International Journal of Computational Intelligence Techniques, ISSN: 0976–0466 & E-ISSN: 0976–0474
Volume 1, Issue 1, 2010, PP-02-05

Searching video blogs with integration of context and content analysis

Catherine Chitra and Anitha Julian
Department of Computer Science and Engineering, Velammal Engineering College,
Chennai, 600 066, catherinechitra@gmail.com, anitha_julian@yahoo.com

Abstract – Now a day's video blogs are playing an important role. To effectively manage the vlogs and make them more conveniently accessible for users is a challenging problem. In this paper we proposed a novel vlog management model which is consists of two stages: annotation and search. In Vlog annotation, we extract informative keywords not only from the textual content of the target vlog itself but also from external resources which are semantically and visually relevant to it. Sentiment evaluation obtained from comments. In vlog search we adopt saliency based matching to make the search results. We use different ranking strategies are adapted to the user.
Keywords-Annotation expansion, ranking, saliency-based matching, vlog annotation, vlog search

I. Introduction

Video blogging, sometimes shortened to Vlogging or video blogging is a form of blogging for which the medium is video entries are made regularly and often combine embedded video or a video link with supporting text, images, and other metadata[1, 2]. Because of the richness of expression of videos, vlogs are much more powerful and compelling than text-only blogs, and thus gain much attention now a day. A blog is a type of website maintained by an individual with regular entries of commentary, descriptions of events or other material such as graphics or video. Most blogs are primarily textual, although some focus on artlog, photolog, sketchlog, vlog, Mp3 blog. From this vlog we obtain some useful information such as submitting time, viewed time, comment entry number and rating. Many number of vlogs growing exponentially, how to manage the vlogs effectively and conveniently accessible has become a challenging problem. In this paper, we will discuss this problem in detail. It consist of two stages: annotation and search.

A. Vlog Annotation

Video-centered vlog has the advantage over general video because all the textual content in a vlog is used to describe the video. This annotation will be more suitable and less expensive than general video. As we know the manual annotation is labor-intensive and time-consuming, automatic annotation has become the major direction of research efforts. As a result, an effective method for automatic vlog annotation is obviously the key to solving the problem mentioned above. Basically vlogs are created by vloggers from all over the world, it is expected that the words used in vlog texts are subjective and Nonstandard [5, 6]. Therefore, the annotation extracted directly from the vlog text is, in most cases, of low quality, which will consequently put at risk the performance of vlog search. Existing approach proposed vlog annotation model, which comprises intrinsic annotation creation from the target vlog and annotation expansion from relevant external recourses. Traditional annotation focuses semantic aspect, while sentimental aspect is totally neglected. We propose an effective way for automatic vlog annotation, which analyze vlogs semantically and sentimentally. In order to acquire high-quality annotation for a vlog, we first extract intrinsic annotation from the original text of a vlog; then, using relevant external resources, we improve the intrinsic annotation by context- based annotation expansion. We make better use of the context information both the global context of the whole vlog and the local context of each keyword and greatly boost the quality of annotation. Besides semantic annotation, we perform sentiment analysis based on the comments to obtain the overall evaluation of the vlog [3, 4].

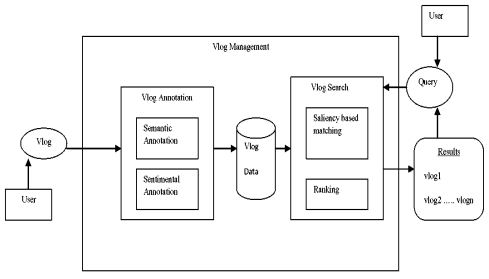

Fig. 1- Vlog Management Model

B. Vlog Search

The aim of vlog search is to provide the user with vlogs that are most relevant to the submitted query.

To improve the overall search performance we introduce content-based video search. To measure the similarity of each model linear mixing or discriminative classifier are used. We propose a novel saliency-based similarity matching approach for vlog search. We place major emphasis on the saliently similar aspect of the objects to be compared, and thus make the search result more agreeable for users.

After the relevant vlogs are obtained using saliency-based matching, different ranking strategies are adopted according to the user's specific interest. Finally, the ranked vlogs are clustered according to the category

When a user uploads a vlog to the database, semantic annotation will run automatically using vlog text and relevant external resources, and sentiment evaluation is obtained from vlog comments illustrated from Fig 1.After that, the vlog will be stored in the database with the corresponding annotation and evaluation. When a user submits a query to the search engine, the vlog search module will access the vlog database to obtain relevant vlogs by saliency-based matching; then, using user specified ranking strategy and clustering, the results will be returned to the user in a well-organized manner.

