Social Media Service for TV Programs

Soonhong Jung, Jacheon Yoon, Hyeokman Kim*, Seonkyu Park**, and Sanghoon Sull
School of Electrical Engineering, Korea University, Korea
{shjung, jcyoon, sull}@mpeg.korea.ac.kr
**Department of Computer Science, Kookmin University, Korea*
**hmkim@kookmin.ac.kr*
***New Media Developing Team, Korean Broadcasting System, Korea*
***psk@kbs.co.kr*

Abstract

A variety of media sharing websites such as YouTube and Flickr are becoming more popular. Hulu provides a video on demand service (VOD) for TV shows and movies through Internet. In this paper, we focus on premium TV programs. We designed and implemented a social media service system that is sharable, searchable and targetable while respecting content provider's right. The proposed system has been used by Korea Broadcasting System (KBS) that is the largest terrestrial broadcasting station in Korea to provide PC users a social media service for their broadcast TV programs through KBS's Internet VOD site. We also developed a metadata scheme enabling the social media service. We present the overall system and the promising experimental data collected for two years.

Keywords: Social media service (SNS)

1. Introduction

The rapid growth and popularity of many social media websites, including YouTube, Flickr, MySpace, Facebook, etc. have enabled users to easily share and annotate social media. Hulu [1] is a VOD website that provides users ad-supported premium videos of TV shows and movies through Internet and allows users to send the links to videos to their web pages of social media websites such as MySpace and Facebook. However, there still remains a need for developing searchable, sharable, targetable solutions while respecting content provider's right for a variety of devices such as PC, smart TV, and mobile devices.

In this paper, we designed and implemented a social media sharing service system for TV programs that is sharable, searchable, and targetable while respecting content providers' rights for the users of PCs, smart TVs, and mobile devices. To facilitate user-friendly video sharing while discouraging illegal sharing, we designed a visual bookmark [2-3] comprising the temporal position or pointer of the bookmarked frame and its thumbnail image and also implemented a visual bookmark bulletin board system (VBBS) allowing users to post their visual bookmark to a user community by one click [4]. And, to provide the searchable and targetable service for social media, a semi-automatic video indexing tool has been developed for content and service providers to attach keywords or tag (or scene associated information) to scenes of interest based on our own metadata scheme.

2. System Description

In this section, we describe our proposed system whose whole service block diagram consisting of a content provider, a portal site, a metadata service provider and users of PC, smart TV and mobile devices as shown Figure 1. The content provider, KBS in our case, has offered VOD services to the Internet users since 2000, and the metadata service provider has generated, collected and managed the metadata for the KBS video contents since 2007. The metadata service also started to provide the metadata to the portal site Naver since 2008 so that users of the portal site can perform the scene-based video search for the KBS contents and play the scene from KBS VOD site. Also, users of the smart TV can view VBBS generated by PC users through their smart TVs.

The scene associated information (SAI) such as people, products, locations and background music on a scene of a video from the content provider is generated by using the indexing server in the metadata service provider. Also, additional metadata on a scene can be

