January 21, 2019

Automatic dating of videos based on matching photos

Rainer Vincent Mager

Automatic dating of videos based on matching photos

ABSTRACT

This disclosure includes techniques to automatically date a video based on a matching photo. With user permission, the video is analyzed to determine an identity of a person and an identifying feature depicted in the video. Based on the identity of the person, a photo associated with the person in the video that includes the identifying feature is identified. Metadata is extracted from the image to determine a date of capture of the image. If the date of capture of the image is different from the date of capture of the video, a suggestion is provided to the user to change the date of capture of the video to be the same as the date of capture of the image.

KEYWORDS

- capture date

- creation date

- video timestamp

- photo library

- chronological organization

BACKGROUND

Media applications such as photo and video libraries typically display videos and images captured by a user based on a creation date. When a photo is edited, the metadata often includes the creation data and adds an edit date that reflects the date of the edit. However, when a video is edited and re-encoded, some media applications change the creation date to the date that the video was re-encoded. This causes a problem when the user interface of the media applications displays the video based on the re-encoding date, which could be months or even years after the

creation date. As a result, users may have trouble finding their videos within such media

applications. Additionally, users may become annoyed at seeing the videos in the wrong order in

the user interface.

DESCRIPTION
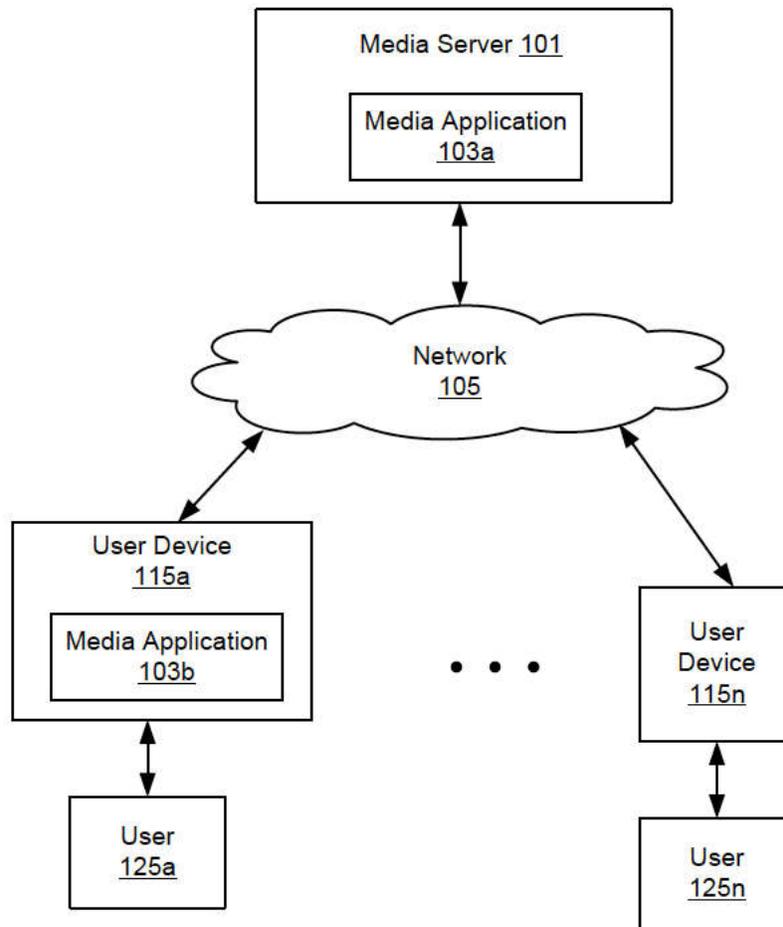

Fig. 1: Example media system

Figure 1 illustrates a diagram of an example media system that includes a media server

101, user devices 115a, 115n, which are coupled to each other via a network 105, e.g., a wired or

wireless network.

The media server includes media application 103a that is configured to receive, edit, and/or store media, such as videos and images. The media may be associated with a particular user. User devices 115a, 115n are computing devices (e.g., mobile device, tablet, laptop, wearable device, etc.).

Users 125a, 125n interact with their respective user device. The user devices access the media server via the network. A user captures images and a video of an event using a camera of their user device. Consider, for example, that the user captures images and videos during a vacation in Europe. The user utilizes media application to edit and/or re-encode the captured videos. For example, the user trims the videos, creates a new video from two or more videos, etc. The media application implements the edits and re-encodes the video.

