A Study of Multimedia Visuals and Information Retrieval and Techniques

Dr. M.Inbavalli, G.Sathya & R.Manjula

Abstract

The process of retrieval of relevant information from massive collection of documents. Multimedia documents include various elements of different data types including visible and audible data type's text images and video documents structural elements as well as interactive elements. An image contains several types of visual information which are difficult to extract. The main goal of multimedia information retrieval task using the combination of textual profiteering and image rerunning. The combination of textual and visual techniques and retrieval processes used to develop the multimedia information co retrieval system solves the problem of the semantic gap of the given image. Semantic fusion approaches are used for text based and content based image retrieval of any database. The logistic regression relevance is used to determine the images from the database. The content based retrieval image an low level ,high level visual content .image and high dimensional database in vertical search data. Then system is made to receive the user image of IR model.

Keyword

CBIR, multimedia IR model, image and video, multimedia information fusion.

————————— ◆ —————————

1. INTRODUCTION

In the context of multimedia information retrieval such as images text audio or videos is an open research area. Various methods have been discovered to retrieve the effective and accurate information. There are three levels to describe visual features of image or video described below (4).

1. Low level description

2 .Middle level description

3. High level description

The growing demands for image retrieval in multimedia field such as crime prevention, Fashion and graphic design and traffic control has pushed application developers to search ways to manage and retrieve images more efficiently. Content-based image retrieval CBIR also

Dr. M. Inbavalli, Professor & Head , Department of Master of Applications(MCA),Er.Perumal Manimekalai College of Engineering,Hosur,Tamil Nadu.

G. Sathya, Second Year MCA, Er.Perumal Manimekalai College of Engineering,Hosur, ,Tamil Nadu.

R. Manjula, Second Year MCA, Er.Perumal Manimekalai College of Engineering,Hosur,Tamil Nadu.

known as query by image content (QBIC) and content-based visual information retrieval (CBVIR) is the application of computer vision to the image retrieval problem. the problem of searching the digital images in large database. Content- based means that the search will analyze the actual contents of the image. The term [CBIR] describes the process of retrieving desired images from a large collection on the basis of features such as colour texture and shape that can be automatically extracted from the images themselves.(2) The main goal of an IR system is to match the user query with the documents stored in a database. A document may contain tabular data, pictures, graphs and mainly textual.(3) Statistical approaches involves retrieved documents that matches query closely in terms of statistics i.e. it must have statistical model, calculations and analysis.(1)

2. LITERATURE REVIEW

Multimedia based information retrieval of the different text, images, audio, and video are may be the best developed technology. As early in the 1986, image databases were being developed and deployed the system as UC Berkeley's Query Image on system, so Developers and researchers believe this software was the first deployed multiuser based networked digital image database system in the environment. Multimedia Information Retrieval is usually addressed from a textual point of view in most of the existing commercial tools, using annotations or metadata information associated with images or videos. Multimedia fusion tries to use the

different media sources as complementary information to increase the accuracy of the retrieved results, in order to help in solving the semantic gap problem, referred to the difficulty in understanding the information that the user perceives from the low level characteristics of the multimedia data(5). Content based video retrieval has been one of the challenging research areas in the field of image and video processing .Then key frames were extracted. The feature vector of key frame features in the form of RGB color value and entropy value was created. The entropy features are retrieved from GCL matrix. In the second phase of system, the user enters a video frame as a query. Then the entropy feature of this frame is calculated by the system. The authors had proposed the combination of various features such as entropy-edge based feature method, entropy-color based feature method (4). We present a review on content based image retrieval using various techniques such as support vector machine (SVM) that should combine all relevance or irrelevance features such as color, texture, shape, size. Edge feature based method in the construction domain, news domain and entropy-color feature based method(3).

3. WHAT IS MULTIMEDIA

A multimedia information system that can store and retrieve

- ➤ Text
- ➤ Attribute
- ➤ Audio
- ➤ Image
- ➤ Video

3.1MULTIMEDIA IR SYSTEM

MIR aims at extracting semantic information from multimedia data sources such as audio, image and video directly and indirectly perceivable sources such as text, biosignals.(3).These systems use human perception to process query and returns results. The syntax of multimedia document is different from text documents. Multimedia documents do not contain any information symbols or keywords that help in expressing information.

- ➤ Visible and Audible Data Types: - It includes text, images, graphs, videos and audio.
- ➤ Structural Elements: - They are not visible. They describe the organization of other data type   a technique which uses visual contents to search images from large scale image.
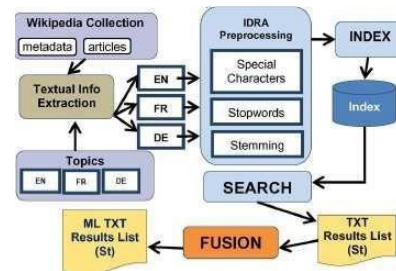

Fig1: Text-based Index and Retrieval(5)

4. MULTIMEDIA IR SYSTEM MODELS

Multimedia documents do not contain keywords or symbols that facilitates easy process of searching through document. Query Processing Module that translates the multimedia information tokens into symbols keywords which are easily understood by system.

