Using Priority Curve Algorithm in Sports Video Summarization

Jayanthi .J, Ida Evones .M

Asst. Professor, Faculty of Computing, Sathyabama University ,Chennai

Abstract- Video summarization is the process to represent the content of video in effective manner.It is based on two types , static video summary and dynamic video skimming . Static video summary is the process that selects a set of salient images (called key frames) extracted or synthesized from the original video to represent the video contents. Dynamic video skimming is method to make the original video as several short video clips it can be done by using two -ways. It's objective is to extract the main events (highlights of the match) from cricket video and make a short summary of the match so that it can take a small memory space as well as for fast content browsing transmission, and also retrieval.

General Terms: Algorithms, Performance
Index Terms- Video Summarization, DVT

I. INTRODUCTION

Video enriches the content delivery by combining visual, Audio and textual information in multiple data streams. Thus it is always the favourite medium for the play of the most-people and Communication entities for its extraordinary expressive power. With the fast development of the network bandwidth and large capacity storage devices, video data has become pervasive on the Internet in these days. On today's network many companies of the Provide video sharing services, which further speeds up the Growth of the volume of Internet videos. People can retrieve and enjoy multimedia information in the form of text, image and particularly video. Moreover, individual people also begin to share their own edited videos.

II. RELATED WORK

To solve this problem, video summarization, which engage In providing concise and informative video summaries to help people to browse and manage video files efficiently, have received more and more Videos. Basically there are two kinds of video summaries.

I. ***Static video summary***

Static video story board, which is composed of a set of salient images (key frames) extracted or synthesized from the original video. Based on the way a key frame is extracted, existing work in this area can be categorized into three classes: sampling based, shot based, and segment based.

1.Shot based*:*

A shot is defined as a video segment taken from a continuous period; a natural and straightforward way is to extract one or more key frames from each shot using low-level features such as colour and motion. A typical approach was proposed where key frames were extracted in a sequential fashion via thresholding. The first frame with in the shot is always chosen then the colour-histogram difference between the sub-sequent frames and the latest key frame is computed. Once the difference exceeds a certain threshold, anew key frame will be extracted. One drawback of the shot-based key frame extraction approach is that it does not scale up well for long video

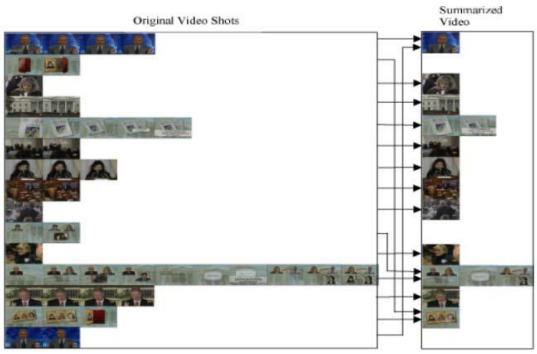


Figure 1. shot based summary

2.Dynamic video skimming

Dynamic video skimming, which a shorter version of the original video is made up of several short video

III. VIDEO STRUCTURE ANALYSIS

A video is composed of images and audio and textual. The images is converted into frames and the video play at least 25 to 30 frames per second. Each video also uses some video compression. Video compression refers to reducing the quantity of data used to represent video images and is a straightforward combination of image compression and motion compensation. There are four methods for compression, discrete cosine transforms (DCT), vector quantization (VQ), fractal compression, and discrete wavelet transforms (DWT).

1) Discrete cosine transform: DCTs are important to numerous applications in science and engineering from lossy compression of audio (e.g. MP3) and images (e.g. JPEG) (where small high-frequency components can be discarded), to spectral methods for the numerical solution of partial differential equations, It analyzes the frequency components present in the sample, and discards those frequencies which do not affect the image as the human eye perceives it..

2) Vector Quantization: Vector quantization (VQ) is a lossy data compression method based on the principle of block coding. It is a fixed-to-fixed length algorithm. In the earlier days, the design of a vector quantizer (VQ) is considered to be a challenging problem due to the need for multi-dimensional integration.

