ments, the processor **110** will determine that the second texture is associated with the characteristics of the object. The second texture may comprise one of many textures known in the art, for example, the texture of steel, ice, fur, skin, leather, sand, sandpaper, rocks, snow, water, or oil. In some embodiments, processor **110** may determine that the second texture is similar or identical to the first texture. Or, in some embodiments, processor **110** may determine that the second texture comprises no texture.

[0072] In some embodiments, processor **110** may implement a haptic map to determine the first and second haptic effects. In such an embodiment, processor **110** may map the display signal to one or more actuators. In some embodiments, mapping the display signal to an actuator comprises determining haptic effects at various locations on the display, based at least in part on the display signal. For example, the display signal may comprise a plurality of pixels, each of the pixels associated with a color. In such an embodiment, processor **110** may determine the haptic effect by assigning a haptic value to each color in the display signal. Then processor **110** will determine a haptic effect based, at least in part, on the haptic values. In some embodiments, processor **110** may assign a haptic value to only some of the pixels in the display signal. For example, in such an embodiment, the haptic effect may be associated with only a portion of the display signal.

[0073] In some embodiments, processor **110** may determine the first haptic effect and the second haptic effect based, at least in part on, a user interaction or trigger. In such an embodiment, processor **110** receives an interface signal from touch-sensitive interface **114**, and determines the haptic effect based at least in part on the interface signal. For example, in some embodiments, processor **110** may determine a different intensity haptic effect based on the interface signal received from touch-sensitive interface **114**. For example, if touch-sensitive interface **114** detects a high pressure user interaction, processor **110** may determine a high-intensity haptic effect. In another embodiment, if touch-sensitive interface **114** detects a low pressure user interaction, processor **110** may determine a low-intensity haptic effect.

[0074] Next processor **110** transmits a haptic signal to an actuator **118** configured to receive the haptic signal and output a haptic effect **410**. Actuator **118** may be, for example, a piezoelectric actuator, an electric motor, an electro-magnetic actuator, a voice coil, a linear resonant actuator, a shape memory alloy, an electro-active polymer, a solenoid, an eccentric rotating mass motor (ERM), or a linear resonant actuator (LRA). The haptic effect may comprise one of several haptic effects known in the art, for example, vibrations, knocking, buzzing, jolting, or torquing the messaging device. In some embodiments, the haptic signal is configured to cause actuator **118** to output a haptic effect that simulates a texture. In some embodiments, if processor **110** determines that the user interaction is associated with the first section of the display area, the texture will comprise the first texture. In other embodiments, if processor **110** determines that the user interaction is associated with the second section of the display area, the texture will comprise the second texture. In some embodiments, processor **110** may determine the location of the user interaction based at least in part in the interface signal received from touch-sensitive interface **114**. In other embodiments, processor **110** may determine the location of the user interaction based on another factor, for example a sensor signal received from a sensor or manipulandum such as a mouse, scroll wheel, or roller ball.

[0075] Finally, display **116** receives the display signal and outputs an image based at least in part on the display signal. In some embodiments, display **116** comprises a flat-screen display, such as a Liquid Crystal Display (LCD) or Plasma Screen Display. In other embodiments display **116** comprises a Cathode Ray Tube (CRT) or other type of display known in the art. In still other embodiments, display **116** may comprise touch-sensitive interface **114**, for example, display **116** may comprise a touch-screen LCD. In some embodiments, processor **110** is configured to generate a graphical representation of a user interface to be shown on display **116**, then transmit a display signal comprising the graphical representation to display **116**. In other embodiments, display **116** is configured to receive a display signal from another device. For example, in some embodiments, display **116** may comprise an external display such as a computer monitor.

Illustrations of Various Embodiments Using Textures in Graphical User Interface Widgets

[0076] FIG. **5** is an illustration of a system for using textures in graphical user interface widgets according to one embodiment of the present invention. FIG. **5** comprises a system **500**, which comprises messaging device **502**. Messaging device **502** comprises a display **516**. Display **516** is configured to display a graphical user interface to the user. Further, a touch-sensitive interface, which is configured to detect user interaction is mounted overtop of display **516**. The touch-sensitive interface allows the user to interact with the graphical user interface shown in display **516**, for example allowing the user to enter text, select objects, or perform other operations known in the art. In the embodiment shown in FIG. **5**, system **500** comprises a handheld device. In other embodiments, system **500** may comprise a larger device, such as a laptop or desktop computer, or a display in a kiosk. In some embodiments (not shown in FIG. **5**), system **500** may further comprise a manipulandum, such as a mouse, scroll wheel, or roller ball, which allows the user to interact with the graphical user interface on display **516**.

[0077] As shown in FIG. **5**, display **516** displays text **504**. Display **516** further displays a selection box **506** over a portion of the text **504**, which indicates that the user has selected the portion of text **506** within text **504**. In some embodiments, the user may have highlighted the text in selection box **506**, for example, by tapping the section of display **516** associated with the text. In other embodiments, a text editing program may have automatically highlighted the text in box **506**, for example as a part of a track changes function. In such an embodiment, selection box **506** may comprise the user's edits to an existing text file.

[0078] Messaging device **502** further comprises an actuator (not shown in FIG. **5**) configured to output a haptic effect configured to simulate a texture. In some embodiments, the user may feel the texture on the housing of device **502**. In other embodiments, the user can feel the texture on the surface of display **516**. For example, in some embodiments, when the user touches the section of display **516** associated with selection box **506** the actuator may output a haptic effect configured to simulate a texture. Further, in such an embodiment, the actuator may be configured to output a haptic effect simulating a different texture when the user touches a section of display **516** that is not associated with selection box **506**. For example, when the user interacts with selection box **506**, the actuator may output a haptic effect simulating the texture of sand. Further, when the user interacts with the remainder of