VIDEO TO VIDEO ENHANCEMENT AND OBJECT DETECTION IN VIDEO WITH LOW CLARITY USING HISTOGRAM

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Abstract
Calculation of the important features of an image is done using featured detection which is a technique used in image processing. Objet detection uses Histogram as feature descriptor .We are using two enhancement techniques histogram equalization and image sharpening. These two techniques are used to convert a video with low clarity to high clarity to produce a better object detection and tracking. This makes the work more suitable for video surveillance cameras, Medical imaging etc.
Keywords: Dynamic data networks(DBNs), ISO(International standards organisation), Human computer interaction(HCI)

1. INTRODUCTION

Video surveillance is an active topic which tries to detect, recognize and track objects over a sequence of images. Getting an information about what to track is an important task. An efficient tracking algorithm requires an object detection method either to every frames or to the frame which appears first in the video. Many representation schemes such as spatial region template, non-parametric histogram were used in visual tracking system already. In our proposed system we are introducing an video enhancement technique in which each frames are taken and processed separately. This enhancement technique increases the quality of the image and makes the detection process more easier by increasing the score value.

2 PROPOSED SYSTEM

The proposed system consist of two phases one is the object detection and object tracking method. The overall block diagram is given below. The block diagram of the proposed technique is given in figure 3.The proposed system also has an enhancement technique which increases the quality of the video which makes it more suitable for object detection.

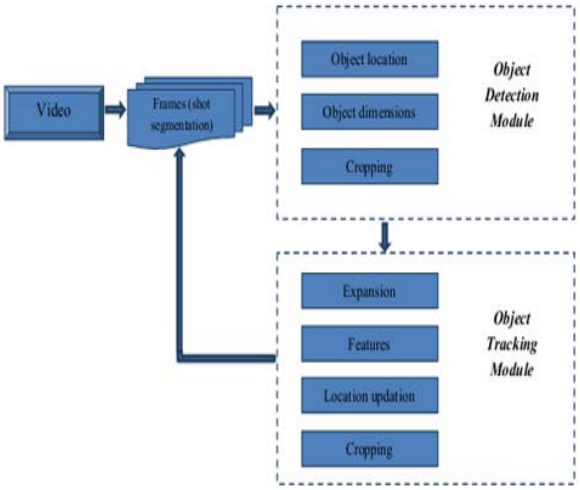

Fig 1 Block diagram of proposed technique

3 ARCHITECTURE

The proposed architecture consist of three steps which includes object identification, object detection, object tracking. The processed frames are undertaken for image enhancement which includes CLAHE and image sharpening.

A. OBJECT DETECTION MODULE

Initially the frame is selected where the object is suppose to be .Shot segmentation is carried out to convert the video to frames immediately after this background subtraction is done and hence the object is identified and cropped out as images.

Shot segmentation
Initially Shots are made from video which are

non overlapping units. The shot segmentation is used in applications such as video retrieval, video watermarking etc. Here we are using Wavelete Transform Based Shot Segmentation in which each units are added with noise and objects in the video.

B. OBJECT TRACKING MODULE

In successive frames the objects are tracked by processing the frames by finding successive position of the object. Soon after tracking the object in first frame the second frame is considered and the same process is repeated. By keeping the initial frame as reference the object in the second frame is also detected. Let c1 be the cropped image from the first frame and c2 be the cropped images from the second frame. The location is kept if c1=c2

The proposed code for the system:

Convert input video to frames using shot segmentation for all frames
Read the current frame
{LO}={LO_1 , LO_2, ……LO_{n-m}} Object subtraction is done to identify object
Calculate the object dimensions $OC_x(i)$, OW(i), OH(i)
Crop the object from the frame using the obtained parameter
Crop the required image from the next frame using the first frame as reference
The condition to be satisfied is $c_1=c_2$ if so keep the location
Else expand the dimension
Required parameters are calculated den_i , his_i ,cor_i, $wavm_i$
Save the cropped images

c. RESULT AND DISCUSSION

In section C implementation screenshots of various techniques are given. The performance ansalysis of various techniques are to be discussed in section E.

D. IMPLEMENTATION SCREENSHOTS

The screenshots of images after applying various techniques are given below. Here the original frames are considered first and then the CLAHE method is applied for better quality the images are sharpened using image sharpening.

