assignment_6.3_resnet50

January 9, 2022

0.0.1 Assignment 6.3

Load the ResNet50 model. Perform image classification on five to ten images of your choice.

– Include the images in dsc650/assignments/assignment06/images/

– Save the predictions dsc650/assignments/assignment06/results/predictions/resnet50 directory.

[1]:
```
import json
from pathlib import Path
import os

current_dir = Path(os.getcwd()).absolute()
results_dir = current_dir.joinpath('results')
image_dir = current_dir.joinpath('images')
image_dir.mkdir(parents=True, exist_ok=True)

# src_data_dir = current_dir.parent.parent.parent.
 ↪joinpath('data\external\\tidynomicon')

print(current_dir)
print(results_dir)
print(image_dir)
```

```
c:\Users\saman\git_repos\dsc650\dsc650\assignments\assignment06
c:\Users\saman\git_repos\dsc650\dsc650\assignments\assignment06\results
c:\Users\saman\git_repos\dsc650\dsc650\assignments\assignment06\images
```

[2]:
```
# Classify ImageNet classes with ResNet50
# https://keras.io/api/applications/

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

model = ResNet50(weights='imagenet')
```

[3]:
```
# defining a function to predict the input and print the prediction
def pred_image(image_file):
        img = image.load_img(image_file, target_size=(224, 224))

        x = image.img_to_array(img)
        x = np.expand_dims(x, axis=0)
        x = preprocess_input(x)

        preds = model.predict(x)
        # decode the results into a list of tuples (class, description,␣
 ↪probability)
        # (one such list for each sample in the batch)
        print('Predicted:', decode_predictions(preds, top=3)[0])
```

[6]:
```
image_file = f'{image_dir}\mountains.jpeg'

pred_image(image_file)
```

```
Predicted: [('n09193705', 'alp', 0.9691843), ('n09468604', 'valley',
0.023586366), ('n03792972', 'mountain_tent', 0.002100797)]
```

[4]:
```
image_file = f'{image_dir}\cat.jpg'

pred_image(image_file)
```

```
Predicted: [('n02123045', 'tabby', 0.8573125), ('n02124075', 'Egyptian_cat',
0.04626846), ('n02123159', 'tiger_cat', 0.025576176)]
```

[5]:
```
image_file = f'{image_dir}\dog2.jpg'

pred_image(image_file)
```

```
Predicted: [('n02108422', 'bull_mastiff', 0.88610816), ('n02110958', 'pug',
0.054304935), ('n02108089', 'boxer', 0.016958967)]
```

[6]:
```
image_file = f'{image_dir}\elephant.jpg'

pred_image(image_file)
```

```
Predicted: [('n02504458', 'African_elephant', 0.955127), ('n01871265', 'tusker',
0.028732905), ('n02504013', 'Indian_elephant', 0.016140157)]
```

[9]:
```
image_file = f'{image_dir}\\tiger.jpg'

pred_image(image_file)
```

```
Predicted: [('n02129604', 'tiger', 0.9155154), ('n02123159', 'tiger_cat',
0.083713815), ('n02128925', 'jaguar', 0.00016676295)]
```

[10]:
```
image_file = f'{image_dir}\\tree.jpg'

pred_image(image_file)
```

```
Predicted: [('n09332890', 'lakeside', 0.39498907), ('n02793495', 'barn',
0.17764492), ('n04604644', 'worm_fence', 0.08433946)]
```