3) Discrete Wavelet Transforms: The discrete wavelet transform (DWT) is an implementation of the wavelet transform using a discrete set of the wavelet scales and translations obeying some defined rules. In other words, this transform decomposes the signal into mutually orthogonal set of wavelets, which is the main difference from the continuous wavelet transform (CWT), or its implementation for the discrete time series sometimes called discrete-time continuous wavelet transform (DT-CWT)..

IV. EXISTING SYSTEM

When user searching particular an event query in video sharing websites there will be displayed more videos which are not related to the query User has to spend more time to search that particular

V. PROPOSED SYSTEM

Video summarization is one of the possible way to generate a sufficient answer to the event query given by the user Summarization methods are two types Video skimming and Visual-textual storyboard Summarizing multiple videos is possible by visual content and textual information available Web video summarization by tag localization and key-shot identification approach we first localize the tags that are associated with each video into shots then the relevance of the shots with respect to the event query by matching the shot level tags with the query. After that we identify a set of key-shots from the shots that high relevance scores by exploring the repeated occurrence of key sub-events

VI. PLAN OF WORK

Structural analysis for sports videos

Play-Break Detection*:* Sports video is composed of play events, which refers to the times when the ball is in play and break events, which refers to intervals of stoppage in the game. The play- break was detected by the duration thresholding of the time interval between consecutive long shots.

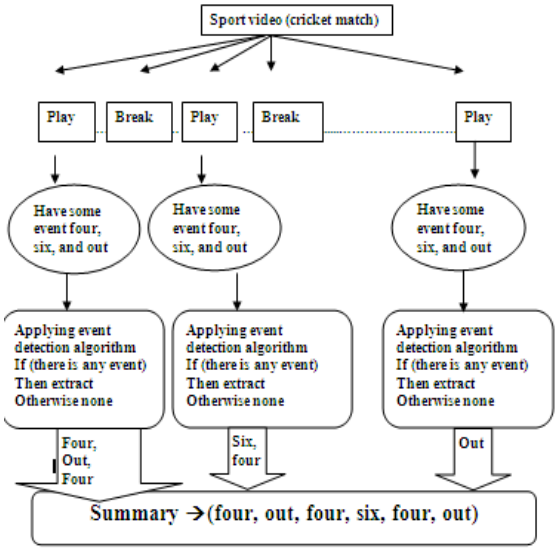


Figure 2. Example of Cricket video summarization process

Visual Feature Extraction

In image or video processing research, features such as edge, texture (grass ratio) etc are widely adopted. As features however do not-possess high-level semantics, they are referred to as "Low-level" Features. In sports video analysis literature, researchers usually use these low-level features to extract semantic information for high-level analysis. Umpire action always gives the important information about an event in case of cricket match. Grass ratio is defining as the ratio of play ground grass colour pixel verses other pixel in each frame. In case of cricket video whenever a player hit a shot (four, six) the grass pixel ratio decreases from play ground to boundary in each frame. If the numbers of frames contain the pixel ratio from a particular threshold below and above then there may be boundary shot. In this paper I am using the grass ratio for detecting the boundary shot. The figure-3 shows the complete calculation process of grass pixel ratio per frame and on the basis of extraction visual features of cricket video.