II. Techniques Used In Vlog Annotation

In this section we discuss word correlation measurement, intrinsic annotation, vlog categorization, context based annotation and sentimental evaluation.

A. Word Correlation Measurement

There are two approaches used to calculate word correlation. Existing approaches to measuring word correlation mainly fall into two categories: the lexical and the statistical approaches.

Lexical: Relational theories of lexical semantics hold that any word can be defined in terms of the other words to which it is related. For example, a definition of the compound noun "sugar maple" might start with its sub-name, "A sugar maple is a maple that . . . ," followed by a relative clause based on Part-name or other semantic relations that specify how sugar maples differ from other kinds of maples[7].

Statistical: As we know Statistical is data driven and flexible to measure the relevance of two words by using NGD method[8].This new method is proposed in to extract semantic knowledge from the world-wide-web for both supervised and unsupervised learning using the Google search engine in an unconventional manner. The approach is novel in its unrestricted problem domain, simplicity of implementation, and manifestly ontological underpinnings. We give evidence of elementary learning of the semantics of concepts, in contrast to most prior approaches outside of Knowledge Representation research that have neither the appearance nor the aim of dealing with ideas, instead using abstract symbols that remain permanently ungrounded throughout the machine learning application.

The world-wide-web is the largest database on earth, and it induces a probability mass function, the Google distribution, via page counts for combinations of search queries. Then we take the reciprocal of the revised NGD as the correlation or similarity of two words and, resulting in

$$\mathrm{Sim}_{\mathrm{word}}(w_1, w_2) = \log \frac{\mathrm{n}(w_1, w_2)}{\mathrm{n}(w_1)\mathrm{n}(w_2)} \qquad (1)$$

Fig-2 Vlog from Youtube

Define the probability that a word occurs as: p(w)=n(w)/M. where M is the total number of web pages possibly returned by Google. then we have

$$\begin{aligned}\mathrm{Sim}_{\mathrm{word}}(w_1, w_2) &= \log \frac{M\mathrm{p}(w_1, w_2)}{M\mathrm{p}(w_1) \cdot M\mathrm{p}(w_2)} \\ &= \log \frac{\mathrm{p}(w_1, w_2)}{\mathrm{p}(w_1)\mathrm{p}(w_2)} - \log M \\ &= \mathrm{PMI}(w_1, w_2) - \log M\end{aligned} \qquad (2)$$

Where PMI (w1,w2) is the Point wise Mutual Information between w1 and w2. From (1) and (2), we
derive the relationship between NGD, ' >vor^, and PMI as follows:

$$\frac{1}{\mathrm{NGD}} \propto \mathrm{Sim}_{\mathrm{word}} \propto \mathrm{PMI}. \quad (3)$$

The larger the value of ^miword > the more relevant the two words are on semantics. In order to make the similarity measurement more suitable for vlog words which are video-centered, we use Google Video3 searcher instead (of Google) to acquire the number of returned results.

B. Intrinsic Annotation Creation

The textual content Consist of title, description, and comments, among which the title and description are closely related to the semantics of the vlog video illustrated in Fig 2. Therefore, we first extract annotation words from the title. After stop word removal, important words are reserved in
the word set "title- After keywords extraction from the title and description, we merge word and getting the below equation.
we should also extract annotation words from the body of the textual content, i.e., the vlog's description. Similarly, we remove the stop words beforehand. Then, using the standard text processing technique such as tf-idf, $W_{\mathrm{description}}$ we can acquire the important words and create another word set,

$$W_{\mathrm{intrinsic}} = W_{\mathrm{title}} \cup W_{\mathrm{description}}. \quad (4)$$

C. Vlog Categorization

Vlog Categorization plays a major role in Vlogging. For example, NBA game of the team Houston Rockets will have an annotation word "rockets". Only from the word "rockets", the user will be confused whether it is a vlog concerning military.
However, once we have confined its category to sports, there will be no doubt that the "rockets" here is the name of a basketball team. In this paper, we focus on the following seven categories, which cover most of the hot topics of vlogs:

- Autos & Vehicles
- Film & Animation
- Music
- News & Politics
- Pets & Animals
- Sports
- Travel & Events

These categories are a subset of the categories defined by You Tube.

$$\mathrm{Cat}_{\mathrm{word}}(w) = \arg\max_{c \in C} \mathrm{Sim}_{\mathrm{word}}(w, c) \quad (5)$$

Where C is the set of all categories.

$$\mathrm{Cat}_{\mathrm{vlog}}(v) = \operatorname*{mod}_{w \in W_{\mathrm{intrinsic}}(v)} \mathrm{Cat}_{\mathrm{word}}(w) \quad (6)$$

The category most closely related to a word is taken as the most probable category the word falls into
Where the function mod returns the value that occurs the most frequently.

