Epoch 24/30
47/47 [=====] - 5s 110ms/step - loss: 0.0480 - acc: 0.4729
Epoch 25/30
47/47 [=====] - 5s 110ms/step - loss: 0.0338 - acc: 0.4729
Epoch 26/30
47/47 [=====] - 6s 118ms/step - loss: 0.0776 - acc: 0.4729
Epoch 27/30
47/47 [=====] - 6s 122ms/step - loss: 0.0332 - acc: 0.4729
Epoch 28/30
47/47 [=====] - 5s 104ms/step - loss: 0.0252 - acc: 0.4729
Epoch 29/30
47/47 [=====] - 5s 106ms/step - loss: 0.0260 - acc: 0.4729
Epoch 30/30
47/47 [=====] - 5s 107ms/step - loss: 0.0757 - acc: 0.4729
```

```
Out[11]: <tensorflow.python.keras.callbacks.History at 0x1e37ccb4e10>
```

```
In [12]: model.save("things.h5")
```

```
In [ ]:
```

