assignment_6_3_BasitAbdul

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1 Assignment 6.3

1.0.1 Load the ResNet50 model. Perform image classification on five to ten images of your choice. They can be personal images or publically available images. Include the images in dsc650/assignments/assignment06/images/. Save the predictions dsc650/assignments/assignment06/results/predictions/resnet50 directory. If you are using JupyterHub, you can include those plots in your Jupyter notebook.

[1]:
```
!pip install opencv-python
```

```
Requirement already satisfied: opencv-python in /opt/conda/lib/python3.8/site-
packages (4.6.0.66)
Requirement already satisfied: numpy>=1.17.3; python_version >= "3.8" in
/opt/conda/lib/python3.8/site-packages (from opencv-python) (1.18.5)
```

[2]:
```
from tensorflow.keras.applications.resnet50 import ResNet50
from tensorflow.keras.preprocessing import image
from tensorflow.keras.applications.resnet50 import preprocess_input,␣
 ↪decode_predictions
import numpy as np
import os, cv2
import matplotlib.pyplot as plt
```

[3]:
```
os.getcwd()
```

[3]:
```
'/home/jovyan/dsc650/dsc650/assignments/assignment06'
```

[4]:
```
# Load Model
model = ResNet50(weights = 'imagenet')
```

[5]:
```
# Get the file path for the images
img_path = 'images'
```

[6]:
```
images = os.listdir(img_path)
```

[7]:
```
# Get the filename for each image
for i, name in enumerate(images):
```

```
    print(name)
```

```
lion.jpg
.ipynb_checkpoints
zebra.jpg
giraffe.jpg
fox.jpg
tiger.jpg
rabbit.jpg
```

[8]:
```
# Write the predictions into a file
for i,name in enumerate(images):

    if name != '.ipynb_checkpoints':
        img = cv2.imread(img_path + '/' + name)
        img = cv2.resize(img, (224,224))
        x = image.img_to_array(img)
        x = np.expand_dims(x, axis=0)
        x = preprocess_input(x)

        preds = model.predict(x)

        decpr = name, decode_predictions(preds, top=3)[0]

        print(decpr)

        with open('/home/jovyan/dsc650/dsc650/assignments/assignment06/results/
↪predictions/resnet50/6_3_predictions.txt', 'w') as f:
            f.write(decpr[0])
    else:
        pass
```

```
Downloading data from https://storage.googleapis.com/download.tensorflow.org/dat
a/imagenet_class_index.json
40960/35363 [==================================] - 0s 0us/step
('lion.jpg', [('n02129165', 'lion', 0.88315237), ('n02128757', 'snow_leopard',
0.018691592), ('n02487347', 'macaque', 0.010037277)])
('zebra.jpg', [('n02391049', 'zebra', 0.99975246), ('n02422106', 'hartebeest',
0.00014737848), ('n02422699', 'impala', 9.2034505e-05)])
('giraffe.jpg', [('n01665541', 'leatherback_turtle', 0.19476254), ('n04604644',
'worm_fence', 0.17185062), ('n02391049', 'zebra', 0.060387988)])
('fox.jpg', [('n02120505', 'grey_fox', 0.47995383), ('n02114548', 'white_wolf',
0.11556621), ('n02119789', 'kit_fox', 0.11196693)])
('tiger.jpg', [('n02128757', 'snow_leopard', 0.66197836), ('n02125311',
'cougar', 0.1805466), ('n02127052', 'lynx', 0.07387976)])
('rabbit.jpg', [('n02326432', 'hare', 0.92289644), ('n02325366', 'wood_rabbit',
0.056178406), ('n02328150', 'Angora', 0.019021347)])
```

[ ]: