March 31, 2016

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Nazif Tas

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Recommended Citation
Tas, Nazif, "PERSONALIZED MEDIA STREAMING SYSTEM", Technical Disclosure Commons, (March 31, 2016)
http://www.tdcommons.org/dpubs_series/184

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PERSONALIZED MEDIA STREAMING SYSTEM

ABSTRACT

A personalized audio/video streaming system can be used to synchronize an audio and a video of a content playing on separate devices by establishing an audio conference. The system receives a request for content associated with a content ID and a request to publish the audio of the content from a first device. The system, in turn, transmits the request with the associated content ID to a video server. The system receives the requested content and a stream ID from the video server and streams the requested content to the first device. The system further transmits the stream ID to an audio server. Further, the system establishes the requested audio conference on receiving a request to establish an audio conference and an audio ID, associated with the streamed content, from the audio server. Furthermore, the system receives a request, including the audio ID, to join the audio conference from a second device. Then, the system connects the second device to the audio conference.

PROBLEM STATEMENT

Media streaming devices enable users to stream and view content on large screens (e.g., televisions). Users can connect media streaming devices to their televisions and stream content on their televisions. However, in a room where the television is placed, there might be people who may not be interested (non-viewers) in the content being streamed by the user. The sound, volume, or language of the streamed content might disturb the other uninterested audience present in the room. To make the streaming experience more personalised, wireless headphones provide the user an option to enjoy the content without disturbing others in the room. However, this solution does require the user to spend money to buy additional hardware, i.e., wireless
headphones. Moreover, using wireless headphones negatively affect the social experience as the users with wireless headphones cannot interact with each other, share comments or reviews regarding the content being streamed. A technique for providing a more personalized and collaborative experience while viewing content on large screen devices is described.

DETAILED DESCRIPTION

The systems and techniques described here relate to a personalized media streaming system that can be used to provide a more personalized media experience to the user. The system can be implemented for use in an Internet, an intranet, or another client and server environment. The devices can be any electronic device, e.g., a laptop, mobile phone, desktop computer, tablet, electronic wearable device, PDA, over-the-ear headphones, surround sound speakers, home theatre systems, etc. The system can be locally installed on the electronic device or can be web-based. For example, it can be a functionality implemented at a cloud, a server, or a remote memory location. Alternatively, or additionally, the system can be implemented at a video server, an audio server, and/or a third party application.

Fig. 1 illustrates an example method for synchronizing video of a content being played at a first device with audio of the content being played at a second device. The first and second devices fetch the audio and/or video of the content independently. The method can be performed by a system such as a personalized media streaming system.

The system receives a request for content associated with a content ID and a request to publish the audio of the content from a first device (102). The first device can be any electronic device capable of displaying content. In one example, the first device is a large screen device in a...
room such as television. The request for content can be initiated by a user of the first device. Alternatively, or additionally, if multiple people are present in the room where the first device is placed, the request can be initiated by anyone in the room. The requested content can be a video desired to be streamed. The requested content can be associated with a content ID which is a unique ID that identifies the requested content. Further, the request to publish the audio requires an audio associated with the requested content to be published onto an audio conference. Additionally, the request to publish the audio informs the system to stream only the requested video content to the first device without the audio.

Further, the system transmits this received request with the associated content ID to a video server (104). The video server can be a media streaming application server or the like. In response to transmitting the request, the system receives the requested content and a stream ID from the video server (106). In an embodiment, the video server matches the content ID with media items present at the video server to find the requested content and transmits the requested content along with the stream ID to the system. In one example, the stream ID is a unique ID associated with the streaming being performed by the video server. In another example, the streaming ID can be based on the content ID.

Thereafter, the system streams the requested content to the first device (108). The system can stream the requested content to the first device for playback. In one example, streaming the requested content can include playing only the video of the requested content without the associated audio on the first device. In another example, streaming the requested content can include playing the requested content with the audio muted.
The system further transmits the stream ID to an audio server (110). The audio server can be a server associated with an application capable of providing audio functionality, e.g., any communications related application or service. The audio server is at least capable of streaming audio content. Alternatively, or additionally, the audio server is at least capable of storing audio streams associated with various video streams.

Further, the system receives a request to establish an audio conference and an audio ID, associated with the streamed content, from the audio server (112). The audio server, upon receiving the stream ID, can associate an audio ID with the streamed content and request the system to establish an audio conference using the audio ID associated with the streamed content. The audio ID can be a string of characters, a QR code, a unique audio tone, etc. The audio conference can enable multiple devices to connect to the conference using the audio ID and get access to the audio associated with the streamed content.

Further, the system establishes the requested audio conference (114). The audio conference is established between the audio server and the video server. The system establishes the audio conference by permitting the audio associated with the streamed content to be streamed independently by the audio server in synchronization with the content being streamed by the video server. Establishing the audio conference provides the audio server access to the audio associated with the streamed content and capability to stream the audio on various devices, when requested.

