

Types of Occlusion Removal Technique Used for Image Matching in MATLAB

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Abstract

In this paper my aim is to work on image matching technique which will explored the removal of occlusion in a such way that image matching which is now a day's burning topic will achieve different height in various application. Content Based image retrieval is earlier technique used in an image matching algorithm which is used in modified way in this paper. Since speed and precision are also important, we need to develop a system for retrieving images that is efficient. The color features are the common parameter we are taking into discussion while retrieving image for image matching. Shape is one of the important parameter for image matching but my primary goal is to remove occlusion in a query image so that image matching or recognition should happen on larger scale. In this paper I have design an algorithm on simple CBIR Based with different phases of shape retrieval which works on concept of occlusion removal.

Keywords: CBIR, Color, Feature, Image, Mapping, Occlusion.

INTRODUCTION

Occlusion is the technique where important portion of query image is been hidden this may happen due to projection of one image on another or eyesight view which will be in need to remove occlusion. Here occlusion is considered as biggest problem over the period of time .to remove occlusion we have to go through the various stages because we have to discriminate original with distorted image. An image matching is concern it is one of the type of distortion which makes image matching a tedious task to be carry out. So for upcoming developer it is tough to

design the system which is occlusion free and removal of occlusion is main task we have to reconstruct the images from different shapes and objects Occlusion also reduces the aesthetic beauty of the picture.

Based on importance of technique in removal of occlusion there are some application developed purposely which is also depending on environment which we are using. In a real time world we see different task and different module for occlusion removal but it will not show part of images it will show complete occluded images



Fig.1. Occlusion occurs in Tracking person

Phase of Removal of occlusion

Flowchart shown below can be used for image matching along with removal of occlusion .Feature is matched on based of

dataset stored in CBIR Image Matching technique. The flowchart is illustrated are as below.

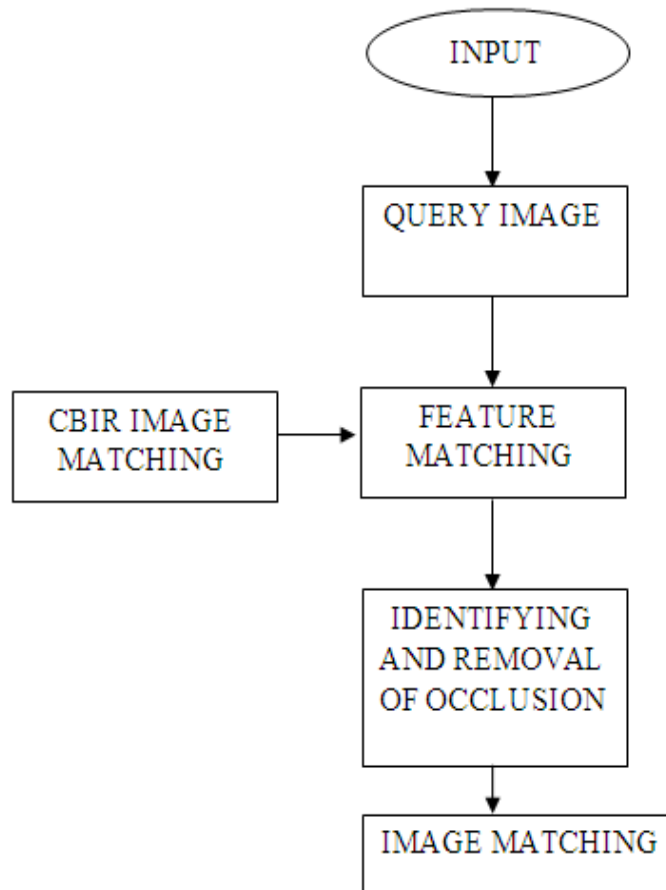


Fig2.Flowchart of Phases

OCCLUSION BASED REMOVAL TECHNIQUES

Occlusion is categorized in different way as follows

- Minor Occlusion - It is an occlusion type where regular and effective pixels is get occluded by contradict pixels on texture part of image which could be impainted using their background pixels. Eg. Tattoo, beard, moustache, etc.
- Major Occlusion - This category consist of occlusions which occupies some hindrance part of typical recognizable feature of face like eye, nose, mouth, etc behind, and which is

not possible to impaint for recovery, such occlusions are called Major occlusions. Eg. Goggle, Scarf, masks, etc.