Fig 2 cropped images of original frames

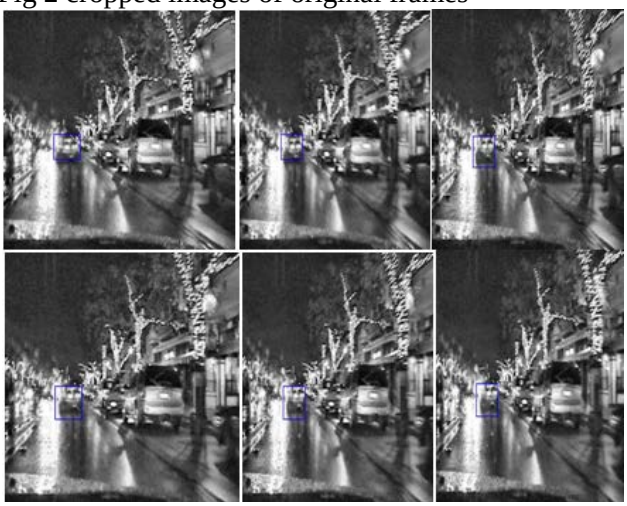

Fig 3 cropped images of CLAHE applied frames

Fig 4 cropped images of sharpening applied to frames

E. PERFORMANCE ANALYSIS

In this section the performance of all methods are evaluated and analyzed. Score value is the basic parameter used for the evaluation. The performance of each technique is plotted and is compared with other techniques to find the increase in score value. Frames with high score value are more efficient. The score value after each method along with the score value of the original frame is listed below.

TABLE 1 SCORE VALUE

ORIGINAL SCORE	CLAHE SCORE	SHARPENED SCORE
0.5511	0.4827	0.5263
0.7684	0.6327	0.6942
0.7064	0.5820	0.6414
0.6612	0.5462	0.5992
0.5676	0.4971	0.5420
0.6819	0.6131	0.6684
0.6905	06209	0.6770
0.5980	0.4946	0.5438
0.6608	0.5462	0.5979
0.5193	0.4549	0.4959
0.4885	0.4279	0.4665
0.5159	0.5253	0.5728
0.7037	0.7069	0.7082
0.5038	0.5315	0.5585
0.5889	0.5423	0.5912
0.6044	0.6412	0.6591
0.4852	0.5760	0.5134
0.5990	0.6338	0.6711
0.3849	0.4601	0.4063
0.6225	0.5452	0.5790
0.5229	0.5661	0.5523
0.5540	0.6628	0.5893
0.4941	0.5659	0.5034
0.5508	0.4798	0.4886
0.6593	0.7108	0.6493
0.3970	0.4267	0.4153
0.5468	0.5955	0.5488
0.4130	0.4334	0.4533
0.4042	0.4204	0.4433
0.4173	0.4115	0.4373
0.5399	0.5565	0.5407

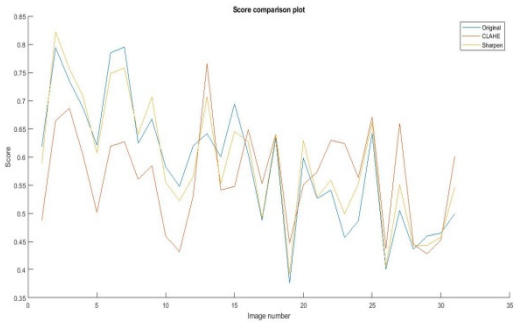

Fig 5 comparison graph

It can be found that the images after applying CLAHE increases the score value. The graph before applying equalization and before applying equalization are given below.

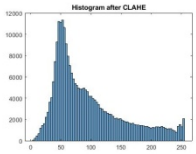

Fig 5 Before applying CLAHE

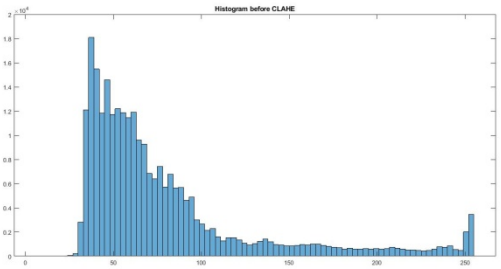

Fig 6 After applying CLAHE

F. CONCLUSION

In this paper 3 task are performed which includes object identification object detection and object tracking which make use of segmentation and featured extraction. The score values of various techniques are compared and evaluated. The highest score value is 0.7082 increase from 0.7037 in original frame.

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