UDACITY

‹ Return to Classroom

Use a Pre-trained Image Classifier to Identify Dog Breeds

REVIEW

CODE REVIEW

HISTORY

Meets Specifications

Dear Student,

Congratulations!!!!👏👏👏👏
You've successfully passed all the specifications in this submission and I must admit that the structure of this project implementation is good. Going through the work, I could appreciate the time and effort put into this submission as it meets all the principal objectives. The results obtained from your models clearly proves how great your implementation was. :+1:

Additional Materials

- Learning Python: From Zero to Hero
- 30 Python Best Practices, Tips, And Tricks
- Learn Python from Top 50 Articles for the Past Year (v.2019)
- Python & Object-Oriented Programming
- Classify Images Using Convolutional Neural Networks & Python

Timing Code

Timing Code

Student calls the time functions before the start of main code and after the main logic has been finished.

Well done measuring execution time. This is the first step in the process of code optimization. Keep it up!

Comments

Python's time module has a handy function called `sleep()`. Essentially, as the name implies, it pauses your Python program. `time.sleep()` is the equivalent to the Bash shell's sleep command. Almost all programming languages have this feature, and is used in many use-cases.

Tips

Here are some documents on the topic.

1. Time a Python Function
2. Python time measure function
3. Time access and conversions
4. Time Functions in Python

Command Line arguments

adds command line argument for '--dir'
uses default ='pet_images/'

Good work! the output of the `python check_images.py --dir pet_images/` is superb.:+1:

Extra Resources

- The purpose of command line arguments is to provide a way for your programs to be more flexible by allowing external inputs (command line arguments)
  to be input into a program. The key is that these external arguments can change as to allow more flexibility in the program.
- Please check some links provided below to know more:
  The Easy Guide to Python Command Line Arguments
  Parser for command-line options, arguments and sub-commands
  How to Write Perfect Python Command-line Interfaces

adds command line argument for '--arch'

default='vgg'

It's remarkable to see the `--arch` used in your work with `default='vgg'`. That's neat!

adds command line argument for '--dogfile'
default='dognames.txt'

`python check_images.py --dogfile dognames.txt` gives a good result. Keep working hard!

Pet Image Labels

Makes sure files starting with '.' are ignored.
Checks for '.' using a conditional statement.

Hidden files (files starting with a '.') are filtered out in your program. Well done!

These files can be useful for system configuration, considering them as regular input files could cause potential bugs in your program as it scales.
Moreover, the origin of such bugs is often difficult to trace due to the hidden status of these files.

Check this out:

```
    results_dic = dict()
    for imagefile in listdir(image_dir):
        emptystr = " "
        namelist = imagefile.lower().strip().split(".")[0].split("_")
        cleanimagefile = emptystr.join([str(item) for item in namelist if item.isalpha()])
        results_dic[imagefile] = [cleanimagefile]


    return results_dic
```

Extra Resources

Working With Files in Python
Filenames and file paths in Python

Dictionary key and label are in the correct format and retrieves 40 key-value pairs.
e.g:- {'Poodle_07956.jpg': ['poodle'], 'fox_squirrel_01.jpg': ['fox squirrel'] ... }

Well done!!!

Extra Resources

- Python | Ways to create a dictionary of Lists
- Dictionaries in Python

'in_arg.dir' is passed as an argument inside check_images.py while calling the get_pet_labels function.

Nice implementation of the `get_pet_labels()` function. And, the argument passed in as the parameter of this function is reasonable.

Classifying Images

Appends images_dir to each value before making the function call.

classifier(images_dir+users_key, model)

- ✅ You correctly concatenated images_dir and key which represent the full path to each pet image file.
- The image directory is a choice of the user and changes often. It is thus a great idea to separate the filenames from the image directory and later concatenate the two to form a relative path to the files

Convert the output to lower case and strip any whitespaces

- ✅ Good job in applying lower() and strip() to the classifier output.
- This will help ensure uniformity throughout the code and importantly to accurately compare the classifier output with the pet label efficiently.

Comment

The `lower()` et `strip()` functions are among the string methods. Here is a document that presents other string methods with some good examples.The `lower()` and `strip()` functions do the required work.

- String Methods Part 1

Note that you have used the required functions, but the above document is only provided for more information on string methods.

Extra Resources

Python String Formatting Best Practices
Python String Methods

Appends 1 to correct label, and 0 to falsely classified values

Your work appends `1` to correct label, and `0` to falsely classified values. Great!

Classifying Labels as Dogs

Check the displayed output and see if all matches are appropriately displayed.

All matches are appropriately displayed in the display output. Good job!

