EFFECTIVE VIDEO RETEIRVAL USING CLUSTERING TECHNIQUE

Dennis Joseph and D.Saravanan

Faculty of operations & IT, IFHE University, IBS Hyderabad, Telangana.

Article received 20.7.2017, Revised 3.11.2017, Accepted 11.11.2017

ABSTRACT
Knowledge extraction is one of the fastest growing fields today. Proper extraction of the needed information presents a challenging job for many researchers. This becomes even more complicated in the case of multimedia content. Clustering is a useful technique for finding useful patterns from the given data set. Video clustering is done on video files for video data mining. Existing clustering techniques work well for only a few particular types of inputs. It has been experimentally verified that the proposed clustering technique offers the best clustering solution for a majority of input files.

Keywords—Video Frames, Video indexing, Histogram Values, Frame Comparison, Data mining, Clustering, Image mining.

INTRODUCTION
Information retrieval is an emerging technology which is currently researched by many. Information retrieval may be from several types of files like document files, image files and even audio and video files (Saravanan et al., 2013) is the size of data increases the retrieval process becomes more complex and this poses a challenge for any researcher. Technology allows the users to create and store data very easily. Due to this, the amount of information which is produced every year goes on increasing (Saravanan et al., 2012). Multimedia data is a combination of all media like audio and video, and retrieving the required information from multimedia files is a really challenging task for users. Information retrieval is either text base or image based. Here, there is no guarantee that the user may get the relevant data in a single search either for text or for image. Users must spend at least two or three iterations to arrive at the needed content. For simplifying this, several techniques and methods have been proposed for information retrieval. Most of them are concerned with arranging the data in a proper form so that it is easy to retrieve the required information for the users in a single search (Imaran et al., 2012). For this the data is clustered and then stored. Clustering, in data mining is a useful technique for discovering interesting data distributions and patterns in the underlying data. It is useful for determining groups and recognizing interesting distributions in the fundamental data. Many clustering algorithms have been developed to retrieve the relevant information, but every clustering technique works well only with some particular type of data set. Some clustering algorithms work well for texts while other techniques work well with images (Monserrat 2013). But none of the algorithms works well with all types of files. In the field of video data mining, the retrieval process is more complicated as it combines image understanding and knowledge extraction. Data either in the form of an image or text is required. For this process both the stored data sets and the retrieved set require special attention. Creation of image type data sets is easy but retrieving the particular set is really more complex.

A. Disadvantages of the existing system:
Existing techniques work only for text type data.
The existing techniques are based on the users input, and the accuracy of output is less.
Time required for execution is more.
In clustering the difference between two clusters are not properly defined.
The quality of cluster formation is very poor.
Existing clustering algorithms are not suitable for different types of video files.
Number of clusters formed depends on the input video type.

Proposed system: The proposed clustering technique called CURE removes the number of duplicated values compared to other hierarchical clustering algorithms. This works well especially for video data files. The processes involved are shown in the Table 1. By removing excess duplication, the extraction of the needed information becomes easier and the performance of the algorithm increases (Bhatt 2013). This brings about a good cluster formation for the given input video or image files. Functionality of CURE differs from other clustering processes. CURE initially examines the complete input first, afterwards it identifies certain positions from the input, and finally the selected points are reduced towards the centre position. This process is repeated for the entire input file for various data
sets. This entire operation takes only a few seconds to complete. CURE algorithm works well with all types of input files. It works well even with large and multipart data files.

A. Advantages of the proposed system

- Reduces the time for the formation of clusters.
- Eliminates duplication efficiently.
- Cluster formation is good.
- Performs well with all types of inputs.

**Fig 1**: Proposed Architecture

**Experimental setup**

A. **Image extraction**: Image mining from a video/image stored database is a branch of data mining. Storing of image/video content in the data base is easy, but it is very difficult to extract the needed information because of complexity of comparison. So the image/video information in the image/video database is effectively organized (Saravanan et al. 2015). Due to the increasing amount of image/video data indexing of the files to build a dictionary of the image/video region is necessary. Any image mining process storage is very easy but access the particular information it is really challenge task to the user because of increasing the quantity and quality of the image files. Any image mining process requires additional domain knowledge about the process. In our proposed technique the process is done with the help of similarity matching.

