

fairly tall (127 mm tall) because it includes various buttons and controls on the face of the device below the display.

[0017] Device makers typically use traditional electrical-mechanical controls (referred to herein as “mechanical” controls), such as buttons, rollers, jog-dials, toggle switches, joy sticks, and so on, as a means for allowing users to control functions on a device. And many device makers have incorporated rollers or jog-dials to allow scrolling in at least one dimension (usually just vertically). When a device only allows vertical scrolling, then content that is wider than the display width (such as many Web pages) must be reformatted by the device or by a remote server to fit horizontally onto the device’s display, and such reformatting always changes the look of the page and often changes the behavior of Web page elements. A company named DataWind (www.datawind.com) recently developed a Web browsing device with two roller controls for scrolling—one roller on the right side of the top edge of the device (for horizontal scrolling) and another roller on the right side of the device (for vertical scrolling)—and with a 640×240 pixel display. Having separate horizontal and vertical scroll controllers is an improvement compared to only having a vertical scroll controller. However, the DataWind’s placement of the horizontal scroll controller along the top edge of the device (rather than the bottom edge) is inconvenient and unnatural to many users because, when holding a device that is wider than it is tall, such as the DataWind device, the user’s thumbs tend to rest along the bottom of the device, not along the top of the device.

[0018] In view of the foregoing, there is a need for improved techniques for displaying and interacting with multimedia information on hand-held electronic devices.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019] The present invention is illustrated by way of example, and not by way of limitation, in the figures of the accompanying drawings and in which like reference numerals refer to similar elements and in which:

[0020] FIG. 1-A illustrates a front view of a portable electronic display device according to an embodiment of the present invention;

[0021] FIG. 1-B illustrates a left side view of the portable electronic display device whose front view is shown in FIG. 1-A;

[0022] FIG. 2-A illustrates a front view of a portable electronic display device according to an embodiment of the present invention, highlighting substantially independent touch sensitive areas along the right and bottom edges of the device which the user can use to scroll content vertically or horizontally simply by sliding a finger or hand along the side or bottom of the device;

[0023] FIG. 2-B and FIG. 2-C illustrate a right side view and bottom view, respectively, of the portable electronic display device shown in FIG. 2-A;

[0024] FIG. 2-D illustrates a front view of a portable electronic display device according to another embodiment of the present invention. It highlights substantially independent touch sensitive areas along the right, left, top, and bottom edges of the device, which the user can use to control aspects of the device;

[0025] FIGS. 3-A and 3-B illustrate a front view and bottom view, respectively, of a portable electronic display device according to an embodiment of the present invention that uses a touch sensitive strip comprised of a fairly large number of small neighboring independent sensors;

[0026] FIG. 4-A illustrates the portion of a Web page viewable on a portable electronic display device according to an embodiment of the present invention at the display’s native resolution;

[0027] FIG. 4-B illustrates preferred effective pixel resolutions for a portion of a Web page that the present display device can display, according to an embodiment of the present invention.

[0028] FIG. 5 illustrates a 600×400 pixel portion of a Web page rendered at a preferred 144 pixels-per-inch (ppi) pixel density compared to the same portion rendered at 190 ppi;

[0029] FIGS. 10-A and 10-B illustrate a front view and bottom view, respectively, of a portable electronic display device according to another embodiment of the present invention, highlighting the incorporation of two touch sensitive areas along the bottom edge and two along the top edge, as well as touch sensitive areas on the left and right edges—with all of the touch sensitive areas being substantially independent from one another;

[0030] FIG. 11 illustrates a front view of a portable electronic display device according to another embodiment of the present invention. In this case, the illustrated device uses four substantially independent touch sensitive areas on the top edge, two on each side, and two on the bottom;

[0031] FIGS. 12-A and 12-B illustrate a front view and bottom view, respectively, of a portable electronic display device according to another embodiment of the present invention, in which, in addition to six substantially independent touch sensitive areas along the edges (for sensing sliding or tapping by a user’s hands), the device also incorporates a modifier spot;

[0032] FIG. 13-A illustrates a front view of a portable electronic display device according to a preferred embodiment of the present invention. This preferred embodiment has two touch sensitive areas along the bottom of the device, one on the left side, and one on the right side, each of which is substantially independent of the others and each of which enables the device to detect the direction and approximate speed of a finger or hand sliding along that touch sensitive area, so that the device can translate that into horizontal or vertical scrolling of content being displayed on the device. This embodiment also incorporates a modifier spot centered below the display, as well as a touch screen display;

[0033] FIGS. 13-B, 13-C, and 13-D illustrate the bottom view, top view, and right side view, respectively, of the portable electronic display device preferred embodiment shown in front-view in FIG. 13-A;

[0034] FIG. 14-A shows a user clicking on a displayed item while simultaneously pressing the modifier spot with a thumb according to a preferred embodiment of the present invention;

[0035] FIG. 15-A shows the use of a modifier spot as a shift key while typing on a virtual keyboard on a portable