As the input image is categorized, it would be then travelled though proper channel for manipulation. i) If occlusion is Minor, then with the help of Image Impainting technique it remove occluded pixels to get occlusion-free image. Here, proposal is to use Exemplar based Image-Impainting technique where KNN (K-Nearest Neighbour) algorithm works on pixels to replaced occluded pixels with reference to background pixels. Just in single iteration

it retrieve image which seems original and cleaned image as it had never be occluded.

ii) In case II, consider the occlusion as major which is not possible to recover with above process, then it have to be processed by another process of feature extraction shown in project flow. Major occlusion images has to be followed by three process:-

- a) Face-Detection
- b) Feature Extraction and
- c) Image Reconstruction.

A. Face-Detection The input image is to be normalized first before get proceeded to further steps. Normalization leads to image detected face compare with dataset which again get trained with the help of this process on the other hand. Here, only facial part is detected and extracted from overall image excluding background area. The output image obtained is normalized and relevant to undergo further process. B. Feature Extraction This module takes input image obtained by Face detection which is normalized. In this, image feature get extracted in the form of vectors and represented by 66 lines of code in the .txt file. It includes feature like Color segmentation, Edges and Texture. As the feature get extracted it is then compared by features of trained dataset. The matching is contradictorily done on the basis of Differences in vectors of input image and images from dataset. The least 5 difference obtained means 5 are matching image. Here, minimum difference means maximum matching image. By obtaining matching vectors, those images are get redirected on the label. C. Image-Reconstruction From all 5 images it is possible to easily select anyone related image referring to which it can substitute the occluded part. As the Occluded pixels of input image get substituted by pixels of matching image. After the process it return the output image seems to be dis-occluded. The input image which was occluded undergoes the process, completion of which get resultant image as occlusion free

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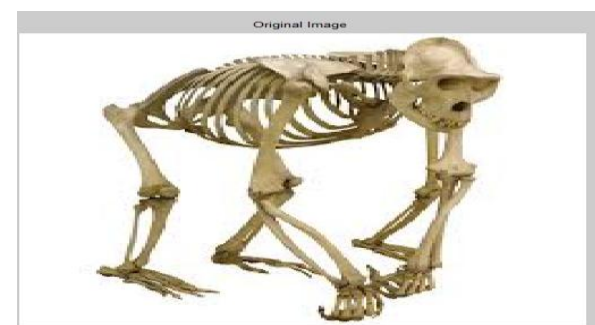
RESULT

MATLAB is technical computing platform which we are going to used for building image processing based system incompatible with occlusion removal .The reason for using MATLAB in this project is due to it's compatibility with transforms like easy going environment with software technical programming and Image Processing toolbox that helped to obtain an efficient code for image retrieval with less occlusion. In this paper, I have discussed the detailed information about experimental results and their analysis by using some processes.

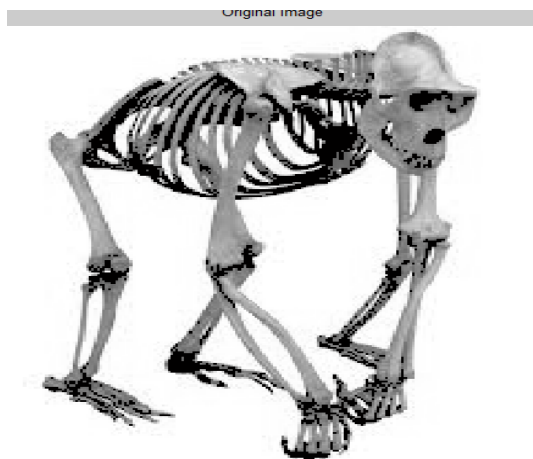
Manipulating noise is a very essential part for any approach in image matching which will result better result and efficiency. Whereas our results are efficient on various prospects like database size is more and concept



Fig3. Observed Result in Image Matching



(a) Original image



(b) Gray Image

Fig 4. Image Processing Operation

The above result is image 3 and 4 is image matched out of algorithm of CBIR with low occlusion .this is called as image retrieval algorithm

CONCLUSION

In digital image processing finding image match in huge database of digital image is main task in image processing to perform an operation on image or find the image it is take too much time, so to reduce a computational time and increases the efficiency of algorithm hence we use Shape Retrieval technique,"Shape Retrieval" means that the search analyzes the Shape of the query. In our algorithm we use features matching of different types or different formats of images e.g. .jpg, .bmp, .png and etc. In our project user is interface with device with help GUI (Graphical User Interface) which is construct in MATLAB .In our algorithm database of digital images is load in MATLAB with help of GUI and extract the features of all the image for feature matching and then give the query image as input filter images or also apply different processes and extract features using different algorithm of image to find appropriate match in database and related images or false match image show on screen .The features matching of different

images is large appliances in different domains such as biometric .

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