- ➤ Analysis Module: - IR system firstly analysis multimedia documents and extract features from them. The features include low- level as well as high level features.

- ➤ Indexing Module: - The module that stores features or terms retrieved from multimedia documents is called Indexing Module.

- ➤ Query Processing Module: - This module translates multimedia information tokens like audio, text-pairs, videos etc into information symbols that are now understood by system.

- ➤ Retrieval Module: - It finds rank of stored documents on basis of similar terms used in query. After ranking of documents, the results satisfying query are presented to user (1)

5. CBIR FEATURE TECHNIQUES

Feature extraction is the basis of content based image retrieval. Typically two types of visual feature in CBIR Primitive features which include color, texture and shape. Domain specific which are application specific and may include, for example human faces and finger prints. Primitive features are those which can be used for searching like color, shape, texture and feature which are used for particular domain and have knowledge about them. For example, we are searching for face of girl which belongs to human category, so here domain is human. Another one is we are searching for elephant which belong to animal category. These features are domain specific.

1. Color
2. Texture
3. Shape

> ## COLOR

Color is one of the most reliable visual features that are also easier to apply in image retrieval systems. Color is independent of image size and orientation it is robust to background complication. First a color space is used to represent color images. Typically, RGB space where the gray level intensity is represented as the sum of red, green and blue gray level intensities Swain and Ballard proposed histogram intersection, an L1 metric as the similarity measure for color histogram. Color histogram is the most common method for extracting the color features of colored images. Color histograms are widely used for CBIR systems in the image retrieval area

> ## TEXTURE

Texture is that innate property of all surfaces that describes visual patters, and that contain important information about the structural arrangement of the surface including clouds, trees, bricks, hair, and fabric and its relationship to the surrounding environment. Various texture representation have been investigated in both pattern recognition and computer vision.

> ## SHAPE

Shape is the characteristic surface configuration that outlines an object giving it a definite distinctive form. In image retrieval, depending on the applications, some require the shape representation to be invariant to translation, rotation and scaling, whiles others do not. In general shape representation can be divided into two categories: Boundary based which uses only the outer boundary of the shape. Region-based which uses the entire shape regions.

6. MULTIPLE OF IR INTEGRATION

A. Homogeneous Systems
Homogeneous multi-DB systems are tightly coupled in the sense that they are designed from a single DB and then geographically distributed. DB has the same schema structure so that the schema metadata are the same and synonyms are avoided. These systems are relatively easy to query and manage, but can be difficult to extend to cover new DB component

B. Heterogeneous Systems
Heterogeneous multi-DB systems are loosely coupled in the sense that they are constructed as an integration of existing heterogeneous systems set. The integration schema is constructed through the union of the schemas for the participating databases. A synonym table and a thesaurus may be constructed to support single query access to the multiple component databases.

C. Interoperable System

Disjoint or language based systems are very loosely connected. the local DB schema metadata of cooperating systems and use domain ontology to map a user query to relevant databases and documents.

1. W3C which contains XML (Extended Markup Language)
2. DTD (Document type Definition)
3. RDF (Resource Description Framework)
4. OWL (Web Ontology Languages).

D. Query Processing

Tools from both traditional SQL3 and Information Retrieval Systems are being adapted for use in the multi DB environment of the Web .The tools needed to access Web-data include those that are familiar to database management.

7. CONCULSION

This paper reviewed the main components of a content based image retrieval system, including image feature representation while highlighting the past and current technical achievement Open research issues are identified and future research directions are suggested .In retrieval system to achieve fast retrieval speed and make the retrieval system scalable to large size image collection, an effective multidimensional technique is required and an indispensable part of whole system.

8. REFERENCES

1. Ms.Sayali S.PawarProf.R.S.Chaure.**A New Trend Content-Based Image Retrieval Technique used in Real Time Application**.International Journal of Advanced Research in Computer Science and Software EngineeringVolume 4, Issue 6, June 2014

2. Gagandeep Singh Narula **Improving Statistical Multimedia Information Retrieval (MIR) Model by using Ontology.** International Journal of Computer Applications May 2014

3. NavdeepKaur .**Content Based Video Retrieval with Frequency Domain Analysis Using 2-D Correlation Algorithm** .International Journal of Advanced Research in Computer Science and Software Engineering.Volume 4, Issue 9, September 2014

4. PoojaShinde .**Late Semantic Fusion Approaches for Multimedia Information Retrieval with Automatic Tag Generation.** International Journal of Computer Applications (0975 – 8887)Volume 130 – No.5, November2015

5. 1Telkapalli Murali Krishna, 2Habtamu Fanta, 3Sreedhar Appalabatla**. Trends and Techniques in Information Retrieval System (IRS).** Issue7,july2015.