

TOUCH PAD WITH SYMBOLS BASED ON MODE

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to Provisional Patent Application No. 60/755,656 entitled "TOUCH PAD WITH FEEDBACK" filed Dec. 30, 2005 which is herein incorporated by reference.

[0002] This application is related to the following applications, all of which are herein incorporated by reference:

[0003] U.S. patent application Ser. No. 10/188,185, titled "TOUCH PAD FOR HANDHELD DEVICE", filed Jul. 1, 2002;

[0004] U.S. patent application Ser. No. 10/722,948, titled "TOUCH PAD FOR HANDHELD DEVICE", filed Nov. 25, 2003;

[0005] U.S. patent application Ser. No. 10/643,256, titled "MOVABLE TOUCH PAD WITH ADDED FUNCTIONALITY", filed Aug. 18, 2003;

[0006] U.S. patent application Ser. No. 11/057,050, titled "DISPLAY ACTUATOR", filed Feb. 11, 2005;

[0007] U.S. patent application Ser. No. 10/840,862, titled "MULTIPOINT TOUCH SCREEN", filed May 6, 2004;

[0008] U.S. Patent Application No. 60/658,777, titled "MULTIFUNCTIONAL HAND HELD DEVICE", filed Mar. 4, 2005;

[0009] U.S. patent application Ser. No. 11/115,539, titled "HANDHELD ELECTRONIC DEVICE WITH MULTIPLE TOUCH SENSING DEVICES", filed Apr. 26, 2005;

[0010] U.S. patent application Ser. No. 11/394,493, titled "ILLUMINATED TOUCHPAD", filed Mar. 31, 2006.

[0011] U.S. patent application Ser. No. 11/483,008, titled "CAPACITANCE SENSING ELECTRODE WITH INTEGRATED I/O MECHANISM", filed Jul. 6, 2006.

[0012] U.S. patent application Ser. No. 11/482,286, titled "MUTUAL CAPACITANCE TOUCH SENSING DEVICE", filed Jul. 6, 2006.

BACKGROUND OF THE INVENTION

[0013] 1. Field of the Invention

[0014] The present invention relates generally to touch pads that provide visual feedback. More particularly, the present invention relates to touch pads with symbols that adapt based on mode.

[0015] 2. Description of the Related Art

[0016] There exist today many styles of input devices for performing operations in a computer system. The operations generally correspond to moving a cursor and/or making selections on a display screen. By way of example, the input devices may include buttons or keys, mice, trackballs, touch pads, joy sticks, touch screens and the like.

[0017] Touch pads, in particular, are becoming increasingly popular because of their ease and versatility of operation as well as to their declining price. Touch pads allow a user to make selections and move a cursor by simply touching an input surface via a finger or stylus. In general, the touch pad recognizes the touch and position of the touch on the input surface and the computer system interprets the touch and thereafter performs an action based on the touch event.

[0018] Touch pads typically include an opaque touch panel, a controller and a software driver. The touch panel

registers touch events and sends these signals to the controller. The controller processes these signals and sends the data to the computer system. The software driver translates the touch events into computer events.

[0019] Although touch pads work well, improvements to their form feel and functionality are desired. By way of example, it may be desirable to provide visual stimuli at the touch pad so that a user can better operate the touch pad. For example, the visual stimuli may be used (among others) to alert a user when the touch pad is registering a touch, alert a user where the touch is occurring on the touch pad, provide feedback related to the touch event, indicate the state of the touch pad, and/or the like.

SUMMARY OF THE INVENTION

[0020] The invention relates, in one embodiment, to a multifunctional handheld device capable of operating in different modes. The multifunctional handheld device includes a single input arrangement that provides inputs for each mode of the multifunctional handheld device. The single input arrangement includes at least an input pad that provides signals when touched or pressed. The input pad can be divided into one or more input areas that change in accordance with the current mode of the multifunctional handheld device. The multifunctional handheld device also includes a display mechanism that presents graphical elements to indicate the configuration of the input areas at the input pad. Each mode of the multifunctional handheld device provides a different configuration of input areas and graphical elements associated therewith.

[0021] The invention relates, in another embodiment, to a multifunctional handheld computing device capable of operating in different modes. The multifunctional computing device includes a touch device having a touch surface (e.g., touch pad). The multifunctional computing device also includes a means for presenting input identifiers that indicate the locations of the touch surface designated for actuating inputs associated with the input identifiers. The multifunctional computing device further includes a means for indicating which input area is ready for actuation.

[0022] The invention relates, in another embodiment, to a touch pad that displays graphical elements to indicate input areas of the touch pad. Each input area represents a different functionality. The input areas and graphical elements changing in accordance with different input modes.

[0023] The invention relates, in another embodiment, to a touch pad. The touch pad includes a touch sensing layer. The touch pad also includes a first set of symbols that only illuminate with a first light. The touch pad further includes a second set of symbols that only illuminate with a second light. The touch pad additionally includes a light system capable of generating the first and second light.

[0024] The invention relates, in another embodiment, to a circular touch pad. The circular touch pad includes a circular light diffusing cover. The circular touch pad also includes a circular transparent touch sensing layer disposed below the light diffusing cover. The circular touch pad further includes a circular organic light emitting device (OLED) disposed below the transparent touch sensing layer. The circular touch pad additionally includes a printed circuit board disposed below the organic light emitting device (OLED). The printed circuit board carries a controller that is operatively coupled to the transparent touch sensing layer and the organic light emitting device. The controller receives touch data from the