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Overview Of Video Condensation In Streaming Video

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Abstract:

Proficient browsing of long video series a main tool in video surveillance. Example: for earlier event video forensics, but can also be used for quick review of moving pictures and home videos. Since there are many Proficient techniques have been developed such as video summarization an video montage but they lose either the activist or semantic background of events. A recently proposed method called video synopsis deals with some of these issues but involves many processing stages and is quite difficult. Video condensation that we overview here is the way in which information is removed from the spacetime video volume is conceptually simple and relatively easy to implement. We have the concept of a video ribbon inspired by that of a seam recently proposed for changing the size of the image. We accurately carve ribbons out by reducing an activity cost function using efficent programming. The ribbon model we develop is bendy and allows an easy adjustment of the compromise between sequential condensation ratio and survival of events. We also have sliding-window ribbon carving to control streaming video and exhibit the steps easily on motor and person on foot and coastal traffic data.

Key Terms – video carving, seam carving, video summarization, ribbon carving.

I. Introduction

In the recent years millions of cameras have been set up in transportation center (e.g. railway station, airport, hospitals and bus stations) on public streets and highways, and in office buildings. In fact, In 2007, there were 30 million video cameras in use in the Usa alone making over four billion hours of video recording each week in London. U.K is said to be the most camera-used city in the world. This explosion of surveillance cameras is mainly due to the new coming of an economical network camera.

Surveillance cameras have been closely organized in populous areas and are tremendous enormous video data. However displaying the entire video to find activity is inefficient as most segments are not important. Therefore some methods are needed to manage excess data.Thus we go for the video condensation.

This study paper has been organized as follows. Section II.various methods of video condensation and example of video condensation process. Section III provides comparison among all the surveyed papers. Section IV concludes the survey and deals with future works.

II. Various methods of video condensation

(a) Video condensation by ribbon carving:[1]

Description:

In this we have the concept of a ribbon in space-time video volume and apply it to activity-aware video condensation as a novel extension of the concept of a seam in 2-D images used for content-aware image for changing the size of the image .

Ribbon Carving:

It slices the video block in the form of ribbon Protect the spatial size of the resulting video segment decrease the number of frames in the video segment by exactly one. protect important event distortion in either space or time.Thus a video seam is plainly talking about a connected surface
within the spatio-sequential volume of a segment of video frames which screen the video into earlier and upcoming connected regions.

Merits:

(i) Produces usual looking, high reliability condensed video, both in terms of moving object reliability.

(ii) where relative timings of events are exactly preserved.

Demerits:

The possible condensation ratio is limited. cannot condense scenes with many objects moving at various different speeds or directions

(b) Sliding-window ribbon carving [8]

Description:

The objective of this project is to extend the current ribbon carving algorithm for video condensation to handle streaming video. Based on image seam carving. This method permits us to shorten the length of surveillance video while allowing refined activity loss.

(i) SLIDING-WINDOW APPROACH – This process very long video sequences In the principle of infinite-lenght. At first it express the idea of image seam carving, and then extend this to video ribbon carving.

(ii) CONDENSATION FOR STREAMING VIDEO

condense a piece of video at a time. However, when we need to condense a video with very long series, there are two main reasons why we cannot read all video frames repeatedly to process is Computation time of finding a least-cost ribbon will be very long. Due to control of memory, reading in whole series of video is prohibited.

Merits:

(i) Can achieve high condensation ratio

(ii) processing an extremely long video is prohibited

Demerits:

(i) There may be some misses in moving objects after defective background subtraction.

(ii) Setting a high value may lead a least-cost ribbon to pass through these objects.

(c) Streaming Video Condensation by Ribbon Carving [9]

Description:

In this paper , the research goal is to develop a more well organized video condensation algorithm for streaming video.

We apply a sliding-window concept to process endless video by repeatedly reading original video frames into a storage area .

condensing all frames in writing out a block of video frames of the streaming video and again reading new frames. In order to reduce calculation difficulties of motion .

Background Material - The usual way to reduce the size of an image includes down-sampling,
Shorten .

Seam carving - is a original technique to resize image by reducing the horizontal vertical dimension by one column row at a time. Seams are associated with cost function.

