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INTERFACE FOR SMALL-SCREEN MEDIA PLAYBACK CONTROL

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INTERFACE FOR SMALL-SCREEN MEDIA PLAYBACK CONTROL

ABSTRACT

A media player (e.g., a mobile phone, a tablet computer, a laptop computer, a television, etc.) may present a graphical user interface (GUI) that includes controls for interacting with a media file. The controls may include a play button, a pause button, and a progress bar with a marker designating the present point of playback (i.e., the current frame). The media player may enable user manipulation of the present point of playback, also referred to as media scrubbing, by moving the marker along the progress bar in response to user input dragging the marker along the progress bar. The GUI may be displayed on a screen of any size and shape (e.g., rectangular or non-rectangular). Displaying the GUI on a small or non-rectangular display, such as on a smart watch, may inhibit effective media scrubbing by making the progress bar too small for effective and/or accurate user interaction (e.g., smaller screens may result in a size of the progress bar becoming relatively small as compared to a size of a user's finger). This disclosure provides techniques that enable effective and/or accurate media scrubbing on a small and/or non-rectangular display.

DESCRIPTION

A media player may present a GUI that enables effective and/or accurate media scrubbing on a small and/or non-rectangular display. For instance, a media player may output a first GUI that includes some controls (e.g., a rewind button, a pause button, a fast-forward button, and an indication of a present point of playback). Responsive to receiving user input to activate a playback manipulation mode (e.g., a long press of one of the displayed controls, such as the pause button), the media player may output a second GUI that includes a control for

manipulating the point of playback. One example of such a manipulation control is a circle that the user can rotate to manipulate the point of playback.

The example computing device 1 shown in FIG. 1 may output GUIs to enable effective and/or accurate media scrubbing on a small and/or non-rectangular display.
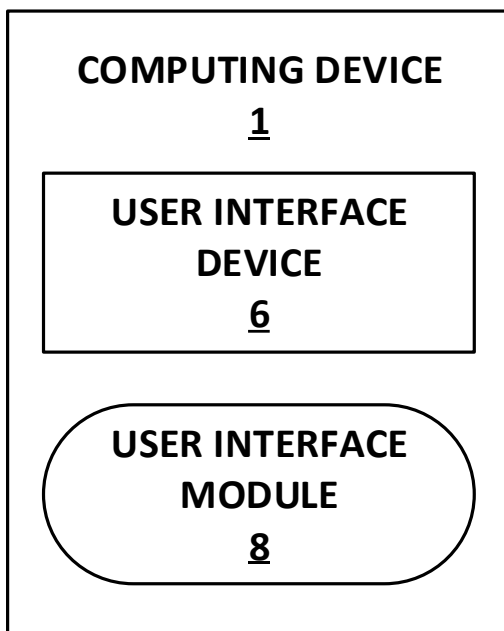

FIG. 1

Computing device 1 may represent any type of computing device that allows control of a media player. Examples of computing device 1 may include a cellular phone (including a so-called "smartphone"), a wearable computing device (such as a so-called "smartwatch"), a television (including a so-called "smart television"), and the like. Computing device 1 may include one or more processors, a memory (which may be part of an overall storage architecture in which a solid state drive (SSD) or other non-volatile memory, such as flash memory or platter-based hard drive, operates in conjunction with volatile memory, such as random access memory (RAM), static RAM (SRAM), dynamic RAM (DRAM), etc., to store data), and wired and wireless interfaces.

Computing device 1 may include user interface device 6, which may function as an input device using a presence-sensitive input screen, such as a resistive touchscreen, a capacitive touchscreen, a pressure sensitive screen, an acoustic pulse recognition touchscreen, radar, or another presence-sensitive display technology. User interface device 6 may function as an output (e.g., display) device using any one or more display devices, such as a liquid crystal display (LCD), a dot matrix display, a light emitting diode (LED) display, an organic light-emitting diode (OLED) display, an e-link, or a similar monochrome or color display capable of outputting visible information to a user. The output display of user interface device 6 may be circular, ellipsoidal, or rectangular, and may be of a small size (e.g., 1.2-inch diameter, 1.34-inch diagonal, etc.).

Computing device 1 may connect to other computing devices via wired or wireless (e.g., Bluetooth® or WiFi™) connections to control the media content. For example, computing device 1 may be built-in to (or, in other words, integrated within) a laptop that stores and displays the media content and is responsive to the commands from user interface device 6. In another example, the computing device may be streaming a music file from a cloud database, where the music file is responsive to commands relayed via user interface module 8. In another example, the computing device may be a remote-control unit to a video file playing on a smart television.

