A Social Network Based Collaborative Video Story Composition Platform

Chen Wang, Meng Meng, Xiangmin Zhou, and Rajiv Ranjan

Information Engineering Lab, CSIRO ICT Centre, Australia
{chen.wang,mendy.meng,xiangmin.zhou,raj.ranjan}@csiro.au

1 Introduction

There is a large number of videos produced and stored in data repositories on a daily basis. Story-telling is a common use-case for using these videos where a user composes a set of videos together to tell a story, either for learning purposes or sharing experiences. For example, a news editor may search and compose story based on video collected from multiple private and public repositories; an instructor may produce teaching materials using a set of publicly available video clips. Existing search engines have limitation on identifying useful video contents for users with different needs [2]. For a user who attempts to compile a story using a variety of videos, there are a few challenges with existing technologies. A search engine often returns a long list of videos that are relevant to the keywords the user enters into the search engine. How the videos in the list are suitable for the story line requires the user's further investigation and the amount of work involved often overwhelms the user considering the number of videos returned by a search engine. It is often the case that the highly ranked videos are not the most appropriate ones for a story line under composing. In addition, videos are not organized in a structured manner based on the content, which makes identifying videos that match the story topic difficult and time consuming.

Many existing work tackle this problem by integrating textual and visual concepts to group videos [3]. Our method treats story-telling as a collaborative process. It is different to other methods mainly in that we integrate collaborators' contributions via social networking services to help story-telling. These contributions include adding comments, recommending relevant videos etc. With certain automated information processing, the method can effectively reduce the workload of an individual when composing a story out of a large number of videos from various sources.

We assume that the story composer has a number of friends or collaborators who have knowledge on the story and are willing to contribute to the story. It is common in the real world that these people participate in a same event or have mutual interests on the topics of the story. As stories are diverse and the group of people who may be interested in contributing them are dynamic, managing these users with different interests is a challenging problem. We address this problem by leveraging the power of social networks to organize a dynamic group of people for contributing to a story.

A. Ghose et al. (Eds.): ICSOC 2012, LNCS 7759, pp. 443–446, 2013.

The proposed story composition platform has the following novelties:

1. The platform makes story-telling a collaborative process and supports the main author of a story to interactively integrate collaborators' input including comments and recommendations;
2. The collaboration is dynamically organized by leveraging the services provided by social networks, in our case, Facebook services;
3. The platform aggregates collaborators' recommendations and comments. It is capable of processing certain information in an automatic manner, e.g., it can organize information based on topics and timeline to further help story composition.

2 System Overview

The platform mainly consists of the following two components:

1. A Web user interface as a working bench for a story author to compose stories. The user interface requires the story author to login using her Facebook account. The authentication is done using *OAuth 2.0 protocol* [1]. The access of user information is through Facebook Open Graph API.
2. A social information aggregator that does the following tasks:
   (a) publishes the story author's activities to a social networking site. The activities include the metadata of the story under authoring as well as ongoing editing activities;
   (b) retrieves relevant information contributed by collaborators, including a collaborator's comments to the story and recommended relevant videos by the collaborator;
   (c) processes the information and discovers certain topics as well as timelines to present to the story author.

Fig. 1 gives an example that shows the basic information flow in the platform. In this scenario, an author creates a story about Sam Stosur, an Australian tennis player. Firstly, the author, e.g., a sports news editor, signs in the platform using her Facebook account. Secondly, she submits a query with keyword "Sam Stosur" to search for videos to start a story. The platform passes the query to the search services of video repositories. Each video repository returns a list of relevant videos. The author may select one and add it to the storyboard. Thirdly, the platform automatically publish the action to Facebook. Fourthly, a collaborator who is in the author's friend list in Facebook may add comments or recommend videos that are related to the story. In the next step, the recommender subsystem processes these comments and recommendations. It then presents recommendations to the story author who may take the recommendation and make changes on the storyboard.

Apparently, an active collaborator is likely to recommend videos that are more relevant to the story line or add comments that can help the author to improve the story line. However, when there are a number of collaborators, reviewing recommendations and comments may become a time consuming process. In our platform, we provide a recommendation service for easing the task.

