December 04, 2017

Interface for Exploring Videos

Christopher Pentoney

Rodrigo de Oliveira

Anshuman Kumar

Mary Cassin

Joshua Lewandowski

Interface for Exploring Videos

ABSTRACT

Searching and browsing for videos is a common task. Search engines attempt to provide a quality user experience by showing the most relevant results at the top of a results page. However, efficiency and relevancy can sometimes be less of a concern, e.g., when browsing for interesting content, such as videos, e.g., without entering a search query. When users browse or search for videos, showing a hierarchical list of search results does not enable easy discovery of other content that they may enjoy.

This disclosure describes techniques to improve user enjoyment when browsing videos, e.g., directly, or after performing a video search. Clusters of videos from various sources are displayed, e.g., in a virtual reality user interface. The distance between the clusters represents the overlap of viewer audience from respective video sources.

KEYWORDS

video search; content discovery; video discovery; virtual reality; user interface

BACKGROUND

Searching and browsing for videos is a common task. Search engines attempt to provide a quality user experience by showing the most relevant results at the top of a search results page. However, efficiency and relevancy can sometimes be less of a concern, e.g., when browsing for interesting content, such as videos, e.g., without entering a search query. When users browse or search for videos, showing a hierarchical list of search results does not enable easy discovery of other content that they may enjoy.

Video search is a context in which other ways of displaying search results can be useful. For example, when a user searches for video content, they are searching for entertainment, for

videos that pique their interests. Therefore, a typical display of results, e.g., in a list format based on efficiency and relevancy, may not surface additional potential content that a user is likely to be interested in watching.

DESCRIPTION

This disclosure describes techniques to increase user enjoyment and to enable users to easily discover additional interesting video content when exploring online videos, e.g., by browsing or searching for videos. Video results are displayed in a user interface that includes clusters that each represent different sources of videos. The distance between the different clusters corresponds to the estimated audience overlap between the respective sources. The interface used to display the video results is suitable as a virtual reality user interface.

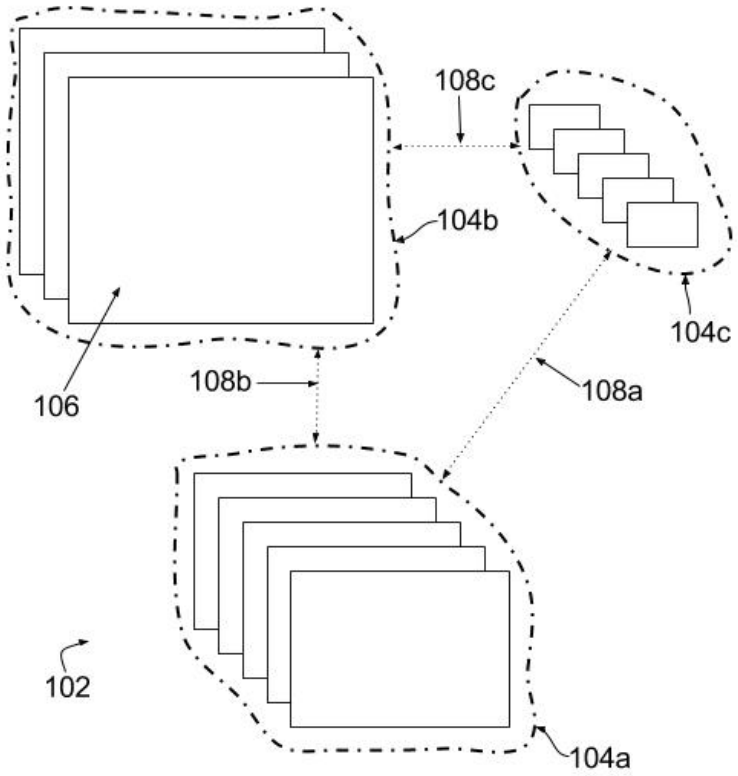

Fig. 1: Virtual reality user interface for display of clustered video results

Figure 1 is a portion of an example virtual reality interface to display video source results spaced a specified distance apart from one another corresponding to the amount of estimated audience overlap. Virtual reality interface (102) displays visual clusters of videos (104a, 104b, and 104c), each of which is separated by a respective distance (108a, 108b, and 108c) from other clusters of videos. Each visual cluster includes, for example, video thumbnails (106) for videos from the video source. Figure 1 is an example interface, and in different implementations, video thumbnails are not included. For example, instead of or in addition to video thumbnails, other information can be included.

The distances between clusters correspond to the audience overlap between the video sources. For example, cluster 104a is separated by a distance 108a from cluster 104c. The distance represents the extent to which the audience of the video source represented by cluster 104a overlaps with the audience of the video sources represented by cluster 104c. Clusters representing a first video source are shown closer to clusters representing other video sources that share a greater portion of the audience with the first video source. Clusters with less proportion of overlapping audience are shown at a greater distance from the first video source.

