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Global Face-Name Matching For Various Movie Frames Using ECGM

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Abstract*- Image Processing is a component of the digital signal processing. The Image Processing is a very broad topic and it is often the procedures, complex mathematical, but the central idea behind the digital image processing is simple. The digital image will be used as an input into a computer and the computer is programmed to change this data with the help of an equation or with the series of equations and then save the values of the calculation for each pixel or picture element. In this thesis proposes a global face-name matching graph-based framework for robust movie character to identify. The system proposed in the two regulations are taken into account. There are connections as well as the differences between them. This study on the improvement of the robustness, ordinal graph is for a face and a name representation of a graph and a new graph matching algorithm called Error Correcting Graph Matching (ECGM) is introduced. In respect of the differences, Schema 1 determines the number of clusters in the implementation of face Clustering. The face of graph is limited to an identical number of points with the name graphics. While in scheme 2, no cluster number is required and the face of title are clustered on the basis of their intrinsic data structure. Existing methods evaluated promising results in a clean environment, the services are limited in complex scenes because of the noise during the Face Detection and Face cluster formation. The proposed system of two regulations are taken into account. There are connections as well as the differences between them. In relation to the connections, the two proposed regulations are both based on the global matching category, where external script resources are used.

Keywords*- Identification, face tracking, Graph Matching, image recognition.

I. INTRODUCTION

IMage is the processing of images using mathematical operations by any form of signal processing for which the input is an image, such as a photo or a video. Most of the image processing techniques, treating the image as a two-dimensional signal and application of standard signal processing techniques. Image processing in the rule refers to the digital image processing, but optical and analog image processing are also possible.

Digital image processing is the use of computer algorithms to perform image processing on digital images. Digital processing techniques can help in the manipulation of digital images with computers. digital image processing includes the modification of digital data for the improvement of image quality with the aid of a computer. The processing will help to maximize clarity, sharpness of the image and details of the features of interest on the extraction of information and further analysis. A digital image is a collection of a finite number of elements where each element has a certain value and location. These elements of the digital image are known as picture elements, screen elements and pixel. The word pixel is usually refers to the elements of a digital image.

Image processing is a method to convert an image into digital form and perform some work to get a better image or some useful information to extract the three general phases, all types of data, while with the help of digital technology are the re-processing, packaging and presentation, the extraction of information. Digital image processing is the use of computer algorithms to perform image processing on digital images. As a sub-category or the area of digital signal processing, digital image processing has many advantages over analog image processing. It allows a much wider range of algorithms are applied to the input data and can avoid problems such as the development of noise and distortion of the signal during the processing. two dimensions (maybe more) digital image processing can be modeled in the form of multi-dimensional systems.

This thesis proposes a global face-name matching graph-based framework for robust movie character to identify. Two regulations are taken into account. There are many connections, as well as the differences between them. In relation to the connections that the two proposed rules both belong to the global appropriate category, in which the external script resources are used. To improve the robustness, ordinal graphing is employed for the face and a name and a new graph matching algorithm called Error Correcting Graph Matching (ECGM) is introduced. In respect of the differences, Schema 1 determines the number of clusters in the implementation face clustering. The face of graph is limited to the same number of points with the name graphics. While in scheme 2, no cluster number is required and the face of title are clustered on the basis of their internal data structure.

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II. RELATED WORK

Mark Everingham et al., investigated the issue of automatic identification the appearances of the characters in the film or television material with your name. This is an incredible challenge because of the large differences in the appearance of the individual characters and shown with the weakness and ambiguity in the text[4]. However you have proven that high precision can be achieved by the combination of several sources of information that both visual and textual.The most important new features that imports we are: (i) Automatic Generation of time-stamped character label by aligning the subtitles and transcriptions; (ii) strengthening the supervisory authorities information by identification, if characters speak. In addition, they contain additional information about the face and the appropriate clothing, appropriate proposals face common annotations for the tracks, and look at the selection of the classifier can potentially correct the fault in the automatic extraction of data from the weak annota Training Text-ing.