User interface (UI) module 8 may cause user interface device 6 to display a GUI for a media player control. For instance, UI module 8 may cause user interface device 6 to display first GUI 2 of FIG. 2 that includes controls for media playback, such as pause button 12 and skip-back and skip-forward buttons 14. First GUI 2 may also include a play button (not shown in FIG.

1) in the place of pause button 12 (e.g., the play button may be displayed while media playback is paused and pause button 12 may be displayed when media playback is not paused).
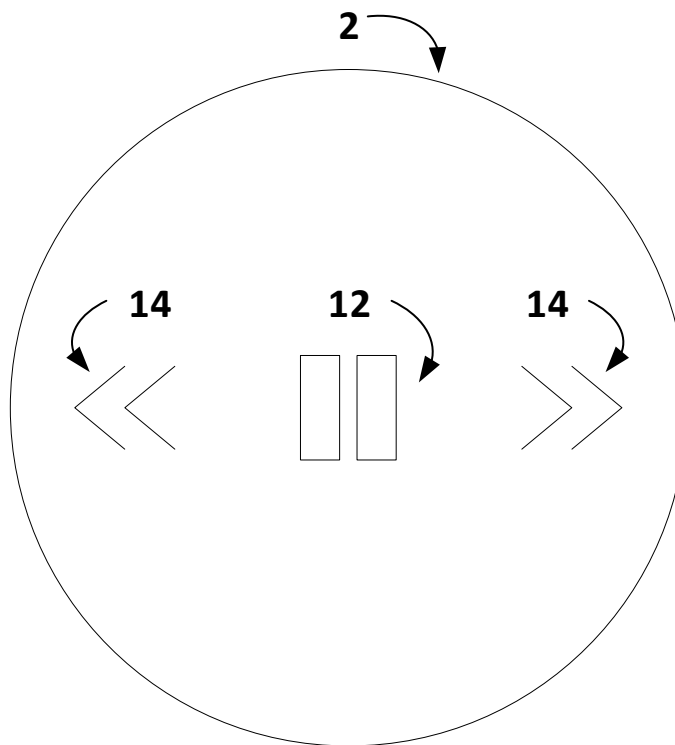

FIG. 2

As discussed above, it may be desirable to enable a user to adjust a present point of playback of media. However, in some scenarios, such as where a display is relatively small, it may not be effective for a user to drag a marker laterally along a progress bar. As such, UI module 8 may selectively cause user interface device 6 to display a second GUI with controls that enable a user to adjust a present point of playback of media on small-sized displays. For instance, responsive to receiving user input to activate a playback manipulation mode, UI module 8 may cause user interface device 6 to display second GUI 4 of FIG. 3 that includes controls for playback manipulation. As shown in FIG. 3, second GUI 4 may include a representation of a present point of playback of a current media file, such as progress circle 20. Progress circle 20 may represent the length of the current media file, with circle segment 22

representing a portion of the current media file already played (extending from start point 26 to current frame 28) and circle segment 24 representing the portion of the current media file not yet played. Start point 26 corresponds equivalently to the end point of the current media file. Progress circle 20 may be proportional to the media file such that halfway around progress circle 20 corresponds to halfway through the media file, and similarly with other points on the trajectory of progress circle 20.
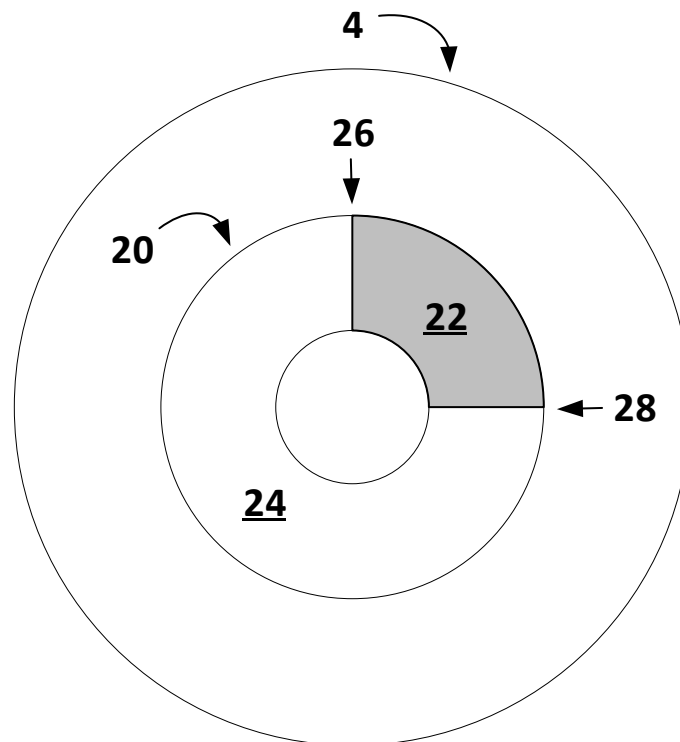
FIG. 3