B. **Image matching process**: The algorithms needed to perform the mining of associations within the context of image.

1. **Attribute dig up**: Input files are first segmented into frames dynamic images are converted to static image files. Each frame objects are differing with other frame objects that we need to extract the attribute function of each frame. This value helps the user find the difference between two successive frames. It also helps to remove the duplicate and unwanted frames. Two similar frames this-values are almost equal, two unequal frames this-values are higher. This helps the user differentiate the frame with others (Saravanan et al., 2014). 2. Create identifier of each frame objects: After successfully eliminating the duplicate frames, next we need to create identifier for each object this helps to extract the need image. This process is done both in the client side as well as the server side. In server side its helps to extract the need objects based on the users input this also called training phase. Client side this process helps to bring the correct object based on the input query it also reduces the users searching time. This process initially done in both side to reduce the searching time and brings the quality result. 3. **Image extraction**: After step 2, image extraction starts.

C. **Clustering**: Clustering is more important because of the increasing demand of information technology. Technology brings huge amount of complex data from this huge content data’s are not arranged properly it increasing the searching time and brings the burden to the user (Saravanan et al., 2016). Creating of any video files is easy but bringing the correct content is really a challenge task to the user. It requires domain knowledge and specific techniques Clustering is useful technique for the discovery of some knowledge from data set. Clustering normally performed based on the similarity between the data points in the given input (Hu et al., 2011). If the objects are similar, then this data points are arranged very closely if the points are scattered then objects are not similar. Based on the data points cluster formation get defer. Text clustering are differing from video clustering because video cluster based on the input video quality. Same video file never produces the same number of clusters (Saravanan, 2015). It depends on the input creation i.e. camera motion, background, light, input source and more. Based on the input the cluster formation is differing. Same background images are never produce the same number of clusters. So, video clustering is litter computer to the researchers. Another key factor for video clustering are time taken for segmentation, duplication removal and image matching (Saravanan 2016).

**Pseudo code for removing outlier**

```plaintext
For y = 0 To y1 - 2
For x = 0 To x1 - 1
pic1 = Display BM. Get Pixel(x, y)
pic2 = Display BM. Get Pixel(x, y + 1)
If THRESHOLD < pic1.G Or THRESHOLD < pic2.G Then
    If pic1.G <> pic2. G Then
        Display BM. Set Pixel(x, y, Color Translator. FromWin32(RGB(255, 0, 255)))
End If
```
Conclusions and future enhancement: Data mining is the process of extracting useful information from the huge data set. Most of the research works are numerical and text extraction very few works in image mining. Today image mining is used in various applications. Proper technology is required to extract the relevant video files. In large complex data files such as image files different formats are used such as audio, motion, text, color, time and more. No standard algorithms work well for all type of video files. In this work proposed image algorithms work well in all type of video files and the proposed system provides greater accuracy and flexibility to the user community.

Future Enhancement: Future research work is required apply this framework to a application for video data mining. The main goal of the future work is to develop the intelligence technique that can be used to support video data mining to retrieve information successfully and maintain the accuracy of the system.

Experimental outcomes
Duplicate Elimination:

<table>
<thead>
<tr>
<th>Video name</th>
<th>Number of input frames</th>
<th>Number of output frames</th>
<th>Duplicate frames removed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cartoon</td>
<td>7</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Graphics</td>
<td>16</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td>Meeting</td>
<td>15</td>
<td>14</td>
<td>1</td>
</tr>
<tr>
<td>Natural Scene</td>
<td>15</td>
<td>13</td>
<td>2</td>
</tr>
<tr>
<td>Song</td>
<td>15</td>
<td>14</td>
<td>1</td>
</tr>
</tbody>
</table>

Fig 2: Input image

Fig 3: Image comparison with Stored Value

Table 3: Frame vs Time taken using cure

REFERENCES
Imran, A., A. Moreno and F. Cheikh, Exploiting visual cues in non-scripted lecture videos for multi-modal action recognition, in Signal Image Technology and Internet Based Systems