Jitao sang and Chang Sheng Xu, explains about a film summary what is helpful for film producer of the film as well as to promote public to capture the theme of the film before you the whole film. The most exiting automatic film summary approaches strongly rely on video content only what is perhaps not provide ideal result by the Semantic Gap between computers is calculated, low-level features and high-level human understanding.[1] They include script in film and proposes a novel Analysis character-based film summary approach which will be reviewed by modern film theory and what actually catch audience attention is the character. You First Segment scenes in the film through the analysis and comparison of script and film. Then initiate sub history discovery and contents attention analysis on the basis of the scene analysis and character interaction features. In view film won the structure and content of attention we calculate film scores in both attraction SHOT and SCENE levels and adoption of this criterion as to generate a summary of the film. The promising experimental results show that character analysis is effective for film summary and movie content understanding.

Timothée Cour and Benjamin Sapp, has only partly to selected image and video item data[8]. For example, personal photo collections often contain multiple faces per image and a caption, are only who is on the image, but not the names match, face. Similar to film scripts can tell us who is in the scene, but not when and where you are on the screen. They formulated the learning problem in this setting as a partially-supervised classification, where each instance is marked multi-class ambiguous with more than one label. You theoretically showed that effective learning is possible on the basis of realistic assumptions, even if all the data is weak labeled. Motivated by the analysis to propose a general convex learning formulation based on minimizing a surrogate for the ambiguous loss label. Your frame to recognize faces selected by web news sources and naming characters in TV series and films. They experiment on a very large data set consisting of 100 hours of video, in particular reaching 6% error for character.

John Stallkamp et al., the classification sub-system of a real-time video-based face identification system that recognizes people, through the door of a laboratory[6]. Because the topics are not asked, in cooperation with the system, but of course are allowed to behave this application scenario presents many challenges. Continuous, uncontrolled fluctuations of facial features due to lighting, attitude, expression, and occlusion must be treated for the successful recognition. Faces are classified by a local appearance-based face detection algorithm. The Confidence notches of each classification are gradually combined to the identity estimation of the total sequence. They brought three different measures to weight the contribution of each individual frame on the entire classi-oriented decision. You are the distance to model (DTM), dis-tance-to-second-next (DT2ND) and their combination. Both a k-nearest neighbor approach and a set of gaussian mixtures are evaluated to produce individual scores.

Tamara L. Berg et al., showed a good face clustering is possible for a dataset of imprecise and ambiguous face images are labeled. Our dataset is 44,773 facial images, by the application of a face finder on transmission oil drain plug-approximately half a million messages images with subtitles. This dataset is more realistic than the usual face detection data sets to be-because it contains land "in the wild" in a variety of configurations in relation to the camera with a variety of expressions and in light of very different color. Every face picture is associated with a series of names are automatically extracted from the associated image caption. Many, but not all of these kits contain the correct name. You grouped facial images in corresponding discriminant coordinates. You use a clustering methods to break ambiguity in the labelling and identification of incorrectly labeled. A merger procedure then identifies variants of names that refer to the same person. The resulting display can be used to label faces in images or messages to organize messages images of persons present. An alternative view of your procedure is as a process that purifies himself according to be monitored.

Andrew Fitz Gibbon and Andrew History 1801 1833 developed a distance metric for clustering and classification algorithms that is invariant to affine transformations and includes the transformation parameters priors[10]. How clustering requirements are generic to a number of problems in computer vision. Ex-tended existing techniques for the affine invariant clustering and show that the new route metric exceeds exist-ing approximations to affine invariant distance Computa-tion, in particular under the large transformations. In addition, the previous chances on the transformation parameters. This

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further regulates the solution, mitigat-ing a rare but serious tendency of existing solutions to diverge. For the specific case of the corresponding point sets they show that the affine invariant measure can be introduced into the closed mold.