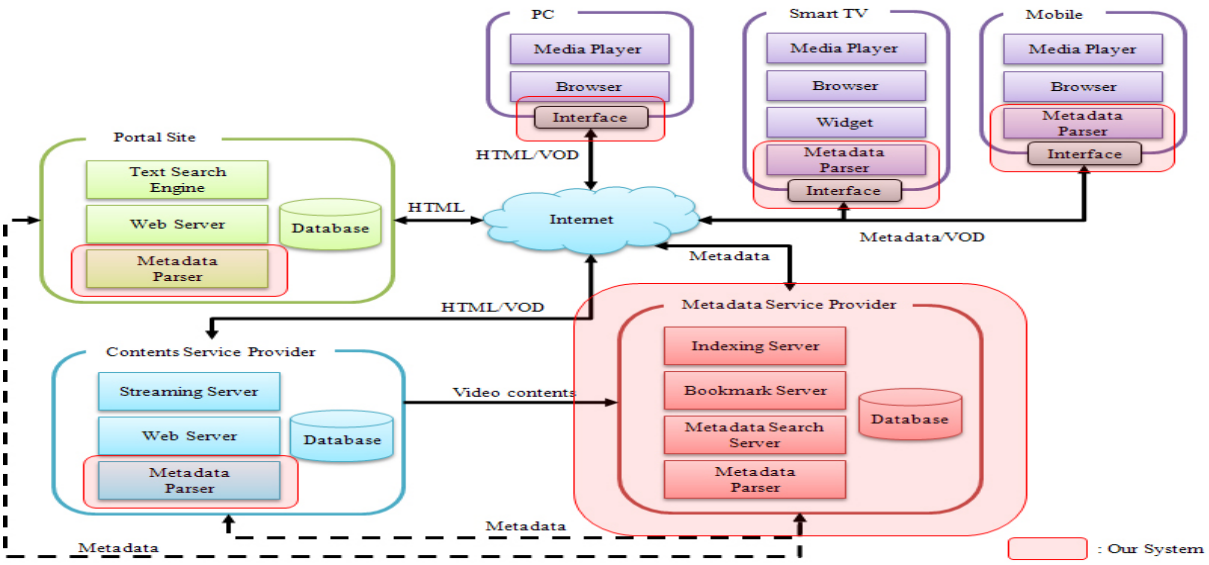

Figure. 1. System block diagram.

obtained from user tags and comments that can be input through a visual bookmark interface. The collected metadata is stored in the database of the metadata service provider.

3. Experimental Results

In this section, we describe the details of our implementation of the social media service. Our system consists of one indexing server, five bookmark servers, two metadata search servers, and two database servers. The bookmark servers have one Quad-Core Intel Xeon CPU (2.0 GHz), and other servers have two Quad-Core Intel Xeon CPU (3.0 GHz). All servers operate on Linux except for indexing server which operates on Windows.

Since August of 2007, KBS has been provided the video sharing service from KBS VOD web site whose number of daily visitors is recently over 1 million. Figure 2 shows the numbers of page views and video plays on KBS VOD site from August of 2007 to March of 2009. We can see that the bookmark and VBBS services have significantly increased the number of users' video viewings. Currently, the number of page views is up to 100 million in September of 2012.

4. Conclusion

In this paper, we described a social media service system that is sharable, searchable and targetable for TV programs. We also designed the metadata scheme enabling the social media service. Since the service of KBS VOD site is started from 2007, we observed the

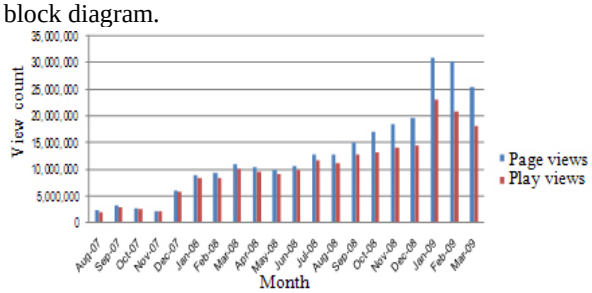

Figure. 2. Numbers of page views and video plays.

followings: i) The visual bookmark and VBBS significantly increase the number of users' video viewings. ii) The number of visual bookmarks generated by users and the view counts for very popular TV programs are higher compared to other programs if the viewers of the popular TV programs are also active users of video sharing service through Internet. iii) Providing scene-based metadata to portal sites for scene-based search increases video views. It will be an interesting challenge to design a better social media service system based on our experience.

References

[1] http://www.hulu.com

[2] M. D. Swenson and E. Troche, "Bookmark for multi-media content", US Patent no. 6,064,380, IBM, May. 2000.

[3] A. Brampton, A. MacQuire, M. Fry, I. A. Rai, N. J. P. Race, L. Mathy, "Characterising and exploiting workloads of highly interactive video-on-demand," *Multimedia Systems*, Springer, May. 2008.

[4] S. H. Sull, H. M. Kim, M. G. Chung, J. C. Yoon, H. S. Choi, "System and method for indexing, searching, identifying, and editing portions of electronic multimedia files", US Patent, no. 7,624,337, Nov. 2009.