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"Key clip extraction for Quick Browsing from Surveillance Videos"

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1. INTRODUCTION

The video information is growing exponentially day by day. Surveillance videos generate hours of videos, the video uploaded on internet is increasing on large scale, new TV channels also add to the content. It is necessary to develop some model to manage this information. Video summarization is a key problem. Video summarization is usually defined as a temporally condensed representation of video. It aims to provide a compact video representation while, preserving the essential activities of the original video. It plays a prime role where the resources like storage, communication bandwidth and power are limited. It can allow us to extract high level information when we are not interested in the whole unit, especially during organization and classification.

We follow the pyramidal reduction using motion entropy approach and this method. The method involves of extracting the optical features of the video. Whenever long tubes exist in the input video such that no temporal rearrangement of the tubes can give very short video. One option is cut the long activity tube into larger subsections and then finds the entropy. And then we use a suitable threshold based on motion entropy to discard other frames and mutual information to get dependence of frames. Again divide each selected section into subsections and repeat the same till we get the appropriate results. These results in a dynamic video summarization with précised constitute.

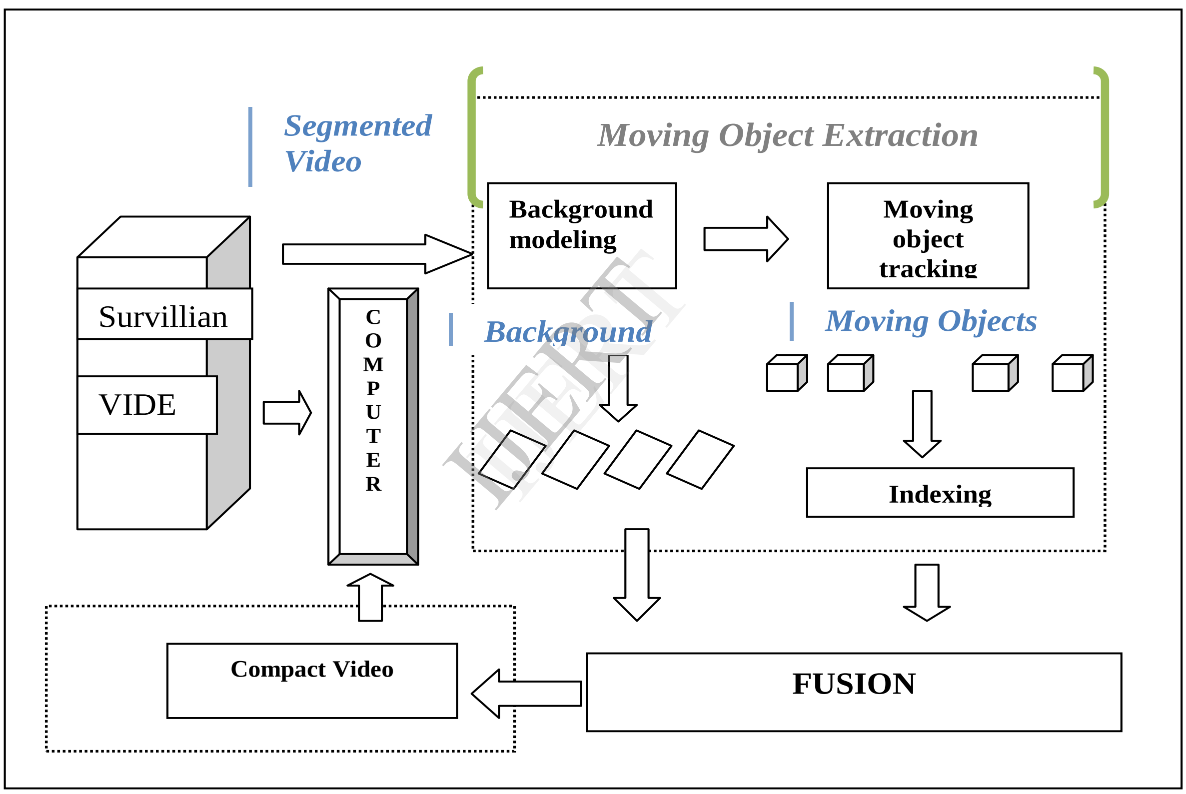
The increasing demand of the cameras for surveillance systems not only requires the large storage devices but also requires the reduction in the time to browse the whole video. To meet such requirements video summarization is the only solution. A good visual summarization should collect as much as possible visual information from input video and also maintain the chronology between them.

2. PRESENT THEORIES & PRACTICES

Video summarization is essential where time, storage, communication bandwidth or power is concerns. The major problem in using the surveillance cameras is that they provide unedited raw data [2]. Video browsing and retrieval are inconvenient due to inherent spatio-temporal redundancies, where some time intervals may have no activity, or have activities that occur in a small image region. For example, in case of a surveillance video of a vehicle parking, most of the data is irrelevant as most of the time there will not be any activity of interest [3].So, we propose a video summarization method mainly evolving viewing time constraints. The increasing demand of the cameras for surveillance systems not only requires the large storage devices but also requires the reduction in the time to browse the whole video. To meet such requirements video summarization is the only solution.