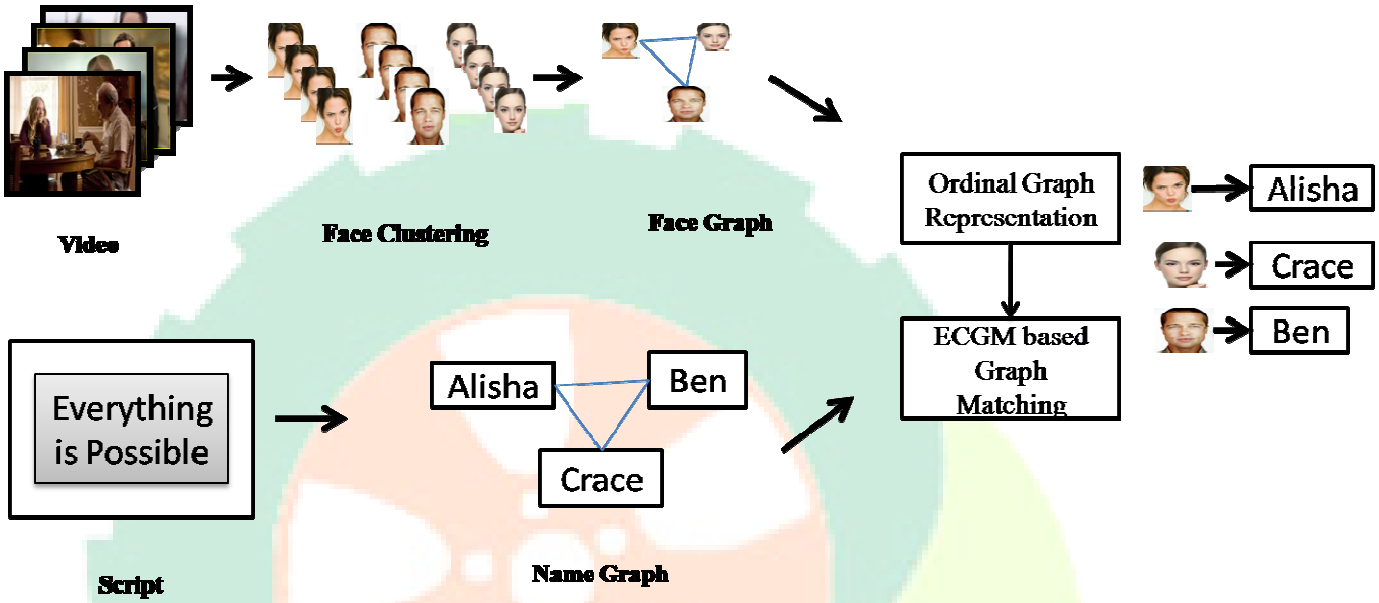

Fig. 1 Face-name Graph Matching

III.OVERVIEW OF THE PROJECT

A. Research Problem

Automatic identification of characters in movies drawn face has the most research interests and have led to many interesting applications. Since the large differences in the presentation of the individual character is found, it is a difficult problem. Existing methods evaluated promising results in a clean environment, the services are limited in complex scenes because of the noise during the Face Detection and Face cluster formation. This study presents two systems of global face name matching-based framework for robust character to identify.

The contributions of this study include:

- A noise insensitive character relationship representation is integrated.
- The study presents an edit function graph matching algorithm is based.
- Complex Character by simultaneously graph and graph matching partition.
- On existing approaches, we character identification a further in-depth sensitivity analysis by the introduction of two types of simulated noise.

The proposed rules show, state-of-the-art performance on film character identification in various films. The project was created with Visual Studio .NET 2005 as the front end and backend SQL Server 2000 as a C# is used, the encoding of the language.

B. The scope of the research work

The distribution of film and television offers a large number of digital video data. This has led to the requirement of an efficient and effective techniques for video content understanding and organization. Automatic video annotation is such a key techniques. In this paper we focus on comments characters in the film and TV, the so-called movie character to identify. The proposed method can be implemented in the real environment such as graphics. And also the system can be implemented to the terrorists in the war field.