For example, if a user searches for videos from a specific comedian from a particular region or city, the interface displays thumbnail videos from the comedian as nearby to a cluster representing a source of comedy videos from another comedian that is from the same region or city as the first comedian. These clusters are near each other because of the overlapping audience of viewers. Although the user in this example searched for comedy videos from a particular comedian, the user may in fact find that the comedy videos from nearby clusters are also of interest.

The virtual reality interface displays these video sources as clusters of videos comprised of individual video thumbnails. The interface enables a user to fly between the clusters of video sources in virtual reality. This way, a user can see different segments of video results in interactive virtual reality separated based on audience overlap rather than simply viewing a textual list of results. A video source is any source of videos, such as videos authored by a specific user, videos posted to an internet video channel, videos by a specific internet video content curator, etc.

Each cluster of videos also includes bibliographic information about the source of the videos. For example, a cluster of videos may correspond to an internet video channel. The bibliographic information about the creator, upload dates, language, video duration, etc. can be listed or associated with the cluster. The relationships between the clusters can encourage the user to explore other content about a topic in which they are interested, and can also encourage users to discover new topics altogether.

The individual video thumbnails can be static or live thumbnails. The virtual reality interface can show clusters of related videos, wherein each cluster is made up of video thumbnails that play simultaneously. In another example, the video thumbnails are played once a user of the virtual reality interface zooms in or flies sufficiently close to a particular cluster. If a user likes the video content presented in a cluster, the user can easily fly over to a nearby cluster to see other video sources that were viewed by a similar audience.

The virtual reality interface enables 360-degree clusters of video results to be displayed to the user. Each cluster is differentiated by its distance to other clusters rather than in a textual list ordered hierarchically based on relevancy. The virtual reality interface can be utilized in

video browsing and search, and can also be beneficial for content discovery in social platforms or e-commerce portals.

The user interface focuses on making the process of discovering and viewing new sources of content enjoyable. Users are free to engage and view different clusters and videos contained therein and to choose any video to start watching immediately. The user interface makes reviewing results more fun because the user can interact with the video results and the individual videos contained therein in virtual reality. The farther a user travels in virtual reality, the user can find more variety and videos that are still of interest. For variety, the user may fly a longer trip to explore a further connected cluster.

To make the virtual reality interface entertaining and engaging it can also be presented as a universe of planets. For example, each video source can be represented by a planet and the user may fly to adjacent planets to view videos from another source with audience overlap. Further, the user can fly to and explore videos from a distant planet, e.g., a video source with less audience overlap. Other virtual reality themes could also be adopted, e.g., an ocean with various islands representing video sources, a theme park with rides representing video sources, a library with shelves representing various sources and books as clusters of videos, etc.

The present technique may also be used to display and explore results from other types of content that can be connected through a shared attribute. For example, the interface can enable the discovery of music, viewing of documents or web pages, and others. In these cases, the clusters can display sources of music, documents, web pages, etc. such as composers, artists, bands, specific journalists or news sources, document authors, etc. connected with a distance determined based on their audience overlap. For example, the virtual reality interface may display clusters of songs, wherein a cluster includes songs by a particular artist and wherein the

clusters are separated by a distance corresponding to the overlap of the audience that listens to music from the different clusters. In another example, the virtual reality interface can display clusters of news articles, wherein the clusters include articles by particular journalists or news sources, and are distanced in virtual reality based on the overlap of audience readership.

The entire virtual reality interface can be adapted for and displayed on one display, such as on a computer display. Additionally, a portion of the virtual reality interface can be displayed as a software-rendered globe coupled with controls that enable the user to drag portions of the virtual reality interface corresponding to exploring content in its virtual reality interface equivalent. Instead of a user moving their head to look around at the clusters of media in virtual reality, the user can click and drag using their mouse or finger on a screen.

In situations in which certain implementations discussed herein may collect or use personal information about users (e.g., user data, information about a user's social network, user's location and time at the location, user's biometric information, user's activities and demographic information), users are provided with one or more opportunities to control whether information is collected, whether the personal information is stored, whether the personal information is used, and how the information is collected about the user, stored and used. That is, the systems and methods discussed herein collect, store and/or use user personal information specifically upon receiving explicit authorization from the relevant users to do so. For example, a user is provided with control over whether programs or features collect user information about that particular user or other users relevant to the program or feature. Each user for which personal information is to be collected is presented with one or more options to allow control over the information collection relevant to that user, to provide permission or authorization as to whether the information is collected and as to which portions of the information are to be

collected. For example, users can be provided with one or more such control options over a communication network. In addition, certain data may be treated in one or more ways before it is stored or used so that personally identifiable information is removed. As one example, a user's identity may be treated so that no personally identifiable information can be determined. As another example, a user's geographic location may be generalized to a larger region so that the user's particular location cannot be determined.

CONCLUSION

This disclosure describes a virtual reality user interface that makes browsing videos enjoyable. The videos are obtained directly from a video source (e.g., a video hosting website, a social media feed, etc.), from a video search, etc. Video results are shown as clusters representing video sources. Each cluster is separated from other clusters based on the extent to which the audience of video sources overlap. Using a user interface per the present techniques, users can discover video content easily, focusing on new sources in topic areas they are already interested in or exploring new topics entirely.