D. Context-Based Annotation Expansion

To achieve a high-quality annotation, we perform annotation expansion based on the specific context of the vlog. Therefore, we adopt YouTube as our labeled database. Given a textual query, the text-based video search engine in YouTube can return rather good results, hence we use YouTube search to find the semantically related videos.
In classic search-based annotation methods needs labeled dataset. That's label's quality and the size are important factors. We make a large dataset and high quality label is time consuming and labor-intensive.

E. Sentimental Evaluation

The users can decide whether a vlog is worth viewing based on the existing comments. User's comments will be either text based or speech. The main process of the sentiment evaluation is to extract annotations words from the user's comments using speech tagging.
In speech tagging to extract nouns, adjectives and verbs from each comment entry. Each extracted word is assigned with a sign +1 or -1 indicating whether it is modified by a negative adverb or not.
Every time a vlog is viewed, new comment entries can be attached. The set of comments is ever-growing and sentimental evaluation of a vlog is ever-changing.
The sentiment evaluation is stored along with the semantic annotation to facilitate vlog search. To improve the performance context is a key factor.

III. VLOG Search

Vlog search method consists of two categories. Saliency-Based Matching and Personalized Ranking.

ISSN: 0976–0466 & E-ISSN: 0976–0474, Volume 1, Issue 1, 2010

A. Saliency-Based Matching

We propose a novel saliency-based similarity matching approach for vlog search based on the characteristic of human perception, in vlog search; two aspects should be taken into consideration: the high-level semantics and the low-level video features.

If a vlog is similar to the query vlog in both high level semantics and low-level features we obtain the best matching result. If a vlog is similar to the query vlog only in high-level semantics, which means vlog annotation is almost same to the query vlog. This is otherwise called as extensive reading.

If a vlog is similar to the query vlog only in the low-level aspect, vlog's central video is almost same to the query vlog. This is otherwise called as intensive reading. If the submitted query is not a whole vlog i.e., the query is just some textual words, or image.

B. Personalized Ranking

After submitting the query, the users can personally specify the

- Ranking criteria by providing
- Last submitting Vlogs
- Most attar active Vlogs
- Heatedly discussed vlogs.
- Ranking by popularity

As a result, after ranking, we organize the vlogs by clustering them according to their category information. Vlogs with the same category information fall into a cluster. With the help of the clustered organization, the semantics become more coherent within each cluster, thus the users can browse the results efficiently and locate the specific vlogs of interest rapidly.

IV. Conclusion

Using this features , we will make a better use of the advanced visual and audio features of vlogs Management. Some advanced techniques in natural language processing and data mining can also be applied to obtain higher-quality textual features. Furthermore, besides vlog annotation and search, we are interested in other areas of vlog management, such as vlog submission and vlog storage.

Acknowledgement

First of all I thank the almighty for giving me the knowledge and courage to complete this project work successfully. I express my gratitude to our respected principal Dr. J. Shanmugam for his constant support and encouragement. My sincere thanks to the HOD Prof. B. Rajalakshmi for his inspiring support to my project. I express my sincere thanks to Mrs. Anita Julian Asst Professor my project internal guide for his inspiring support to my project. Regards are also due to our family, classmates and friends who offered an unflinching moral support for completion of this project.

References

[1] J. C. Dvorak, The Blog Phenomena 2002[Online].Available: http://www.pcmag.com/article2/0,1895,81500,00.asp, Online Essay in PC Mag.

[2] A. Rosenbloom, "The blogosphere: Introduction," Commun. ACM, pp.31–33, 2004.

[3] B. A. Nardi, D. J. Schiano, M. Gumbrecht, and L. Swartz, "The blogo-sphere: Why we blog," Commun. ACM, pp. 41–46, 2004.

[4] B. A. Nardi, D. J. Schiano, and M. Gumbrecht, "Communities: Blog-ging as social activity, or, would you let 900 million people read your diary?," in Proc. 2004 ACM Conf. Computer Supported Cooperative Work, Chicago, IL, 2004, pp. 222–231.

[5] J. Hoem, "Videoblogs as 'collective documentary'," in BlogTalks 2.0: The European Conf. on Weblogs, 2004, pp. 237–270.

[6] D. Stolarz and L. Felix, "Creating your own media empire with podcasts & video-blogs," Streaming Media West, 2005

[7] G. A. Miller, "WordNet: A lexical d a tabase for English," Commun.A, pp. 39–41, 1995.

[8] R. Cilibrasi and P. Vitanyi, "Automatic extraction of meaning from the web," in Proc. IEEE Int. Symp. Information Theory, Seoul, Korea,2006, pp. 2309–2313.