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## *A Review on Different Keyframe Abstraction Techniques from the Video*

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**Abstract:** *Data mining is the process of identifying useful thing from large amount of data. These identified data are useful to business analyst to take a business decision. Video mining is the process of finding interesting data from large amount of video. It is important to categories video based on features such as frame, sound, frame-rate, resolution. In existing technique, only images are extracted from video that provide summary of video. In proposed technique, fuzzy classifier is used to classify all the frames of video and these frames are combined into one or multiple videos. Finally one video or number of small videos provide summary of the whole video.*

**Keywords:** *Data mining, Video mining, Video Shot, Video Pattern, Video extraction, Video Association mining*

### I. INTRODUCTION

Data mining is the process which is used for extracting the knowledge and detecting the interesting pattern from the large amount sets of data. Multimedia data which contains large amount of data. Video data contains different types of data such as the text, video and audio.

Video is the an example of the multimedia data as it contains different types of data such as audio, image, text, meta-data and it is used mostly in many potential applications like medicine, education, programs, sports, security, and surveillance.

#### *a) Video Association Mining*

Video association mining is the process which is used to show the association between the videos.

#### *b) Video Motion Mining*

Video motion mining is the process which is used for the find the various motions from video and identifies useful events.

#### *c) Video Structure Mining*

Video structure mining is the process which is used to identify the objects in the video.

#### *d) Video Pattern Mining*

Video pattern mining is the process which is used for the finding the pattern form the video and those pattern are useful for finding the same pattern in the other video such as the same event.

#### *e) Video Clustering and Classification*

Video clustering and classification is the process which is used for the cluster and classify various types of videos to improve the brows ability of video.

Video is an example of multimedia data as it contains several kinds of data such as text, image, meta-data, visual and audio and it is widely used in many major potential applications like security and surveillance, entertainment, medicine, education

programs and sports [3]. With the development of the Digital Video Processing technology, Video Surveillance has been playing an important role for security and management and it is necessary and important to allow the computer to automatically extract the parts of interest from videos [3]. Video abstraction techniques as an important way to organize video datasets into more condensed forms or extract compact semantically meaningful information for video browsing, retrieval, event detection and genre classification have gained lots of attentions [3].

## II. RELATED WORK

Multimodal temporal panorama (MTP) approach is used to accurately extracting and reconstructing moving vehicles in real-time using a remote multimodal (audio/video) monitoring system [9] and object is classified in various categories [10]. Object such as person is detected by automatic training image acquisition and effective feature selection [11] and boundary between video is detected by motion activity descriptor [12].

Fuzzy c-mean [13] and genetic algorithm [14] is used to classifying text and image segmentation method. Event in video is detected by knowledge-based video indexing and content management framework for domain specific videos based upon association rule [15]. Soccer Video is mined by decision tree using fuzzy event mining approach [16] and also by using machine learning [17]. Video is summarized by matching low-level user browsing preferences [18]. It is useful for visualizing social data [19] and fraud in data is detected by off-line and semi-online mode [20].

## III. VARIOUS TECHNIQUES FOR KEYFRAME ABSTRACTION FROM VIDEOS

Various Techniques for Keyframe Abstraction from Videos are presented as follows:

### a) *Visual Attention Clues*

Visual Attention System model is used for the keyframe video summarization [5]. Attention Detection System is divided into two parts, which is the static attention and dynamic attention. The static attention detection human should not be seen and the dynamic attention is the based upon the human visual attention deduce from local and global motion. The Visual Index Descriptor (VID) is used to create the visual attention model that is used for the mapping between the low level concepts and the high level concepts. The Lucas-kande Optical Flow algorithm is used for block matching of keyframe. Keyframe is divided into size of 8\*8 blocks. Final attentions are produced by combination of static attention and dynamic attention and computer weight of each attention. From multiple keyframe, a keyframe which has highest VAI are selected.

**Advantages:** It can select the most attractive keyframes, and it can easily filter out redundant keyframes without missing important visual content in a shot.

### b) *Adaptive Association Rule Mining*

ARM is the technique for mining event from videos and it bridges a gap between Near-Duplicate keyframes and high level semantic concepts. It has not been utilized in finding the associations of the visual features of NDKs .There are three steps for ARM. Data Pre-processing, Adaptive Association Rule Mining and classification. In data pre-processing, near-duplicate keyframes are extracted from videos and irrelevant keyframe are removed, which is referred as noise. In Adaptive Association Rule Mining, important terms and their semantically related words with its frequency are calculated and combined into groups by using transitive closure. In classification steps, correlation between grouped terms groups and near-duplicate keyframe groups can be expressed in the form of matrix and labelled as a class. Video are classified based on this class.

Advantages: It is more useful for classifying web video event.

**c) Motion Focusing Method**

The frame is extracted from the video and we get the number of frames from the video. For getting the frames from the video by using the motion focussing algorithm. In the static video, in which there are some objects are moving and some are static. To extract a keyframe from video, greedy method is applied for each iteration of greedy search, most foreground coverage from frames are found out. For each frame in the video, the background subtraction method is applied to find out the same objects in multiple frames. And min-cut method is used to find out the changes the objects in the different keyframes and then after scaling and transformation of image is performed, we perform this thing by using least square method. By using the motion focusing algorithm we find out the summarization frame of lane surveillance system. It is used to find out; if different objects are moving at the difference speed and a summary image is provided from different motion.

**Advantages:** It gives a relationship between focus and non-focused motion of the objects.

**Disadvantages:** It is very much effective for the static video recording.

**d) Summarization Based On Depth And Color Information**

It works in three steps:

1. Background Establishment: Color and depth of image is retrieved from image and it is integrated with image. Background of image is updated so that foreground and background are shown cleared.
2. Foreground Extraction: Object is detected from image based on depth. If depth is more, then color information is used to find out foreground.
3. Suspicious Event Detection: Object is detected by One-way crossing line detection and two-way crossing line detection. Alarm of two-way will be triggered when crossing warning line no matter from which side, so that just set a warning line and do not set the direction [8]. Alarm of one-way not only detects whether the moving objects cross warning line but also detects the direction of moving objects crossing [8].

**Advantages:** Integration of depth and color is better than only color and only depth [6].

**Disadvantages:** Depth information is not useful for long distance.

**IV. COMPARISON BETWEEN THE ABOVE MENTIONED TECHNIQUES**

Comparison between above mentioned techniques is presented in the given table.

TABLE I  
Comparison between methods

Algorithm	Motion Focusing	Visual Attention	Adaptive Ruled Mining
Learning	Supervised learning	Supervised learning	Supervised learning
No of class	5	7	6
Precious	100%	100%	100%
Required Training Data	Yes	Yes	Yes
Support Vector	2	5	7
Video Generation	No	No	No

**V. CONCLUSION**

In this paper, various techniques for mining video are explained. The entire algorithm is selected based upon its application and usage of video. Output gives a one shot or keyframe from videos and it is gives vital information from video rather than all videos. There are many research on mining data but some more research is required to mine videos, because today is a trend of videos. There are many challenges for video summarization such as quality, accuracy, effective and boundary. Summarization

of video is very useful in various applications such as video surveillance system, soccer event system, heterogeneous video, web event video, sports highlight and etc.

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