Cost function - Commonly maintaining events or moving object. while empty frames should be dropped. An activity-based or motion-based cost function should be used in this case to preserve moving object. Thus, we apply a background subtraction to the original video to obtain a series of binary labels 0 and 1

Merits:

(i) This is useful and efficient on indoor and outdoor pedestrian traffic videos.

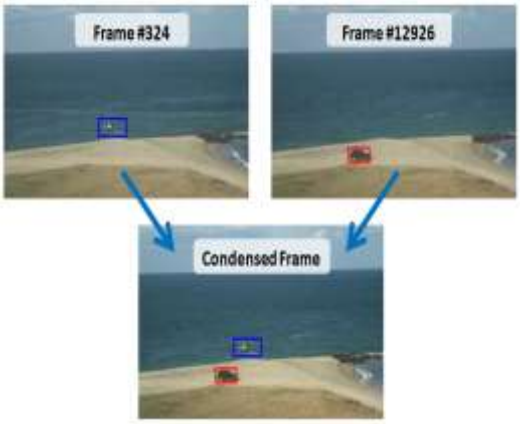
(ii) Stores all the important action and their comparative timings

Demerits:

(i) The quality of the real video is little poor .

(ii) There will be visible moving line in the condensed video caused by brightness change in the original video over time.

Example figure of condensation Process:



The main idea behind the video condensation is to remove frames of data without activity loss. preserving only the salient events. They are condensed into the same moment as shown above Figure.

III. Comparative analysis of various condensation methods and schemes in video streaming

	PAPERS	OBJECTIVE	MERITS	DEMERITS
1	Video Condensation by Ribbon Carving	In this paper we propose a ribbon carving to compute video event that we call video condensation.	(i) Produces usual-looking high-consistency condensed video both in terms of moving object integrity. (ii) where relative timings of events are exactly preserved.	(i) The possible condensation ratio is limited. (ii) cannot condense scenes with many objects moving at various different speeds or directions.
2	Sliding- window Ribbon Carving for video condensation	The objective of this paper is to enlarge the current ribbon carving algorithm for video condensation to handle streaming video.	(i) This shorten the length of surveillance video while allowing advanced activity loss	(i) Processing time of finding a least-cost ribbon will be very long (ii)Due to control of memory reading in whole series of video is prohibited
3	Streaming Video Condensation by Ribbon Carving	In this typical scaling of video is done in time By means of regular or irregular sub-sampling .	(i) This is useful and efficient on indoor and outdoor pedestrian traffic videos. (ii) preserves all the important action and their relative timings	(i) The quality of the real video is little poor . (ii) There will be visible moving line in the condensed video caused by brightness change in the original video over time.
4	Detecting and summarizing salient event in coastal videos	To identify areas of motion. And the presence of ocean waves bank grass blowing in wind.	(i) process many hours of video. we execute the background subtraction as effciently as possible. (ii) requires less memory	(i) The finishing time for background subtraction and behavior subtraction depend only on the video resolution (ii) operates only on blocks of frames
5	Adaptive Video Fast Forward	We derive a statistical graphical model of video scenes with multiple possibly occluded objects that can be efficiently used for tasks related to video search	Our approach to intelligent video forwarding is based on using the frame or shot likelihood to control the playback speed.	Function is used as a cost function for multimedia retrieval. Segmentation, tracking,
6	Video Carving	We present a technique for shortening a video into a short segment.	Reduce the motion tails in the condensed video by processing larger blocks of video at one time. .	Do not use any object information during processing .carving of video sheets can cause end to appear as objects move.
7	Background Subtraction Techniques	class of techniques for segmenting out objects of interest in a scene for applications such as surveillance.	Each pixel is modeled separately by a mixture of K Gaussians.	operates effectively with even more component models

8	Seam carving for content-aware image resizing	Background: It works by uniformly resizing the image to a target size. The Operator approach to content-aware resizing is to remove pixels in a neat manner.	The operator can be easily integrated with various saliency measures as well as user input to guide the resizing Process	our method does not work automatically on all images.

IV. Conclusion

In this paper various methods of video condensation and there algorithm are being overviewed. And how the condensation are being done effectively. The future work will be based on the above findings to develop a better condensation method to condense the large video data from a Surveillance camera.

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