A CBIR WEBPAGE USING PYTHON

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I. ABSTRACT

A simple CBIR webpage using keras and TensorFlow libraries in python . For this CBIR we are using the VGG16 architecture to retrieve the features from the images . VGG is a convolution neural network architecture considered to be one of the best computer vision model architecture till date .I have implemented this VGG16 architecture in the project the CBIR system .VGG has 16 separate layers that have weights .

II. INTRODUCTION

In this project I have created a simple CBIR webpage using python keras and tensorflow libraries .A basic webpage is created using the python flask libraries . flask is a web application framework .it is classified as a microframework ,it has no database abstraction layer , form validation or any other third party components .

I have made use of flask to build a basic webpage which would be used to upload and store the query image given by the user
The keras library has many pretrained models which are being used in computer vision, one of which I have used in this project VGG
VGG is abbreviated as ‘very deep convolution neural network model ‘ Proposed by K. Simonyan and A. Zisserman. VGG architecture is used for image classification and detection .it has over 1.2 million training images .

VGG16 significantly outperforms the previous generation of models in the ILSVRC-2012 and ILSVRC-2013 competitions. The VGG16 result is also competing for the classification task winner (GoogLeNet with 6.7% error) and substantially outperforms the ILSVRC-2013 winning submission Clarifai, which achieved 11.2% with external training data and 11.7% without it. Concerning the single-net performance, VGG16 architecture achieves the best result (7.0% test error), outperforming a single GoogLeNet by 0.9%.

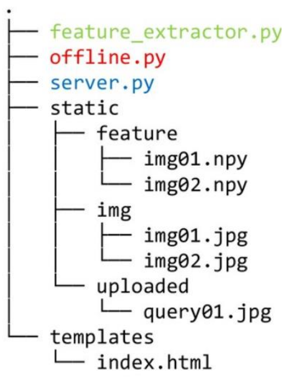
III. MOTIVATION

There has been a significant development in areas of image retrieval and deep learning technologies in recent times
Both the technologies combined together can make a huge leap in image retrieval area. More and more researches are being done in the field of deep learning and image retrieval sectors
This project is just a basic implementation of both these technologies in order to create a CBIR system

IV. PROPOSED SYSTEM

I have proposed a simple CBIR system using python libraries

DIR STRUCTURE



```
.
├── feature_extractor.py
├── offline.py
├── server.py
├── static
│   ├── feature
│   │   ├── img01.npy
│   │   └── img02.npy
│   ├── img
│   │   ├── img01.jpg
│   │   └── img02.jpg
│   └── uploaded
│       └── query01.jpg
└── templates
    └── index.html
```

1) **Feature_exractor.py**

This python file is used to configure the VGG model architecture by input the dataset and configuring the weights to the VGG16 architecture which is used for feature extraction of images

2) **Offline.py**

we use the VGG model architecture which is configured in the **feature_exractor.py** file to extract features from the image dataset and store the features in a separate file called **features**

3) **Server.py**

This python file is used to upload the query image and extract the uploaded image features and store it in a file called **uploaded** the feature is then used to compare with the already extracted features in the **feature** file to arrive with 30 images with features similar to the query image features

V. DATASET USED

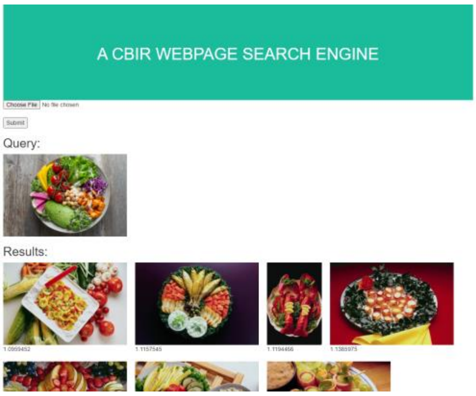
I have used the Kaggle CBIR image dataset which contains
More than 1000 high quality jpeg images
Link to dataset:
https://www.kaggle.com/theaayushbajaj/cbir-dataset/activity

VI. ALGORITHM

1.create a index.html file with basic tags for the webpage
2.create feature_extractor.py and configure the VGG16 model
3.create offline.py and use the feature_extrator function to extract features from the image dataset
4.create server.py to initialize the flask framework
5.in server.py input the query image and extract the image features and store it
6.In server.py compare the extracted features from the query image with the features from the image dataset
7.display 30 images with features similar to the query image

VII. WEBPAGE SCREENSHOTS

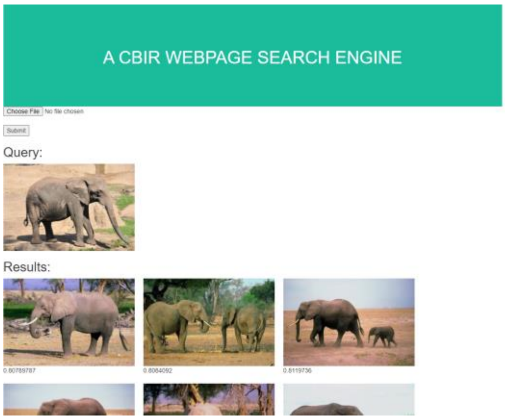
Query image:



A CBIR WEBPAGE SEARCH ENGINE

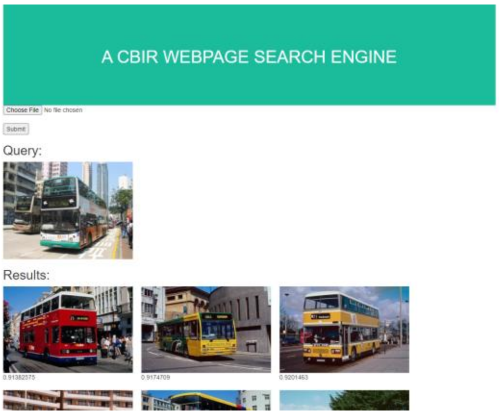
A food image search

Query image:



An elephant search

Query image:



A city bus search

VIII. CONCLUSION

CBIR is a problem in computer vision that is still yet to be solved efficiently by the computers .this is a budding technology and already having its foot on varies existing technologies .numerous researches are being done in this sector and new technologies are developing rapidly . This technology already has many useful real-time application in the IT industries

Some if the uses are in areas like security, surveillance, face detection, emotion detection, restoring old images and videos and so on .

IX. REFERNCES

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