The Edit graphic works includes the statistical reporting and analysis. For example in the areas of corporate finance, it refers to an analysis of the way in which each of the input variables in an investment account decision (as discount rate, cash flow growth rate, tax rate, etc.). Affects the Net Present Value, IRR or any other output, while other variables constant. Sensitivity analysis is useful because it explains the model user how dependent the output value is on each input.

C. Existing System

The existing system includes clustering faces with K-means, in which the number of clusters is different than the number of speakers. In the Script Name Co-occurrence and the face of clusters in the video is the name of the

corresponding area graph and graph. It modifies the traditional global matching frame using ordinal diagrams for robust representation and the introduction of a ECGM-based graph matching method.

For Face and name graph construction, the existing system represents the sign co-occurrence in rank ordinal level, the notches of the strength of the relationships in a ranking of the most vulnerable to the most. The Affinity Diagram is used in the traditional global matching is the interval measures the co-occurrence of relationship between characters.

Disadvantages

- During the continuous action of the strength of the relationship hold full information, but it is very sensitive to noise.
- Same character for certain part surface is pursued, even if films vary.
- Noise reduction process is not discussed.
- The Sequential statistics for the speakers is not carried out.

1) Data Input

- Movie File Selection on file open dialog control. AVI file as input is selected and stored in the table.
- Movie File is selected from the table, and divided into individual frames with AVI extractor "Avifil32.dll" methods and be saved as bitmaps. The bitmaps in the project folder is used to store all the frames. The data record is saved in 'Bitmap' folder with film ID and frame ID.
- Movie File is selected from the table frame ID is selected from the retrieved bitmap frame ID is selected and the track record is added to it.
- Character is added to the name in the title 'face names' table with film-ID, Frame ID and name.

2) Face Detection

- After the film ID selection from the Bitmap frames face area is found and the details in the table "Faces" with film-ID, Frame ID and surface data.
- From the pictures is selected.
- In grayscale image
- Morphological filters will be applied with erosion property (3X3) matrix is used as input for the erosion.
- Then contour (limit) is found. Then based on the specified width/height ratio, places where images can be found.
- Select face regions" image data is stored in the database with X and Y-position together with the width and height of the area.

3) Face Clustering

- After the film ID selection, faces are clustered in such a way that K means clustering is with 'N' is specified as input.
- On the basis of the color difference in the bitmap pixels, the face of similarity.

4) Forming Face graphics

- On the basis of the areas (several characters) appeared in the Bitmap frames, relationship between surfaces is formed.
- For example, a frame contains face A, B and C Other CONTAINS A and C, A and C is more with less with AS
- The edge weight is fixed on the basis of the relationship between faces/common occurrence.

5) Forming Name graph

- On the basis of the name (multiple characters) appeared in the bitmap frame title, the relationship between the name is formed.
- For example, a frame contains name A, B and C Other CONTAINS A and C, A and C is more with less with AS
- The edge weight is fixed on the basis of the relationship between the name/ common occurrence.

6) Graph matching

- Calibration is carried out on the basis of the common occurrence of faces and names.
- For example, if the frame contains 1 Face A, B and C with the name X, Y and Z
- Then face frame 2 contains a and C with the name X and Z, then it is certain that A and B have the name X and Z
- After all frames with intersecting face/names occur, we try to use the names with faces.

D.Proposed system

In addition to the already existing system implementation, the proposed system includes the identification/names for different movies with different names. K means clustering is used for cluster formation. And also the different character name for the face, even if pursued films vary. Media filter concept is applied, remove the noise before/after the cluster formation.

1) The system proposed algorithms

- Frames from several movie files are consolidated (grouped), as each film.
- For the given area (in the selected frames), the name appeared are grouped. For example, if Jack is the name of the frame 1 of the movie 1 and name George from Frame 1 the film 2, stood for the same face, then both as the same actor names.
- As well as all faces in all frames are checked for the combined name appearances in both films for frame selection.
- Common name for that same face data in two movie frames are compared to the occurrence of multiple locations and treated as the same character.