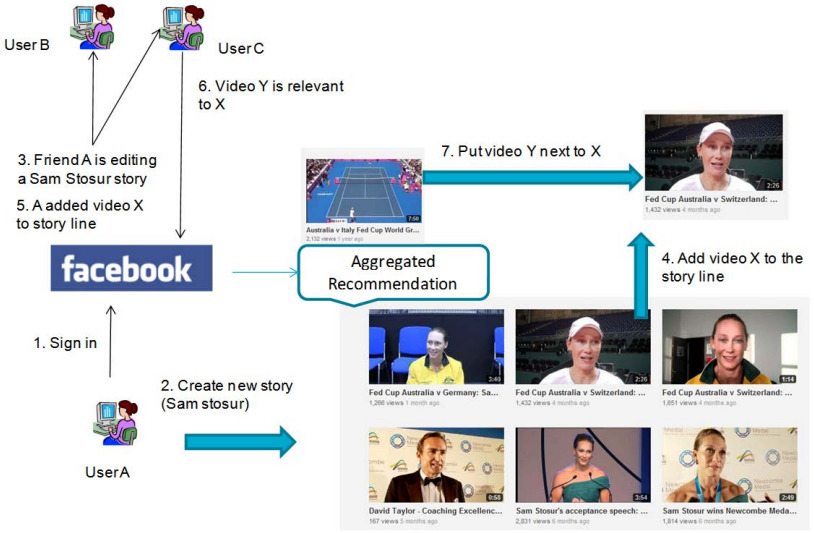

Fig. 1. An example of the basic information flow in the platform (the blue arrow represents the activities of the story author)

2.1 Recommender

The recommendation service fits into the system as shown in Fig. 2. The recommender refines both video and text data from video sources and the social information aggregator. A video data source can be a private data repository or a public data repository. The social information aggregator maintains information such as the author's story creating activities, the collaborator list and manages the input from collaborators. The recommendation service produces the following three types of recommendations to the story author:

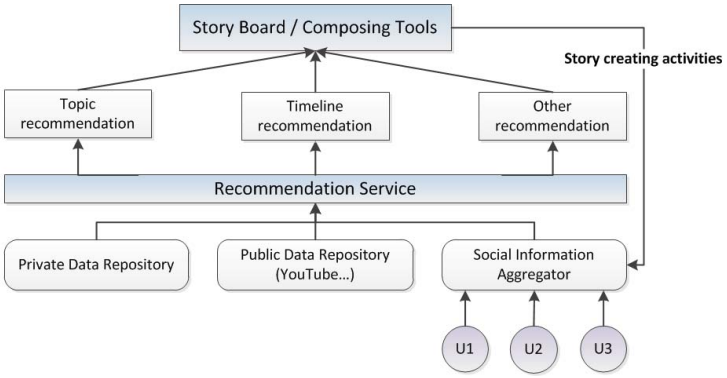

Fig. 2. The recommender architecture

1. Relevant topics: a list of videos categorized by topics that can be derived from the story line under composition. A collaborator is capable of identifying topics among a set of videos and recommending these videos to the author.
2. Timeline recommendation: a group of collaborators may annotate videos based on the event time in the videos. The service can present related videos along the time line to help story composition.
3. Other recommendation: mainly contains comments collected from the social information aggregator that have no clear structures.

3 Demo Script

In this demo, we use YouTube as the video repository and will show the following procedures:

1. The story author signs into the system using her Facebook account;
2. The author uses the search functionality to find videos. This will show how the search results are presented and how a story is initiated;
3. The collaborators sign in to their Facebook account and see the actions of the story author;
4. A collaborator recommends related videos and comments on the story;
5. The storyboard organizes collaborators' input based on different topics. We will show how the story author uses the recommendations to further develop the story.

The video for the demo is accessible at `http://www.youtube.com/watch?v=XvgwL6n9ZZI` (A high resolution version can be found at `http://www.ict.csiro.au/staff/chen.wang/demo/icsoc12-demo.mp4`).

References

1. Hammer-Lahav, E., Recordon, D., Hardt, D.: The oauth 2.0 authorization protocol. Network Working Group Internet-Drafts, `http://tools.ietf.org/pdf/draft-ietf-oauth-v2-12.pdf`
2. Hong, R., Tang, J., Tan, H.-K., Ngo, C.-W., Yan, S., Chua, T.-S.: Beyond search: Event-driven summarization for web videos. ACM Trans. Multimedia Comput. Commun. Appl. 7(4), 35:1–35:18 (2011)
3. Wu, X., Ngo, C.-W., Li, Q.: Threading and autodocumenting news videos: a promising solution to rapidly browse news topics. IEEE Signal Processing Magazine 23(2), 59–68 (2006)