In operation, UI module 8 responds to user input for activating the playback manipulation mode and for scrubbing the media file. User input for activating the playback manipulation mode may involve one or more of tapping or holding pause button 12 or any location on first GUI 2. In response to such input, UI module 8 causes user interface device 6 to display second GUI 4. User input for deactivating the playback manipulation mode may involve one or more of releasing a hold on second GUI 4, tapping any location on second GUI 4, or not interacting with second

GUI 4 for a period of time. In response to such input, UI module 8 may cause user interface device 6 to display first GUI 2 again. For example, on receiving user input of holding pause button 12, UI module 8 may cause user interface device 6 to display second GUI 4, and, on receiving user input of releasing second GUI 4, UI module 8 may then cause user interface device 6 to display first GUI 2. In another example, in response to receiving a user input of holding pause button 12 for three seconds followed by release, UI module 8 may cause user interface device 6 to display second GUI 4; then, in response to not receiving additional user input for five seconds, UI module 8 may cause user interface device 6 to display first GUI 2.

When the playback manipulation mode is activated (i.e., user interface device 6 is displaying second GUI 4), UI module 8 responds to user input for scrubbing the media file. In some cases, scrubbing may involve manipulating a scroll mechanism on the device, such as a scroll wheel, a scroll ball, or a digital crown on a watch, that is associated with second progress circle 20. In other cases, scrubbing may involve tapping or dragging on second progress circle 20. Areas on the display responsive to user input may include circle segment 22 representing the portion of the current media file already played or circle segment 24 representing the part of the current media file yet to be played, as well as divide 28 between segments 22 and 24. For example, in response to a user input of tapping on a location on progress circle 20, UI module 8 may cause user interface device 6 to move divide 28 to the tapped location, which may in turn cause computing device 1 to skip to the corresponding frame in the media file. In another example, in response to a user input of dragging divide 28 clockwise to a new location on segment 24, user interface device 6 may cause computing device 1 to skip-forward in the media file. Similarly, in response to the user dragging divide 28 counterclockwise to a new location in segment 22, user interface device 6 may cause computing device 1 to rewind the media file. In

general, in response to a user input of dragging in the shape of a segment of a circle, UI module 8 may cause user interface device 6 to move divide 28 forward or backward proportionally (i.e., corresponding to the clockwise or counterclockwise direction of the dragging finger) to a new location on progress circle 20, which in turn may cause computing device 1 to skip the media file forward or backward to the playback point corresponding to the new location of divide 28. For example, in response to a finger dragging clockwise in the shape of a 90° segment of a circle, UI module 8 may cause user interface device 6 to move divide 28 forward 25% of the circumference of progress circle 20, which may in turn cause computing device 1 to skip the media file forward 25% of the length of the media file.

By providing an interface by which to scrub a media file on a small or non-rectangular display, the interface may enable a user to jump forward and backward in the media file effectively. Although described for use in the context of a media player, various aspects of the interface may be used in conjunction with other types of computing devices and instruments with continuous numerical input. For instance, a similar interface may be used to control the intensity of lighting in a lightbulb, the temperature on a thermostat, or time on a timer.

It is noted that the techniques of this disclosure may be combined with any other suitable technique or combination of techniques. As one example, the techniques of this disclosure may be combined with the techniques of U.S. Patent Application Publication No. 2017/0188086A1, entitled "VIDEO FRAME BOOKMARKING USER INTERFACE COMPONENT." As another example, the techniques of this disclosure may be combined with the techniques of U.S. Patent Application Publication No. 2008/0174570A1, entitled "TOUCH SCREEN DEVICE, METHOD, AND GRAPHICAL USER INTERFACE FOR DETERMINING COMMANDS BY APPLYING HEURISTICS." As another example, the techniques of this disclosure may be

combined with the techniques of U.S. Patent Application Publication No. 2015/0089369A1,

entitled "TOUCH SCREEN DEVICE, METHOD, AND GRAPHICAL USER INTERFACE

FOR DETERMINING COMMANDS BY APPLYING HEURISTICS."