

through. The processor 258 receives the signals pertaining to the rotational action from the rotation pickup unit 256. The processor 258 then determines the next items of the list that are to be presented on a display screen by the display 260. In making this determination, the processor 258 can take into consideration the length of the list. Typically, the processor 258 will determine the rate of the rotational action such that the transitioning to different items in the media list can be performed at a rate proportional to the rate of the rotational action.

[0047] The processor 258 can also control the audio feedback unit 266 to provide audio feedback to a user. The audio feedback can, for example, be a clicking sound produced by the audio feedback unit 262. In one embodiment, the audio feedback unit 262 is a piezoelectric buzzer. As the rate of transitioning through the list of items increases, the frequency of the clicking sounds can increase. Alternatively, when the rate that the rotational input device 254 is turned slows, the rate of transitioning through the list of items decreases, and thus the frequency of the clicking sounds correspondingly slows. Hence, the clicking sounds provide audio feedback to the user as to the rate in which the items (i.e., media items) within the list of items are being traversed.

[0048] FIG. 3 shows the media player 100 of FIG. 1B being used by a user 120 in accordance with one embodiment of the invention. In this embodiment, the user 120 is linearly scrolling (as shown by arrow 124) through a list of songs 122 displayed on the display screen 104 via a slider bar 123. As shown, the media device 100 is comfortably held in one hand 126 while being comfortably addressed by the other hand 128. This configuration generally allows the user 120 to easily actuate the rotational input device 110 with one or more fingers. For example, the thumb 130 and right-most fingers 131 (or left-most fingers if left handed) of the first hand 126 are used to grip the sides of the media player 100 while a finger 132 of the opposite hand 128 is used to actuate the rotational input device 110.

[0049] Referring to FIG. 3, and in accordance with one embodiment of the invention, the rotational input device 110 can be continuously actuated by a circular motion of the finger 132 as shown by arrow 134. For example, the finger may rotate relative to an imaginary axis. In particular, the finger can be rotated through 360 degrees of rotation without stopping. This form of motion may produce continuous or incremental scrolling through the list of songs 122 being displayed on the display screen 104.

[0050] FIG. 4A is a flow diagram of user input processing 400 according to one embodiment of the invention. The user input processing 400 is, for example, performed with respect to the computer system 50 illustrated in FIG. 1A or the media player 100 illustrated in FIG. 1B.

[0051] The user input processing 400 displays 402 a graphical user interface. Then, a rotational movement associated with a user input action is received 404. Here, the user input action is generally angular, as opposed to linear, and thus pertains to a rotational movement. As discussed in more detail below, the rotational movement can be provided by the user input action. In one example, the rotational movement can be caused by a user acting to rotate a navigational wheel through a user input action. In another example, the rotational movement can be caused by a user's finger or a

stylus being moved in a rotational manner through a user input action with respect to a touch pad. After the rotational movement has been received 404, the rotational movement is converted 406 into a linear movement. The linear movement is then applied 408 to at least one object of the graphical user interface. For example, the object of the graphical user interface can be a list, menu or other object having a plurality of selectable items. The linear movement can effect a scroll type action with respect to the object (e.g., list or menu). Alternatively, the linear movement can effect a level adjustment (e.g., volume adjustment). After the linear movement has been applied 408, the user input processing 400 is complete and ends.

[0052] FIG. 4B is a flow diagram of user input processing 450 according to another embodiment of the invention. The user input processing 450 is, for example, performed with respect to the computer system 50 illustrated in FIG. 1A or the media player 100 illustrated in FIG. 1B.

[0053] The operations 402-408 performed by the user input processing 450 are similar to those like operations performed by the user input processing 400 illustrated in FIG. 4A. Additionally, the user input processing 450 operates to provide 452 audible feedback corresponding to the rotational movements. In other words, as the rotational movement associated with user input action is received 404, audible feedback corresponding to the rotational movement is provided 452. Such audible feedback provides the user with feedback concerning the extent to which rotational movement has been input. In one embodiment, the rotational movement associated with user input action is converted into linear movement and applied to an object of a graphical user interface. For example, when the object of the graphical user interface is a multi-item list that is displayed for user scrolling and selection actions, the rotational movement associated with the user input action represents a distance traversed in the multi-item list. In one embodiment, the audible feedback is provided through a piezoelectric buzzer that is controlled by a processor (or other circuitry). For example, the audio feedback unit 262 shown in FIG. 2B can be a piezoelectric buzzer. The controller for the piezoelectric buzzer can, for example, be a processor of the computer system 50 or the media player 100, or some other circuitry coupled to the piezoelectric buzzer.

[0054] FIG. 5 is a flow diagram of user input processing 500 according to another embodiment of the invention. The user input processing 500 is, for example, performed by a computing device, such as the computer system 50 illustrated in FIG. 1A or the media player 100 illustrated in FIG. 1B.

[0055] The user input processing 500 begins by the display 502 of a portion of a list of items together with a select bar. The select bar typically points to or highlights one or more of the items of the list of items. In general, the select bar can be associated with any sort of visual indication specifying one or more of the items of the list of items. Hence, the select bar is one type of visual indicator. Next, a decision 504 determines whether a rotational movement input has been received. When the decision 504 determines that a rotational movement input has not yet been received, then a decision 506 determines whether another input has been received. Here, the inputs are provided by a user of the computing device performing or associated with the user