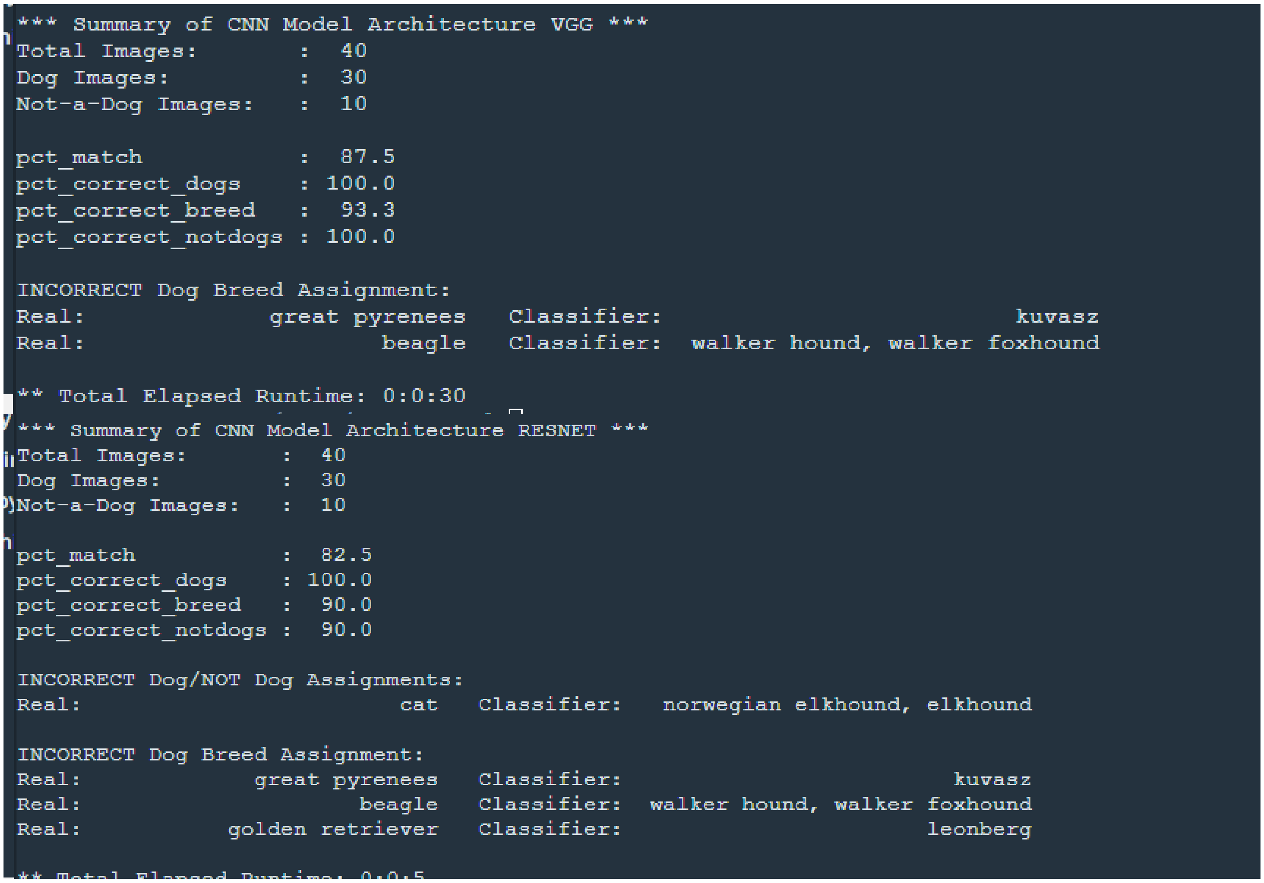
Check the displayed output and see if all non matches are appropriately displayed

All non-matches are appropriately displayed in the display output.:+1:

Results

All three models score as expected.

Well done with all models' scores.



```
*** Summary of CNN Model Architecture VGG ***
Total Images:         :  40
Dog Images:           :  30
Not-a-Dog Images:     :  10

pct_match             :  87.5
pct_correct_dogs      : 100.0
pct_correct_breed     :  93.3
pct_correct_notdogs : 100.0

INCORRECT Dog Breed Assignment:
Real:            great pyrenees   Classifier:                        kuvasz
Real:                    beagle   Classifier:  walker hound, walker foxhound

** Total Elapsed Runtime: 0:0:30
*** Summary of CNN Model Architecture RESNET ***
Total Images:         :  40
Dog Images:           :  30
Not-a-Dog Images:     :  10

pct_match             :  82.5
pct_correct_dogs      : 100.0
pct_correct_breed     :  90.0
pct_correct_notdogs :  90.0

INCORRECT Dog/NOT Dog Assignments:
Real:                        cat   Classifier:   norwegian elkhound, elkhound

INCORRECT Dog Breed Assignment:
Real:            great pyrenees   Classifier:                        kuvasz
Real:                    beagle   Classifier:  walker hound, walker foxhound
Real:           golden retriever   Classifier:                      leonberg

** Total Elapsed Runtime: 0:0:5
```

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