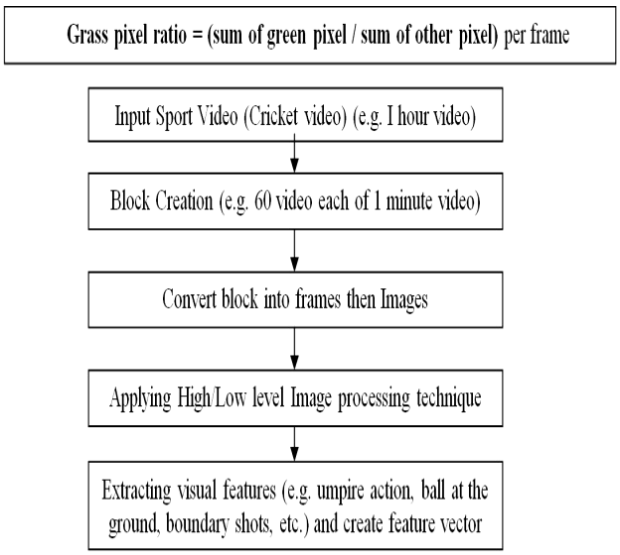
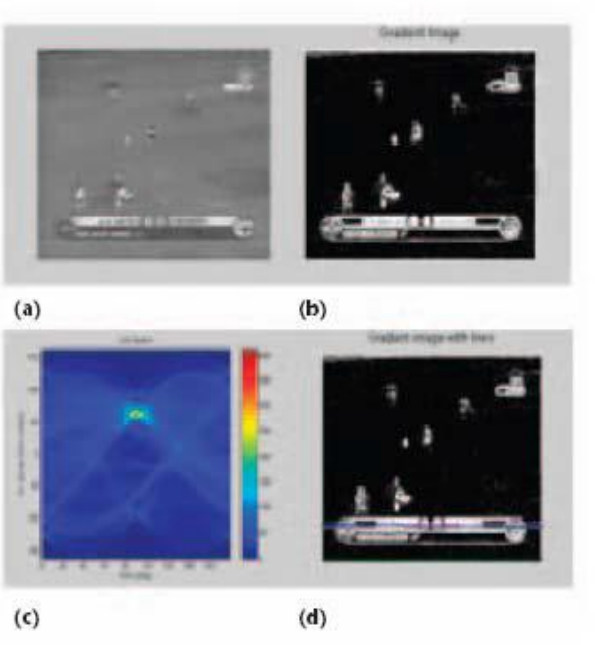


Figure 3. Extraction audio feature of cricket vedio

How the Sobel filter and Hough transform detects text



VII. IMPLEMENTATION

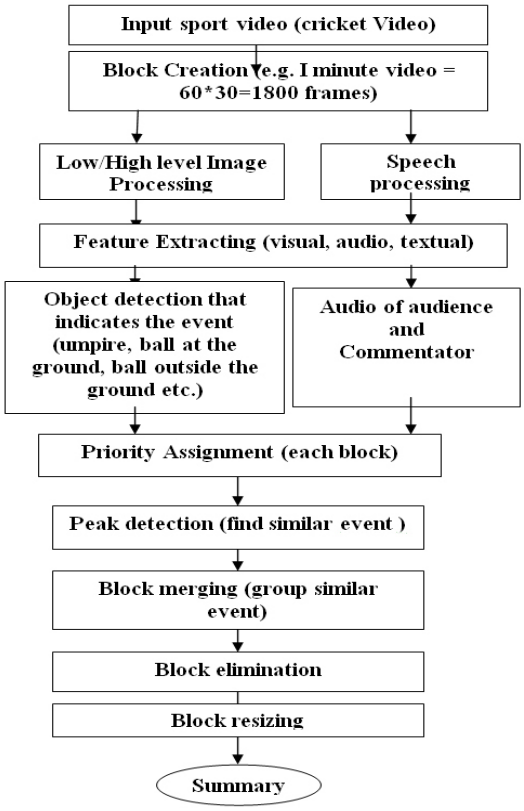
There are six step process of video summarization.

A. Block Creation

In this section we have first split the long video into small blocks of equal size (1 minute) long. That is why create block of the input video and then process. For this purpose have to use mat lab.

B. Priority Assignment

Each block is then assigned a priority (e.g. 0 to 9 an integer vale) based on the objects and events occurring in that block. Yet another alternative would use the audio stream and/or accompanying text associated with the video to identify the priority of the block. The priority assignment can be done automatically using object and event detection algorithms or can be done manually. In our cricket video summarization application, for example, the priority assignment could be done by using (low/ high) level image processing lgorithms for events such as four, sixes and out etc. Here we process each block one by one and on the basis of features (visual, audio, and textual) find out the event in each block and assign a priority to each block.

