

an acceleration movement of a certain speed or faster, the user can visually recognize that it's the last item being displayed.

[0141] In addition, in the present invention, both the blank space as depicted in FIG. 6 and the border as depicted in FIG. 7 may be displayed to increase the recognition effect of reaching the end of the displayed menu list.

[0142] FIG. 8 shows still another example of a visual feedback method with respect to reaching the end of the displayed menu list in a flicking operation.

[0143] As shown in FIG. 8, the last item on the displayed menu list is discriminately displayed. Namely, the last item of the list may be colored or the color of an item adjacent to the last item on the list may be changed to inform the user about the end of the menu list.

[0144] When the user moves between the items (contents) on the displayed menu list by using flicking to search, i.e., scroll, through the plurality of contents displayed on the menu list, the reaching of the end of the displayed menu list can be visually informed.

[0145] In addition, when the user moves, i.e., scrolls, between the items on the displayed menu list by using flicking to search through the plurality of contents on the displayed menu list, the reaching of the end of the menu list can be audibly informed.

[0146] Namely, when the user reaches the last item in the displayed menu list (or contents list) through an acceleration movement faster than a certain speed, in the present invention, a certain sound is outputted as an audible feedback indication with respect to the reaching of the end of the menu list by using the alarm unit 153 or the audio output module 152 to audibly inform the user accordingly. Preferably, the sound may include a voice, a mechanical sound, an intermittent sound or a continuous sound. The voice may be, for example, an announcement such as 'It's the last item of the list', and the sound may be 'ting' or a general alarm sound. The intermittent sound is a sound which is generated one time and then terminated, such as a 'ting'. The continuous sound refers to a sound form which is generated at an early stage of flicking and terminated upon reaching the last item of the menu list (or contents list). Namely, a sound, for example, a frictional sound, may be generated when each displayed item of the menu list frictionally contacts with a bar 410 of a certain form or a rotational plate 420.

[0147] FIG. 9 is a view showing an example of an audible feedback method with respect to the reaching of the end of a displayed menu list in a flicking operation. For example, reaching of the end of the menu list is indicated by generating a continuous sound. FIG. 9 shows the two types of patterns 410 and 420 contacting with the plurality of items on the menu list, but the present invention is not limited thereto, and various shapes may be applicable.

[0148] In the present invention, feedback indication with respect to the reaching of end of the menu list may be made in a tactile manner as well as in the visual or audible manner as described above. Namely, when the last item of the flicked menu list is reached through an acceleration movement of a certain speed or faster, in the present invention, a vibration may be outputted as a feedback indication with respect to the end of the menu list by using the alarm unit 153 of the output unit 150.

[0149] FIG. 10 is a flow chart illustrating the process of a menu search feedback method according to an embodiment of the present invention;

[0150] As shown in FIG. 10, when the user enters a menu select mode by using the manipulating portion 130, the controller 180 reads the contents menu list from the memory 160 and outputs it to the output unit 150 to display a plurality of items of the menu list on the display unit 151 (S10).

[0151] In this state, the user may select a desired item on the menu list through a light touch or drag, or may quickly move to a different item on the menu list through flicking. If the user perform flicking, the sensing unit 140 detects the force and speed of the flicking and outputs corresponding information to the controller 180.

[0152] The controller 180 detects whether or not a flicking has been generated based on the touch, force and speed detected by the sensing unit 140, and moves the displayed menu list in a corresponding direction according to the detected force and speed (S11).

[0153] While the displayed menu list is being moved, the controller 180 checks whether the last item of the menu list is displayed on the screen. When the last item of the menu list is displayed, the controller 180 outputs a feedback to the user indicating that the last item of the menu list has been reached (S13). Preferably, the feedback is outputted by audio, video or vibration when a portion or the entirety of the end of the menu list is displayed.

[0154] FIG. 11 is a flow chart illustrating the process of a feedback output indicating the reaching of the end of the menu list in the menu search method in FIG. 10.

[0155] As shown in FIG. 11, the controller 180 moves the displayed menu list in accordance with the force and speed detected by the sensing unit 140 (S20), and checks whether or not a certain portion of the last item of the menu list is displayed (S21).

[0156] If a certain portion of the last item of the menu list is displayed, the controller 180 controls one or more of the display unit 151, the audio output module 152 and the alarm unit 153 to output a feedback indication for indicating to the user that the end of the menu list has been reached in a visual, audible and tactile (e.g., vibration) form (S22).

[0157] If a certain portion of the last item of the menu list is not displayed, the controller 180 may execute a user selected menu item or detect flicking by the user and moves the displayed menu list again (S23).

[0158] FIG. 12 depicts the display of a motion graphic image generated at a lower edge portion of a screen display when a displayed selection bar reaches the last item of the displayed contents list (or display list) according to a flicking by the user according to one embodiment of the present invention.

[0159] When the selection bar is intended to be moved to the last item (or a first item) of the displayed contents list quickly, the user may flick the displayed selection bar with a proper force and speed.

[0160] In this respect, however, although the user may believe that he has flicked the selection bar with an appropriate force and speed, the thusly flicked selection bar may reach the last item of the displayed list with such a strong acceleration movement as to pass beyond the lower edge of the screen display because of an excessive force or speed. FIG. 12 shows the case where the selection bar reaches the last item of the displayed list due to an acceleration movement faster than a certain speed.

[0161] As shown in FIG. 12, when the flicked selection bar reaches the last item of the displayed list, in the present invention, the boundary contiguous with the last item at the