2) Benefits

- Not sensitive to noise since dirt removal can be applied either before or after the cluster formation.

- Different characters for the face, even if pursued films vary.
- Noise reduction process is performed.
- The Sequential statistics for the speakers is also carried out.

E. Ordinal graph representation

The name and face affinity graph are established on the basis of co-relationship. Because of the imperfect face detection and tracking results, the face as affinity can convert graphics from the name affinity with the installation of noise. Diagram we have observed in our studies, that the generated affinity matrix some statistical properties of the characters are relatively stable and insensitive to noise, as signs of a has more similarities with character, character B as C D never co-occurred with a character etc. Loved this we assume that while the absolute affinity quantitative values are variable, the relative affinity of relations between characters (e.g. It is closer to the B-C) and the qualitative affinity values (for example, whether D has in collaboration with a) remain unchanged in the rule. In this work we use the obtained statistical properties and proposes to represent the characters of co-occurrence in the order of their priority.

F. Classic K-means clustering algorithm:

Automatic identification of characters in movies drawn face has the most research interests and have led to many interesting applications. Since the large differences in the presentation of the individual character is found, it is a difficult problem. Existing methods evaluated promising results in a clean environment, the services are limited in complex scenes because of the noise during the Face Detection and Face cluster formation. This study presents two systems of global face name matching-based framework for robust character to identify.

The contributions of this study include:

- A noise insensitive character relationship representation is integrated.
- The study presents an edit function graph matching algorithm is based.
- Complex Character by simultaneously graph and graph matching partition.
- On existing approaches, we character identification a further in-depth sensitivity analysis by the introduction of two types of simulated noise.

Input: Movie files
Output: recognized face/Name
Steps

Step1: Frames from several movie files are consolidated (grouped) as if they From several movies.

Function frame= read Frames (video)
Start
numFrames = get(readerobj, 'numberOfFrames');
for k=1 to numFrames
framedata = videoFrames(k);
movieframe(k).colormap = [k];
showframes (movieframe(k)
extractComponents(mov(k).cdata);
End

Step 2: Run the clustering to a group of frames

Step1: Cluster Data in *k*- groups in which *k* is predefined.
Step2: Select *k* points randomly as cluster centers.
Step 3: Assigning objects to their closest Cluster Center after the Euclidean distance function.
Step 4: Calculate the centroid or mean value over all objects in each cluster.
Step 5: Repeat steps 2, 3 and 4 until the same points are assigned. Cluster in the following rounds.

Step3: for the given area (in the selected frames), the name appeared Grouped.

Step4: for example, if Jack name from the frame 1 of the film 1 and name George Frame 1 of the film 2, stood for the same face, then both As the same actor names.

Step5: all faces in all frames are enabled, so that the combined designation Performances in both films for frame selection.

Step 6: common names for the same face data in two movie frames are compared to the Occurrence in several places and treated as the same character.

G.ECGM-based graph Matching

ECGM is a powerful tool for graph matching with distorted recording. It has a variety of applications in the pattern recognition and image processing. For the measurement of the similarity between the two charts, graphics editing operations are defined, such as Delete, Insert, and substitution of nodes and edges. Each of these steps is further substantiated some cost. The costs are dependent on the application and are reflected in the rule the probability of graph distortion. The more a certain distortion occurs, the lower its cost. By Error Correcting graph matching, we find suitable graphic edit operations after the noise investigation and design of the Edit Cost function, in order to improve performance.

