Conan:Finding missing people

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June 17, 2021

Contents

Introduction **6**

1 project description **7**

2 Beneficiaries of the project **8**

3 Detailed analysis **9**

4 Detailed description of the adopted techniques **10**
4.1 Image 10

5 Time plan **11**

6 System architecture **12**

7 System architecture **12**

8 database design **13**

9 System design **15**

10 Testing scenarios and results **16**

11 End user guide **17**

12 Conclusion **25**

List of Figures

1 image system block diagram 7
2 time plan 11
3 System architecture class-diagram 12
4 class-diagram 12
5 extraction feature DB 13
6 image feature exract diagram 13
7 image query diagram 14

List of Tables

Abstract

This paper presents imp DIP project

Introduction

In this project the user can find missing people by search with the old pictures or young pictures of missing people. The project uses techniques that extract features from the pictures and check similarity between the query picture and the pictures in the dataset to retrieve the similar picture to the query picture.

1 project description

This is a python desktop application, it applies the Pattern Recognition and Digital Image Processing techniques to analyze, design, and implement multimedia retrieval system, where the media that we are going to use are the images . In CBIR we have implemented many techniques belong Pattern Recognition and Digital Image Processing and AI techniques in retrieval and face Recognition. .

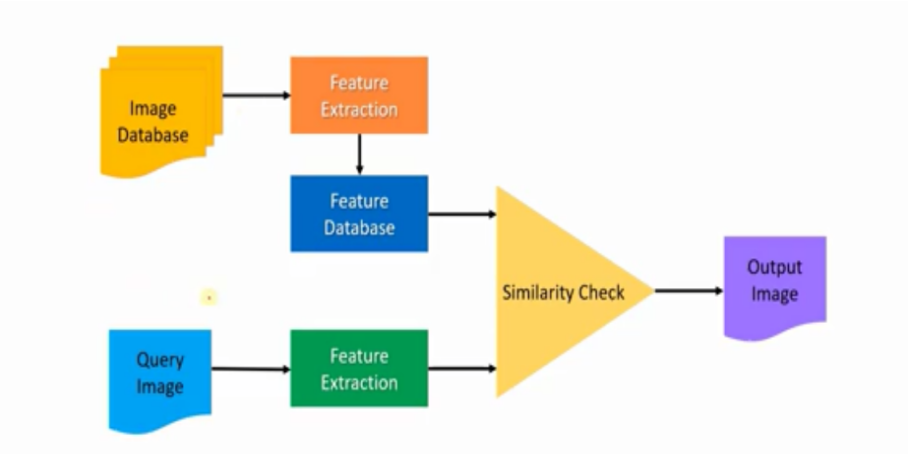

Figure 1: image system block diagram

2 Beneficiaries of the project

The family who want to find any one of their members because of missing of him. Any one who the government wants to find from his traffic camera's pictures to detect his data and find him.

3 Detailed analysis

This project deals with Content Based video Retrieval (CBVR)and Content Based Image Retrieval(CBIR). For the CBIR, the adopted methods are color-based technique, texture-based technique, and shape-based technique. and then after the user select a technique and provide the image that he/she want to search for. The program extract features of the images dataset and save it then extract the features of the input image and compare the image with etracted feature database using the selected technique and by chi-squared distance. The chi-squared distance is distance measures that used to measures dissimilarity between two histograms. the following is an analysis for adopted technique in CBIR.

1. color based technique: searching for images using the color thy contain is widely used technique here we compute the distance based on the color using color histogram.

some distance that we used to measure similarity

- Absolute Distance

$$D_{Absolute}(h, \bar{h}) = \sum_{K-1}^{K} |h_K - \bar{h_K}| \tag{1}$$

- Euclidean Distance

$$D_{Euclidean}(h, \bar{h}) = \sqrt{\sum_{K-1}^{K} (h_K - \bar{h_K})^2} \tag{2}$$