At this stage, the media application updates the creation date of the video to the date that the re-encoding occurred. The media application transmits the re-encoded video to the media server. Per techniques described herein, the media application on the media server determines that the video has an incorrect date of capture and provides a suggestion to the user to change the date of capture. Below is an example method of how to identify and correct the date of capture of the video.
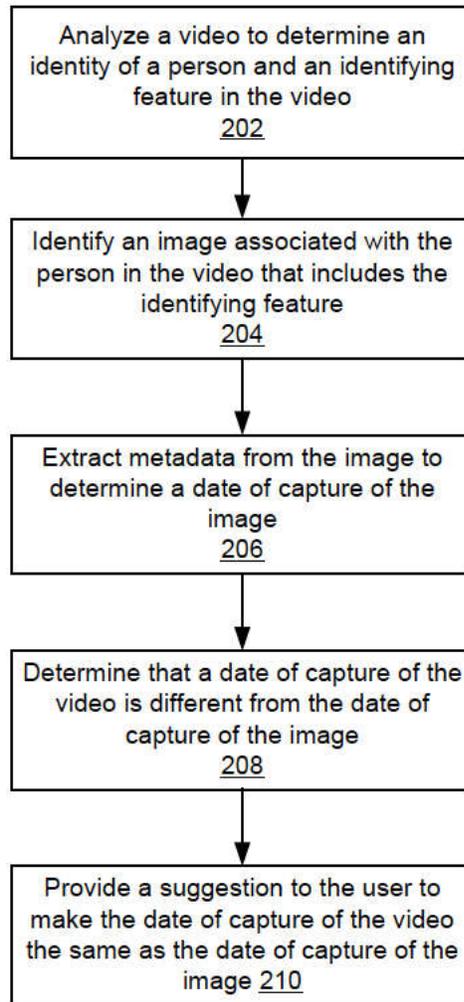
Fig. 2: Automatic dating of a video based on a matching image

Figure 2 is a flowchart of an example method of an automatic dating of a video based on a matching image. At block 202, the media application on the media server receives the re-encoded video from the user device and analyzes the re-encoded video to determine an identity of a person and an identifying feature in the video. The identifying feature can include, e.g., a particular landmark, clothing that the user is wearing, etc. For example, the media application determines an identity of the user of the media application and that the video was taken in front of the Eiffel Tower in Paris, France.

At block 204, the media application identifies an image associated with the person in the video that includes the identifying feature. For example, the media application identifies a photo associated with the user of the media application (e.g., stored in the user's media library) that includes the user in front of the Eiffel Tower. Further, when permission is obtained from other users, the media application can also identify the photo from images associated with other users. For example, the user and another user may have a shared photo album for the trip to Europe and the media application may identify the photo from the shared photo album.

At block 206, the media application extracts metadata from the image to determine a date of capture of the image. For example, the media application determines that the image was captured on 1/1/18.

At block 208, the media application determines that a date of capture of the video is different from the date of capture of the image. For example, the date of capture of the video was 7/1/18 as compared to 1/1/18. At block 210, the media application provides a suggestion to the user to make the date of capture of the video the same as the date of capture of the image.

Based on various factors (e.g., user preference, contents of the media library, etc.), the media application provides the suggestion only if there is a threshold difference between the date of capture of the video and the date of capture of the image. For example, the threshold difference may be at least seven days difference. Further, the media application may generate a confidence score that indicates a confidence that the video and the image are from the same event. The media application may provide the suggestion only if the confidence score exceeds a threshold confidence value, such as 80% confidence. The suggestion may be provided in the form of a request that is displayed within a user interface provided by the media application. In

some embodiments, if the user permits, the media application automatically corrects the date of capture of the video and provides an option to revert to the previous date of capture.

Alternatively, or in addition to the techniques described with reference to Fig. 2, the media application receives the re-encoded video from the user device and compares the re-encoded video to other videos associated with the user. If a similarity of the video to one of the other videos meets a similarity threshold, the media application determines that the re-encoded video is to be updated to have the same date of capture as the other video.

The described techniques can be utilized by any media application that provides backup, hosting and/or sharing of images and videos. For example, such applications can include cloud-based photo libraries, image/video editing applications, social networking services, etc. The suggestions to change the date of a video can be provided in a user interface of the media application, as a suggestion by a virtual assistant, etc.

Further to the descriptions above, a user may be provided with controls allowing the user to make an election as to both if and when systems, programs or features described herein may enable collection of user information (e.g., information about a user's social network, social actions or activities, profession, a user's preferences, or a user's current location), and if the user is sent content or communications from a server. 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. For example, a user's identity may be treated so that no personally identifiable information can be determined for the user, or a user's geographic location may be generalized where location information is obtained (such as to a city, ZIP code, or state level), so that a particular location of a user cannot be determined. Thus, the user may have control over what information is collected about the user, how that information is used, and what information is provided to the user.

CONCLUSION

This disclosure includes techniques to automatically date a video based on a matching photo. With user permission, the video is analyzed to determine an identity of a person and an identifying feature depicted in the video. Based on the identity of the person, a photo associated with the person in the video that includes the identifying feature is identified. Metadata is extracted from the image to determine a date of capture of the image. If the date of capture of the image is different from the date of capture of the video, a suggestion is provided to the user to change the date of capture of the video to be the same as the date of capture of the image.