The system transmits the stream ID and the audio ID to the first device (116). The stream ID is associated with the video content being streamed at the first device and the audio ID is associated with the audio associated with the content being streamed. The first device can
display the stream ID and audio ID along with the streamed content. Alternatively, or additionally, the first device can display a unique code that represents the stream ID and audio ID. In one example, the unique code is a set of strings which can be read by viewers of the streamed content on the first device. Alternatively or additionally, the unique code can be a QR code, an audio tone, etc.

Further, the system receives a request, including the audio ID, to join the audio conference from a second device (118). In an embodiment, the first device and the second device belong to the same user. Alternatively, or additionally, the second device can belong to any viewer present in the room where the first device is placed. The request can be initiated by one or more people with access to the first device on which the content is being streamed and the audio ID is being displayed. For example, any number of users who happen to be in the vicinity of the first device can request to join the audio conference, via their respective second devices, using the audio ID displayed on the first device. The second device can be the user’s personal electronic device such as mobile device, laptop, and tablet. The user can request to join the audio conference by entering the displayed audio ID on the second device. Alternatively, or additionally, the user can enter the audio ID in an application on the second device to initiate the request for joining the audio conference. Alternatively, or additionally, the user can request to join the audio conference by scanning the audio ID from the first device using the second device. The system can receive multiple requests from multiple devices present in the room to join the audio conference.

Further, the system connects the second device to the audio conference (120). When connected, the second device can stream synchronized audio associated with the video content
being streamed on the first device. The system can connect any number of electronic devices which request to join the audio conference to the audio conference. This way each user can experience the audio independently, via their electronic devices, without disturbing non-viewers in the room. Each user can adjust volume levels according to their taste using their electronic devices, i.e., their second device. In an embodiment, the system can enable various users connecting to the audio conference to subscribe to various different variants of the audio associated with the streamed content. The different variants of the audio can include the audio in different languages. This way, each user can subscribe to audio associated with the streamed content in a language of their preference.

In an embodiment, the stream ID and audio ID can be shared with various electronic devices located at geographically different locations. This enables users to access audio of content being streamed at one location at a geographically different location. Alternatively or additionally, the system can enable the users who have joined the audio conference to share their views about the streamed content in the form of comments in real time, thereby, making it a collaborative experience for all the users or viewers. In an example, the users can share their comments or reviews using the application via which they connected to the audio conference.

Fig. 2 is a block diagram of an exemplary environment that shows components of a system for implementing the techniques described in this disclosure. The environment includes client devices 210, servers 230, and network 240. Network 240 connects client devices 210 to servers 230. Client device 210 is an electronic device. Client device 210 may be capable of requesting and receiving data/communications over network 240. Example client devices 210 are personal computers (e.g., laptops), mobile communication devices, (e.g. smartphones, tablet
computing devices), set-top boxes, electronic wearable devices, PDAs, over-the-ear headphones, surround sound speakers, home theatre systems, and other devices 210’ that can send and receive data/communications over network 240. Client device 210 may execute an application, such as a web browser 212 or 214 or a native application 216. Web applications 213 and 215 may be displayed via a web browser 212 or 214. Server 230 may be a web server capable of sending, receiving and storing web pages 232. Web page(s) 232 may be stored on or accessible via server 230. Web page(s) 232 may be associated with web application 213 or 215 and accessed using a web browser, e.g., 212. When accessed, webpage(s) 232 may be transmitted and displayed on a client device, e.g., 210 or 210’. Resources 218 and 218’ are resources available to the client device 210 and/or applications thereon, or server(s) 230 and/or web pages(s) accessible therefrom, respectively. Resources 218’ may be, for example, memory or storage resources; a text, image, video, audio, JavaScript, CSS, or other file or object; or other relevant resources. Network 240 may be any network or combination of networks that can carry data communication.

The subject matter described in this disclosure can be implemented in software and/or hardware (for example, computers, circuits, or processors). The subject matter can be implemented on a single device or across multiple devices (for example, a client device and a server device). Devices implementing the subject matter can be connected through a wired and/or wireless network. Such devices can receive inputs from a user (for example, from a mouse, keyboard, or touchscreen) and produce an output to a user (for example, through a display). Specific examples disclosed are provided for illustrative purposes and do not limit the scope of the disclosure.
DRA WINGS

100 Receive a request for content associated with a content ID and a request to publish the audio of the content from a first device

102 Transmit the request with the associated content ID to a video server

104 Receive the requested content and a stream ID from the video server

106 Stream the requested content to the first device

108 Transmit the stream ID to an audio server

110 Receive a request to establish an audio conference and an audio ID, associated with the streamed content, from the audio server

112 Establish the requested audio conference

114 Transmit the stream ID and the audio ID to the first device

116 Receive a request, including the audio ID, to join the audio conference from a second device

118 Connect the second device to the audio conference

Fig. 1
Fig. 2