3. MUTUAL INFORMATION BASED METHOD

In this approach we find the similar segments showing the similar properties and then select the most appropriate segment from those segments as a key segment, thus retaining their dynamicity. Here, we initially find the average pixel value of each frame in the video sequence in the corresponding X and Y direction respectively. We use these values of average pixel value to find mutual information (I) of the large segments. Then apply a suitable threshold to all the similar segments and finally select the key frames from those segments. This process is done repeatedly for a number of levels say level 2, level3, etc.by reducing the segment size till we get appropriate results.



4. ENTROPY BASED METHOD

Due to inherent spatiotemporal redundancies of the surveillance videos because of the activities occurring in a small image region. Our method aims to remove all the redundant segments viz. segments With low-level of information and preserve only those segments containing the activities of interest, thus retaining their dynamicity. In this approach, we refer the group of frames as the segments of the video. We initially find the local coherence motion

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of each frame in the video sequence. We use these values of local coherence motion to find entropy (H) of the large segments at level and remove all the static segments in this level.

We again find the entropy of these segments containing more active frames and further divide and discard the low-level segments at level [2].Then by applying a suitable threshold we discard the segments with low-level of information and select only the segments containing more active frames. This process is done repeatedly for a number of levels till we get appropriate results. At the preceding level is taken as the starting point for estimating motion at the next layer down. Represents Pyramidal segmentation of video based on the entropy (H) [1].

5. RESULT

In this section, we provide the results of summarized video based on the compression ratio which is given as,

Compression ratio = X/Y

X= number of output frames

Y= number of input frames

As in this case we have applied the entropy calculation and then discarding the segment by applying a suitable threshold we get various compression ratios for each video.

	Video1 (HOSTEL)	Video2 (LHC)
No. of i/p frames	48510	51090
Level-1 (SS=270)	10716 (77.91%)	27590 (43.13%)
Level-2 (SS=280)	3720 (92.33%)	14400 (70.32%)

Table 3.2.2 Results for Mutual Information of two different videos

6. CONCLUSION AND FUTURE WORK

This paper presents a system of quick browsing, instead of retrieving relevant video segments, to help the user easily look for the subjects of interest in surveillance videos. We collected all of moving objects which carry the most significant information in a surveillance video to construct a corresponding compact video. It maintains chronology without destroying the temporal relationship of these activities. Here, relatively less compression is achieved in this approach than in stroboscopic approach but at the cost of less compression we can meet the security issues without missing much of the details in activities.

7. REFERENCES

[1] MVA2011 IAPR Conference on Machine Vision Applications, June 13-15, 2011, Nara, JAPAN A Quick Browsing System for Surveillance Videos.

[2] D. Comaniciu and P. Meer, “Mean Shift: A Robust Approach toward Feature Space Analysis,”

IEEE Transactions on Pattern Analysis and Machine Intelligence, vol. 24, no.5, pp. 603-619,2002.

[3] P. DeCamp, G. Shaw, R. Kubat, and D. Roy, An Immersive System for Browsing and Visualizing Surveillance Video, in Proceedings of ACM International Conference on Multimedia,2010.

[4] W.-M. Hu, D.Xie, Z.-Y.Fu, and W.-R. Zeng, "Maybank S.:Semantic-Based Surveillance Video Retrieval," IEEE Transactions on Image Processing, vol. 16, no. 4, pp. 1168-1181,2007.

[5] Shmuel Peleg Alex Rav-Acha, Yael Pritch. Making a long video short: Dynamic video synopsis. CVPR 06, pages 435 441, June 2006.

[6] Video Summarization Cuneyt M. Taskiran and Edward J. Delp

[7] 5Learning opencv computer vision with the opencv library, Gary Bradski and Adrian Kaebler.

[8] I.C. Chang and K.-Y. Cheng," Content-Selection Based Video Summarization", IEEE International Conference On Consumer Electronics , Las Vegas Convention Center,USA, 2007, Jan 11-14.

[9] Y. Pritch, A. Rav-Acha, and S. Peleg, "Nonchronological Video Synopsis and Indexing," IEEE Transactions on Pattern Analysis and Machine Intelligence, vol. 30, no. 11, pp. 1971-1984, 2008.

[10] Y. Takahashi, N. Nitta, N. Babaguchi, "Video Summarization for Large Sports Video Archives," Proceedings of IEEE International Conference on Multimedia and Expo, 2005.

[11] B. T. Truong and S. Venkatesh, "Video Abstraction: A Systematic Review and Classification," ACM Transactions on Multimedia Computing, Communications, and Applications, vol. 3, no. 1, 2007.

[12] Z. Xiong, X. Zhou, Q. Tian, R. Yong, and T. S. Huang, "Semantic Retrieval of Video - Review of Research on Video Retrieval in Meetings, Movies and Broadcast News, and Sports," IEEE Signal Processing Magazine, vol. 23, no. 2, pp. 18-27, 2006.

[13] X.-D. Yu, L. Wang, Q. Tian, and P. Xue, "Multi-Level Video Representation with Application to Key frame Extraction," Proceedings of 10th International Multimedia Modeling Conference, 2004.