

direction, the scroll wheel is rotated in the clockwise direction in accordance with the rotating fingers. As shown in FIG. 27D, when the fingers are rotated in a counterclockwise direction, the virtual scroll wheel is rotated in the counter clockwise direction in accordance with the rotating fingers. Alternatively, rotation of the virtual scroll wheel may also be rotated with linear motion of the fingers in a tangential manner.

[0142] FIG. 28 is user interface method 800, in accordance with one embodiment of the present invention. The user interface method 800 may for example be performed on a computing device having a display and a touch sensitive input device such as a touch screen. The user interface method 800 begins at block 802 where a touch is detected. This may be accomplished with the touch sensitive input device when an object such as a stylus or one or more fingers, is placed on the touch sensitive surface of the touch sensitive input device.

[0143] Once a touch is detected, the user interface method 800 proceeds to block 804 where a user interface (UI) mode is determined in response to the touch. The user interface mode may be widely varied. The user interface mode may include navigation modes, scroll modes, data entry modes, edit modes, control modes, information modes, display modes, etc. Each mode typically has one or more GUI interface elements associated therewith. By way of example, a virtual scroll wheel (e.g., FIG. 27) or slider bar may be associated with a scroll mode, a keyboard (e.g., FIG. 25) or keypad may be associated with data entry mode, a tool bar such as a formatting tool bar or drawing tool bar may be associated with an edit mode, a control panel including buttons may be associated with a control mode, a window may be associated with an information mode, etc.

[0144] The user interface mode may be determined at block 804 based on one or more conditions including for example, one or more applications currently running on the computing device, the current state or mode of the one or more applications and/or the touch characteristics associated with the touch. In fact, determining the user interface mode at block 804 may involve monitoring and analyzing one or more conditions.

[0145] The current applications may for example include operating systems (e.g., Mac OS), word processing programs, spreadsheet programs, draw editing programs, image editing programs, gaming programs, photo management programs (e.g., iPhoto), music management programs (e.g., iTunes), video editing programs (e.g., iMovie), movie management programs (e.g., QuickTime), music editing programs (e.g., GarageBand), Internet interface programs and/or the like.

[0146] The current state or mode of the applications may correspond to an active portion of the application (e.g., current window or windows within windows). For example, the active portion of a music management program may correspond to a music control mode, a playlist select mode, a menu mode, and/or the like. Further, the active portion of a photo management program may correspond to photo browsing mode or photo editing mode. Further still, the active portion of an internet interface program may correspond to a web mode or an email mode.

[0147] The touch characteristics on the other hand may, for example, correspond to touch location, touch ID, number of touches, etc, as described in many of the embodiments mentioned above.

[0148] With regards to applications, different applications may indicate different UI modes. For example, a word processing or spreadsheet application may indicate a data entry mode, while a music management program may indicate a control or scrolling mode. With regards to the current state of an application, different modes of the application may indicate different UI modes. For example, in a music management program, a menu window may indicate one UI mode, while a playlist window may indicate another UI mode.

[0149] With regards to the touch, the number of fingers may indicate different UI modes. For example, one finger may indicate a first mode while two fingers may indicate a second mode. In addition, the identity of the touch may indicate different UI modes. For example, a thumb may indicate a first UI mode and an index finger may indicate a second UI mode. Moreover, the location of the touch may indicate different UI modes. For example, a first touch location may indicate a first UI mode, while a second touch location may indicate a second UI mode (if the touch is located over a border of a music program a first UI mode may be implemented, and if the touch is located over a playlist or list of songs in the music program a second UI mode may be implemented).

[0150] In one embodiment, the user interface mode is based on only one of the conditions. For example, the user interface mode is only based on the application, the current state of the application or one of the various touch characteristics as described above. In another embodiment, the user interface mode is based on multiple conditions. For example, the user interface mode may be based on a combination of at least two selected from the application, the current state of the application and the various touch characteristics. By way of example, the application combined with a first touch characteristic may indicate a first UI mode and the same application combined with a second touch characteristic may indicate a second UI mode.

[0151] To cite a few examples, if the application is a word processing or spreadsheet program then the mode may be determined to be a data entry mode so that data can be entered into the spreadsheet (e.g., keyboard). If the application is a music management program and a playlist is currently showing (active portion), the mode may be determined to be a scroll mode so that the items in the list may be scrolled through in order to find a desired item (e.g., scroll wheel). Alternatively, if a song is playing (active portion), the mode may be determined to be a control mode so that the manner in which songs are played can be controlled (e.g., play, stop, seek and volume control options). Further, if the application is a photo management program and a particular photo is displayed (active portion), the mode may be determined to be a control mode so that the photo can be modified (e.g., converting to black and white, removing red eye, and rotate options).

[0152] After determining the user interface mode 804, the user interface method 800 proceeds to block 806 where one or more GUI elements are displayed based on the user interface mode and in response to the touch(s). In some