- Intersection Distance

$$D_{Intersection}(h, \bar{h}) = 1 - \sum_{K-1}^{K} in(h_K, \bar{h_K}) \tag{3}$$

4 Detailed description of the adopted techniques

4.1 Image

- **color based technique**
  we use **mean color histogram**
  A histogram represents the distribution of pixel intensities as pins (whether color or grayscale) in an image. It can be visualized as a graph (or plot) that gives a high-level intuition of the intensity (pixel value) distribution. We are going to assume a RGB color space in this example, so these pixel values will be in the range of 0 to 255 then we get the mean values. Histogram matching can best be thought of as a "transformation." Our goal is to take an input image (the "source") and update its pixel intensities such that the distribution of the input image histogram matches the distribution of a reference image(in the data set).
  steps

    1. We make picture to parts to make a better histogram
    2. Make histogram for each part
    3. Combine all histograms

  distance
  we use Mean squared error method to compare between the image we search for and images saved in database

5 Time plan

In Prepairing Datasets phase, We search for qualified dataset that qualify project. In parrallel, Extraction Features Algorithms design are finished. The software is developed and then make testing for all functionality of the program.

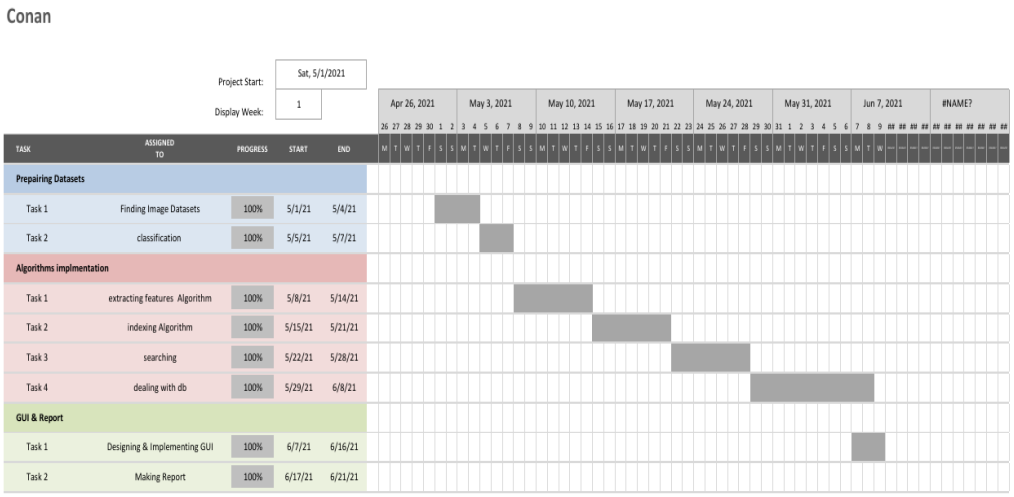

Figure 2: time plan

6 System architecture

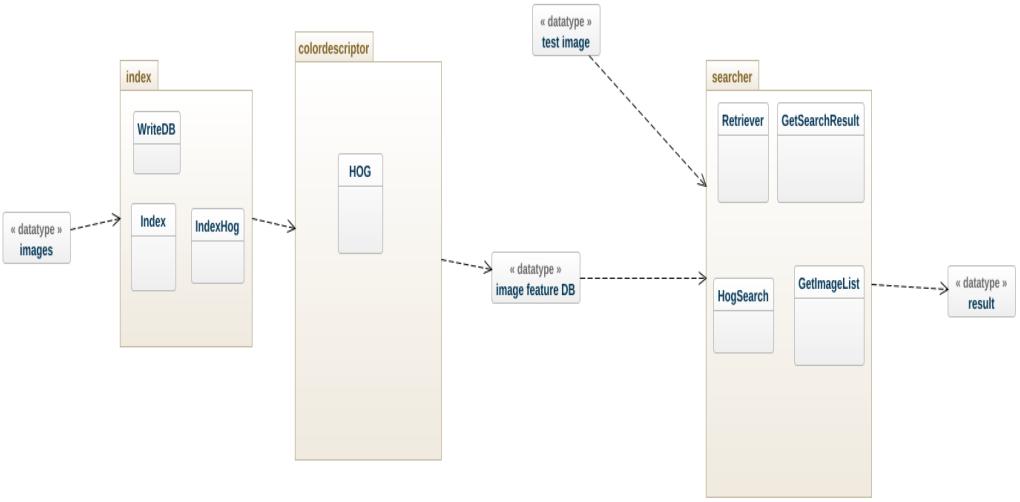

Figure 3: System architecture class-diagram

7 System architecture

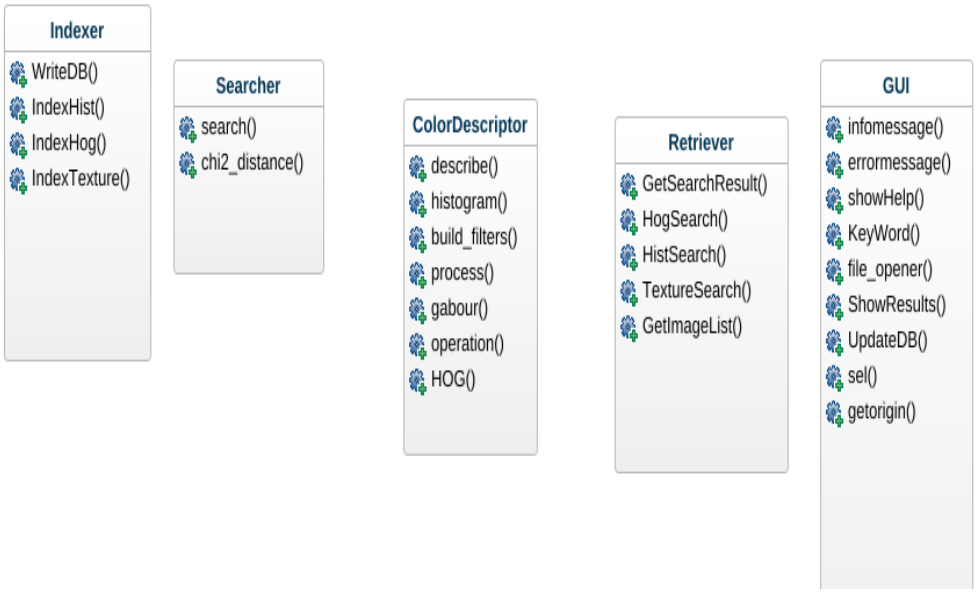

Figure 4: class-diagram

8 database design

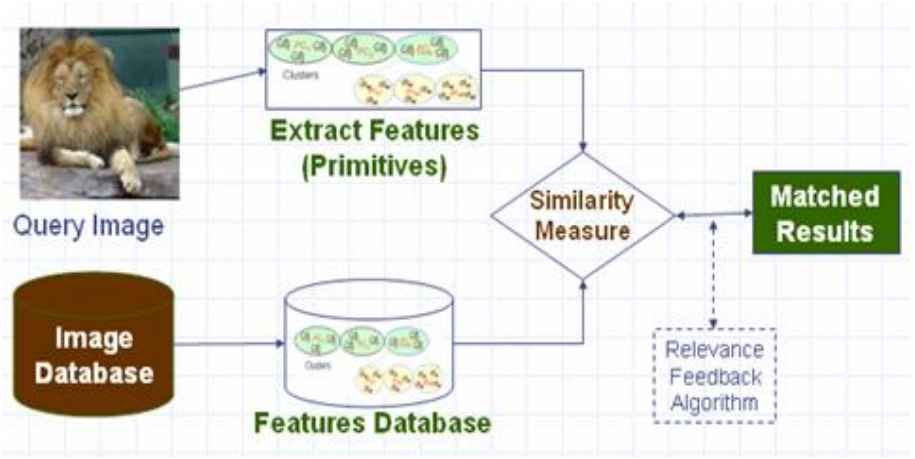

Figure 5: extraction feature DB

we deal with diffrent types of media like photos videos metadata so we include various extraction feture database in csv files like IndexHist.csv , IndexHog.csv , IndexShape.csv and video.csv we include diffrent types of dataset that used for testing and implmentation like

1. CIFAR-10-images
2. wang database
3. microsoft image database
4. Cambridge Object Recognition Image Database
5. 50 short clib

