corresponding to that force. Typically, a range of force is correlated with a function to allow for variances between users.

[0029] The pressure-sensitive device may be located underneath, integrated into or located on the surface of the multifunctional input segment. Alternatively, the pressure-sensitive device may be attached to a finger, or on the surface of, or integrated into a stylus or other device manipulated by the user to exert pressure on the multifunctional input segment.

[0030] In another embodiment, the force exerted on the multifunctional input segment is mechanically manifested by physically depressing the multifunctional input segment to a lower depth. The depth to which the multifunctional input segment is depressed is sensed by or communicated to the computer in communication with the multifunctional input segment or input device and is translated into instructions to carry out the function corresponding to that depth. In one aspect of this embodiment, the input segment may be in communication with a lever that moves in accordance with the segment depth.

[0031] In another embodiment, the force exerted on a multifunctional input segment is the force of pressure on a deformable material in communication with said multifunctional input segment. Alternatively, the multifunctional input segment itself comprises a deformable material. The deformable material may be as a liquid, a gel or a gas, and the force of pressure detected is the pressure of that liquid, gel or gas. In this embodiment, the liquid, gel or gas may be contained within a sealed compartment integrated into or in physical contact with the multifunctional input segment. Alternatively, the input device may comprise a layer of liquid, gel or gas in physical communication with the multifunctional input segment (and monofunctional input segments) components thereof. In this case, changes in pressure in local areas of such a layer of deformable material must be detectable.

[0032] In yet another embodiment, the force exerted on the multifunctional input segment is mechanically manifested by physically moving the multifunctional input segment in two or more different directions. This aspect is often associated with a multifunctional input segment that comprises a portion that is physically raised off of the surface of the input device and is capable of one dimensional movement, such as a wheel, or two-dimensional movement in a plane, such as a joystick, IBM Thinkpad® pointer, or trackball. The direction that the input segment is moved is sensed by or communicated to the computer in communication with the multifunctional input segment or input device and is translated into instructions to carry out the function corresponding to that direction. In this embodiment, the input device comprises multiple multifunctional input segments, each of which comprises a separate portion capable of one or two-dimensional movement in a plane.

[0033] In another embodiment, the force exerted on the multifunctional input segment is mechanically manifested by physically moving the multifunctional input segment in either two or more different directions and by depressing to different depths. For example, a wheel may be moved up or down or it may be depressed, each of which triggers a different function. Similarly a joystick-type input segment is capable of two-dimensional movement in a plane to trigger multiple functions and can be depressed to different depths to trigger other functions. Furthermore, at each depth, the input segment may still be capable of two-dimensional movement, providing the potential to produce numerous different functions via a combination of depth and planar movement.

[0034] In one embodiment, the multifunctional input segment provides feedback to the user in order to inform the user which function had or will be invoked. The feedback may be any one or more of visual feedback, audio feedback or haptic (e.g., tactile) feedback.

[0035] Visual feedback may be achieved by changing a visual output as the force of pressure on the multifunctional input segment changes. For example, when the output of a multifunctional input segment is one of several characters, the character corresponding to the force of pressure currently exerted on the multifunctional input segment will appear on a display in communication with the input device (either directly or indirectly through the computer) and change in real time as the force of pressure changes. In a preferred embodiment, all of the outputs controlled by a multifunctional input segment are indicated on a display when a force of pressure is exerted on that segment (e.g., in a menu) with the presently selected function somehow distinguished from the unselected functions (e.g., through bolding of the selected function and/or graying out of the unselected functions). In this embodiment, as the force of pressure on the multifunctional input segment changes, the display changes to highlight the newly selected function.

[0036] The display can be separate from the input device, such as a LCD or other video display. Alternatively, the display can be located on the input device itself, such as on a keyboard, mouse, touchpad or touchscreen in an area adjacent to the multifunctional input segment or even at the input segment itself.

[0037] Haptic feedback may be the result of the physical movement of the multifunctional input segment. For example, a LCD touchscreen may be manufactured with a thicker liquid crystal such that the user can actually feel changes in displacement of the liquid as greater pressures are exerted.

[0038] In another embodiment, the surface above or below a multifunctional input segment may be made of a deformable material, such as a gel, foam or soft rubber, which compresses as greater pressure is applied. It will be apparent that if the deformable material is above the multifunctional input segment it must not mask a visual indication of what functions that segment controls. Thus, the deformable material may be imprinted with such a visual indication. Alternatively, the deformable material may be see-through, such that an imprinted indication of function on the underlying input segment is visible.

[0039] In another embodiment, a multifunctional input segment capable of being depressed to different depth, such as a key, may catch at a ratchet or other such device, temporarily stopping at each depth corresponding to a different function. Invoking functions at lower depths would then require additional force of pressure to bypass such a temporary stop.

[0040] Haptic feedback can also be produced electronically in response to variations in force of pressure. Thumpers, solenoids, force feedback, vibrations, and shock are all examples of electronically produced haptic feedback that can be utilized in the invention. Technology for employing haptic feedback mechanisms in keyboards, mice, touchpads and other input devices are well-known in the art. See, for example, U.S. Pat. Nos. 6,906,697 and 6,864,877; and United States published applications 20050134562, 20040130526, 20030184574 and 20030174121, the disclosures of which are