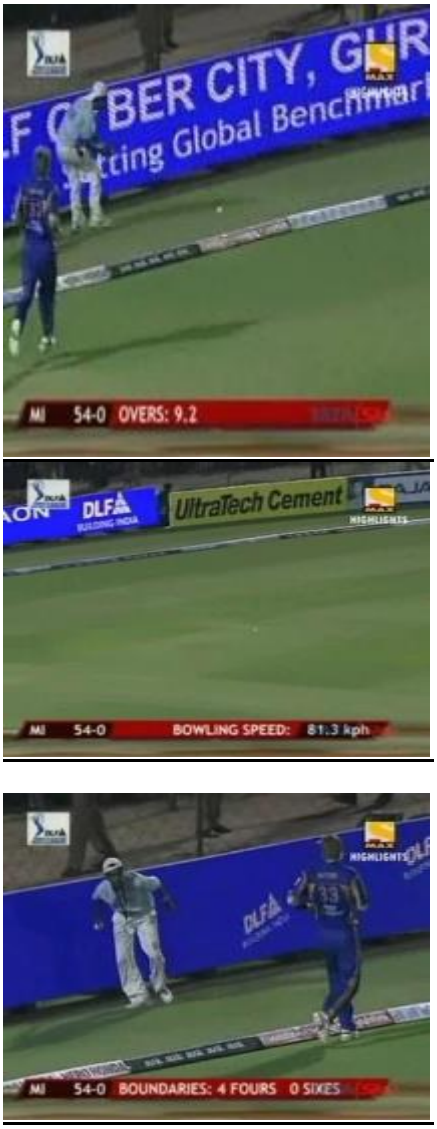


Block diagram of video summarization

PRIORITY CURVE ALGORITHM

```
Algorithm peaks (v,r,s)
   V is a sequence of block-priority pairs
    R is the peak width
    S is the peak height
Begin
 Res:=0
For each j [r, cards(v)-r] do
         canter : =0
          total: =0
 for each (b, p)£ v such that I £(j-r, j+r] do
          total : = total + p
end for
for each <b, p> £ v such that i £(j-r/2, j+r/2)
        center : = center+p
if center/ total>s then
Res : = Res U {<b,p> £ v/i E (j-r/2,j+r/2]}
end if
end for
end res
 end
```

PEAK ALGORITHM USAGE IMAGES



VIII. CONCLUSION

Video is getting more and more popular now than ever before, due to the rapid growth of the Internet bandwidth and the growing use of video in education, entertainment, and information sharing. Many organizations produce huge volume of video data every day. Facing the massive data volume, end users find that it is inefficient to browse a favourite video from the Internet, and the content providers have to face the tedious work of managing the ever growing video database. The urgent problem brings a lot attention to video summarization, which is a new technology intends to solve the problem by providing the people with concise and informative content presentations so that the users can quickly grasp the major contents of a video. Most video summaries goes into the following two types: static video story board, which is composed of a set of salient images extracted or synthesized from the original video, and dynamic video skimming, which is a shorter version of the original video made up of several short video clips. This thesis presents our work done on automatic video summarization

REFERENCES

[1] Y. Taniguchi, “An intuitive and efficient access interface to real-time incoming video based on automatic indexing,” in Proc. ACM Multimedia’95,Nov.1995, pp.25–33.

[2] H.J. Zhang, J. Wu, D. Zhong, and S.W. Smoliar, “An integrated system for content-based video retrieval and browsing,” Pattern Recognit., vol. 30, no. 4 pp. 643–658, Apr. 1997.

[3] S. Uchihashi, J. Foote, A. Girgensohn, and J. Boreczky, “Video manga: Generating semantically meaningful video summaries,” in Proc. ACM Multimedia’99, Oct. 1999, pp. 383–392.

[4] A. Girgensohn and J. Boreczky, “Time-constrained keyframe selection technique,” in Proc. ICMCS’99, June 1999, pp. 756–761.

[5] D. Zhang and D. Ellis, \Detecting sound events in basketball video archive," http://www.ctr.columbia.edu/ dpwe/courses/e6820-2001-01/projects/dqzhang.pdf.

AUTHORS

First Author – Jayanthi .J, Asst. Professor, Faculty of Computing, Sathyabama University ,Chennai, Email: , Asst. Professor, Faculty of Computing, Sathyabama University ,Chennai

Second Author – Ida Evones .M, Asst. Professor, Faculty of Computing, Sathyabama University ,Chennai, Email: idaevones@gmail.com