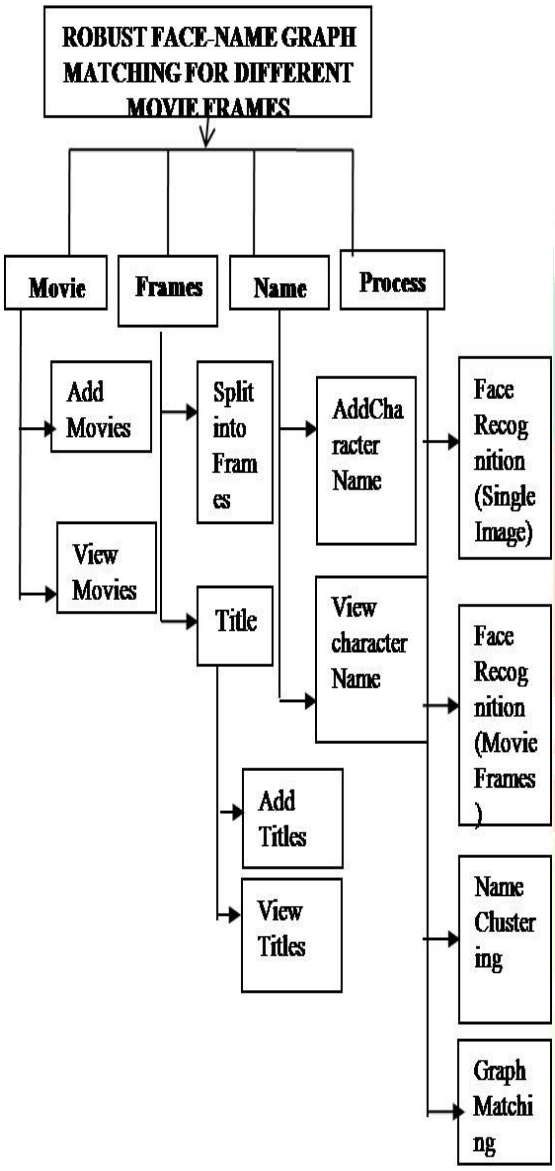

Fig.2 System Flow diagram

IV. PERFORMANCE ANALYSIS

The following Table 1 describes robust face recognition for existing K-mean and classic K-mean clustering algorithm. The table contains the number of data sets that the average area picture for R-K-mean clustering algorithm and the average services for r-classic-K-mean clustering algorithm the details are given below.

Table 1: Performance Analysis- K-mean classic-K-means clustering algorithms value

Number of facial images datasets [N]	R-K-Mean Clustering [%]	R-classic-K-Mean Clustering [%]
100	50.2	51,33
200	58.67	59.32
300	64.03	65.34
400	72.33	71.99
500	76.12	77.98
600	79.33	79.89
700	80.44	81.04
800	81.45	81.78
900	83.22	84.03
1000	84.10	85.65

The following Figure 3 describes robust face recognition for existing K-mean and classic K-mean clustering algorithm. The figure contains the number of the facial image data sets, average for R-K-mean clustering algorithm and the average services for r-classic-K-mean clustering algorithm the details are given below.

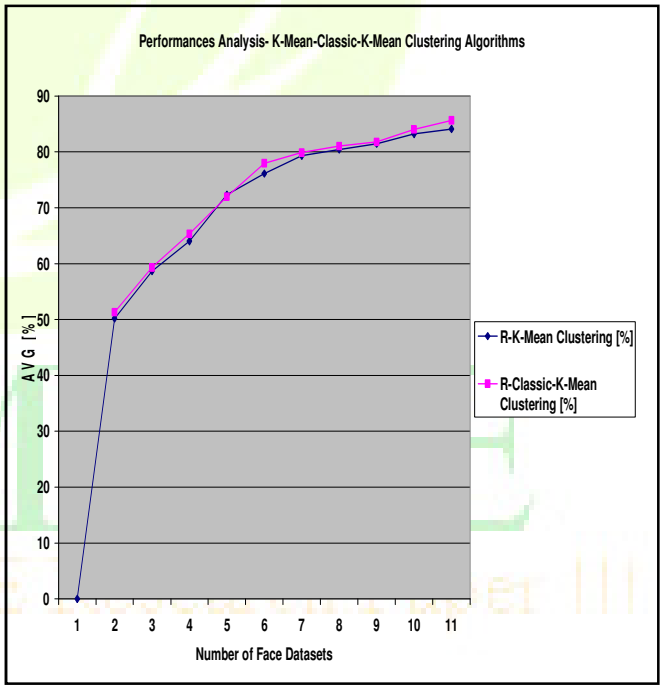

Fig. 3 Services Analysis- K-mean classic-K-means clustering algorithms value (Facial Image dataset)

The following Table 2 describes robust face recognition for existing K-mean and classic K-mean clustering algorithm. The table contains the number of data sets that the average for text R-K-mean clustering algorithm and the average services for r-classic-K-mean clustering algorithm the details are given below.

