Database image preview

Try to preview a few images in the database. Examine the class label, file name and feature dimension The database has been prepared using the script script_02_extract_image_feat_from_folder.py

In [1]:

```
%reset
```

```
Once deleted, variables cannot be recovered. Proceed (y/[n])?
Nothing done.
```

In [2]:

```
from PIL import Image
import matplotlib.pyplot as plt
import numpy as np
import os
import sys
from time import time
import pickle

experimentPath = r'/Users/jeremywan/Desktop/MMTech/lab1_cbir_student'
os.chdir(experimentPath)
# lab related module
from ai_pytorch_module import *
from cbir_module import *
```

In [3]:

```
%pwd
```

Out[3]:

```
'/Users/jeremywan/Desktop/MMTech/lab1_cbir_student'
```

In [4]:

```
#%% Set Path
imgpath = r'./images'
sys.path.append(os.getcwd())
```

In [5]:

```
#%% load database
# Need this since pickle store a list of Database objects
# Pickle need to refer to this class
class Database :
    def __init__(self) :
        self.imageName =  None
        self.featCNN = None

with open("CBIR_database.pickle","rb") as f:
    dataDict = pickle.load(f)
database = dataDict['database']
```

In [6]:

```
print(database[0].classLabel)
print(database[0].imageName)
print(database[0].featColorHist.shape)
print(database[0].featCNN.shape)
print(database[0].featColorHist)
```

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```

In [7]:

```
#%% Check the image in database
id=200

print("Image name = " , database[id].imageName)
label = database[id].classLabel
print("Label ID = " , label)
print("Label Name = " , LabelDic[label])
feat1 = database[id].featCNN
feat2 = database[id].featColorHist
print("Feature dimension CNN = " , feat1.shape)
print("Feature dimension Colour Histogram = " , feat2.shape)
# list attributes
#print(dir(database[3]))
imFile = database[id].imageName
imFile = os.path.join(imgpath, imFile)
im = Image.open(imFile)
plt.figure(figsize=(8,6))

plt.imshow(im) , plt.axis('off')
titleStr = " Image {}.jpg label = {} Label name = {}".format(str(id), label, LabelDic[label])
plt.title(titleStr,  fontsize=20)
```

```
Image name =  200.jpg
Label ID =  3
Label Name =  Building
Feature dimension CNN =  (1, 4096)
Feature dimension Colour Histogram =  (768,)
```

Out[7]:

```
Text(0.5, 1.0, ' Image 200.jpg label = 3 Label name = Building')
```

Question 5:

Implement the following function to display the selected image and information related to the image

In [8]:

```
#%% Question 5:
# Implement the following function to display the selected image and information related to the image
# def showImageInfoFromDB(id, imgpath, database) :

def showImageInfoFromDB(id, imgpath, database):
    # your code

    label = database[id].classLabel
    feat1 = database[id].featCNN
    feat2 = database[id].featColorHist

    print("Image name = " , database[id].imageName)
    print("Label ID = " , label)
    print("Label Name = " , LabelDic[label])
    print("Feature dimension CNN = " , feat1.shape)
    print("Feature dimension Colour Histogram = " , feat2.shape)

    imFile = database[id].imageName
    imFile = os.path.join(imgpath, imFile)
    im = Image.open(imFile)
    plt.figure(figsize=(8,6))

    plt.imshow(im) , plt.axis('off')
    titleStr = " Image {}.jpg label = {} Label name = {}".format(str(id), label, LabelDic[label])
    plt.title(titleStr)

id=900
showImageInfoFromDB(id, imgpath, database)
```

```
Image name =  900.jpg
Label ID =  10
Label Name =  Food
Feature dimension CNN =  (1, 4096)
Feature dimension Colour Histogram =  (768,)
```

In [9]:

```
# Show distribution of image in Corel-1K dataset

numImages = len(database)
classlabels = []
for i in range(numImages):
    classlabels.append(database[i].classLabel)

uniqueLabels = list(set(classlabels))
print(" The database labels are " , uniqueLabels)

numLabel = len(uniqueLabels)
labelarr = np.zeros(numLabel+1)
for i in range(numImages):
    label = database[i].classLabel
    labelarr[label] = labelarr[label] + 1


for i in range(0,numLabel):
    print(" Label {} has {} samples ".format(uniqueLabels[i], labelarr[i+1]))
```

```
 The database labels are  [1, 2, 3, 4, 5, 6, 7, 8, 9, 10]
 Label 1 has 100.0 samples
 Label 2 has 100.0 samples
 Label 3 has 100.0 samples
 Label 4 has 100.0 samples
 Label 5 has 100.0 samples
 Label 6 has 100.0 samples
 Label 7 has 100.0 samples
 Label 8 has 100.0 samples
 Label 9 has 100.0 samples
 Label 10 has 100.0 samples
```