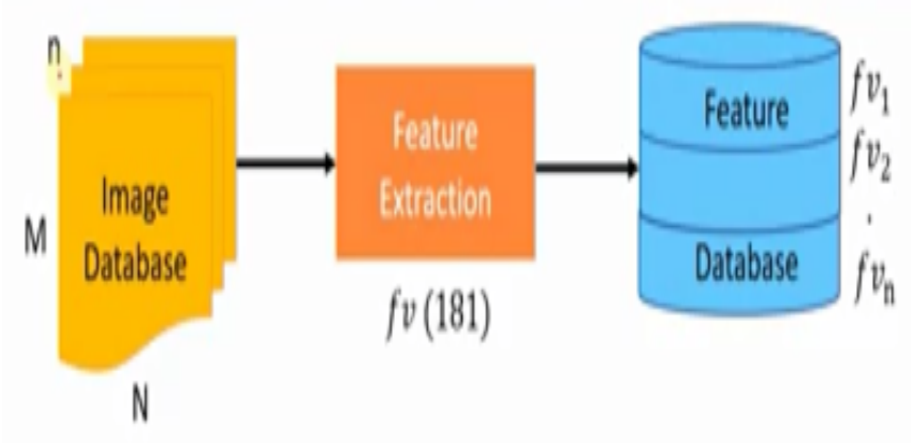

Figure 6: image feature exract diagram

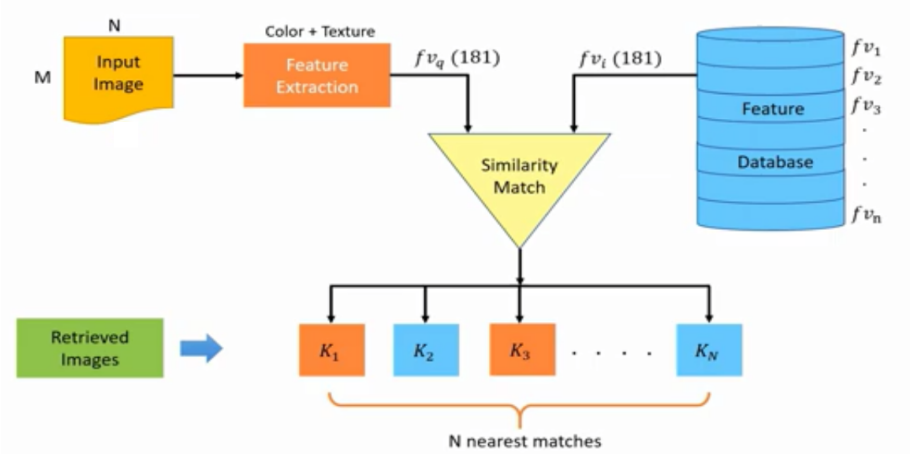

Figure 7: image query diagram

9 System design

1. **system database**
   in this project we have a database for CBIR which has a 3 CSV files each one store features for one technique. for CBVR. in key frames extraction we have a csv file which we store extracted key frames in it. for content-based "Closed Caption" we store the srt and vtt files on the disk

2. **user UI**
   this is a GUI the user interact with to make queries.

3. **the processing part**
   this part is responsible to process images according to the selected technique.

4. **operating scenario**
   first we build our database for images for all technique and then select from GUI image search if image user select the technique and the image want to search with. all data from GUI is passed to the processing part to give results and print it in the GUI

10 Testing scenarios and results

11 End user guide

1. This is the primitive user interface. for choose the images services click on imagesearch tab or if needed to query for videos videosearch tab.

2. before to go in query we need to build database first so go from FILE chose updateImageDB

3. It may take a time and give you alert message for waiting.

4. When the database is finished updating, a message Database Status will appear.

5. now we can search for any image we want From Browse choose Image ex Image of eyes and choose from Image Query the type of search you want like color based , texture based or shaped based.

6. to get the result Click on Retrieve button and the result will appear in the area for displaying results, and when you click at any result image it will be standalone

7. to begin search for videos we need first build video database so From file click on UpdateVideoDB.

8. It may take a time and give you alert message for waiting.
9. When the database is finished updating, a message Database Status will appear.

10. to begin search task we can user either To search on the word belong video from subtitle or using keyframes

11. Write the Keyword you want to search it in the video in search By Keyword.

12. Click on keywords search and the result will appear in the result displaying.

13. if we want to search using keyframes we click on video search tab and from browse chose the video.

14. Click on Retrieve and the result will appear in the result displaying.

12 Conclusion