Table. 2 Services Analysis- K-mean classic-K-means clustering algorithms (Text Value dataset)

The number of text data sets [N]	R-K-Mean Clustering [%]	R-classic-K-Mean Clustering [%]
100	60.43	61.23
200	63.66	62.67
300	65.04	64.22
400	67.99	66.83
500	69.03	68.45
600	71.95	70.80
700	72.77	71.34
800	74.03	73.07
900	75.88	76.09
1000	76.73	77.08

The following Figure 4 describes robust face recognition for existing K-mean and classic K-mean clustering algorithm. The figure contains the number of data sets, average for text R-K-mean clustering algorithm and the average services for r-classic-K-mean clustering algorithm the details are given below.

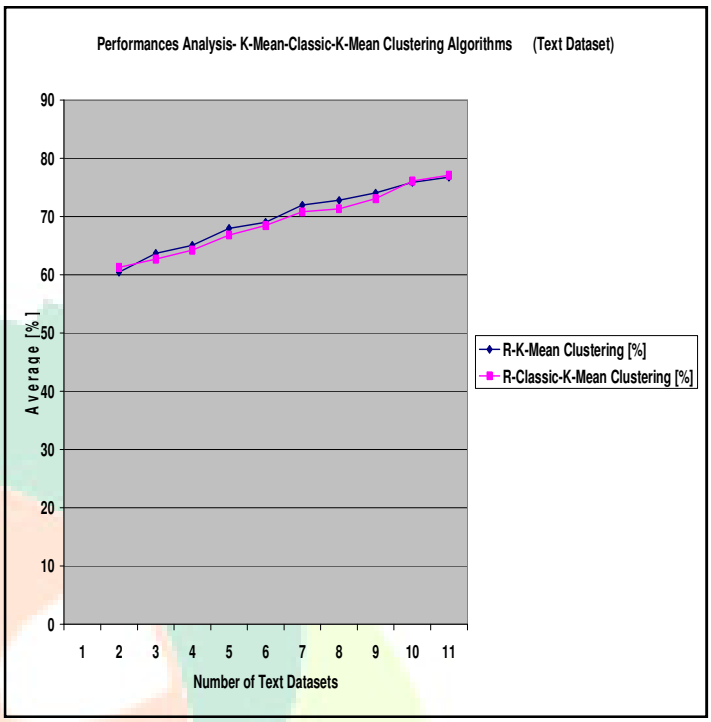

Fig. 4 Services Analysis- K-mean classic-K-means clustering algorithms (Text Value dataset)

V. CONCLUSIONS

Image Processing deals with the manipulation of digital images on a digital computer. It is a part field of the signals and systems, but above all on the images. Digital image processing is focused on the development of a computer system that is able to carry out the processing on an image. The input of this system is a digital image and the system process, Image with efficient algorithms and gives an image as output. In this thesis has shown that the proposed system includes the identification/names for different movies with different names. K means clustering is used for cluster formation. Different character name for the face, even if pursued films vary. Media filter concept applied to remove the noise either before/after the cluster formation.

VI. FUTURE ENHANCEMENTS

Currently, the faces are clustered, charts, for the names and faces, then graph matching is performed. The dirt removal process is also performed and faces are effectively clustered. Different films taken and to list names for individual surface (in both films occurred) can also be found in the future we will investigate the best features for different film genres. A further objective of the future work is to use more character relations, e.g. the sequential statistics for the speaker, the figures in the scene, then the recognition and the improvement of the robustness.

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