quiescent haptic response. By quiescent it is meant that the user would feel little or no haptic effects. However, once the user's finger intersects outer boundary **802** (that could be visible, or not) of button element **702**, the user experiences haptic sensation H_1 corresponding to region **1**. As the user's finger moves from region **1** to region **2**, the user experiences haptic sensation H_2 corresponding to region **2**, and so on until the user reaches target area **708**. If the user's finger continues to move in such a way that it would be leaving target area **708** by re-entering region **2**, for example, then the user would be made aware of this fact since the user would experience a change in the haptic sensation indicating that the user's finger is leaving target area **708**.

FIG. **9**A shows slider element **900** as a particular embodiment of slider element **604** shown in FIG. **6**. Slider element **900** includes slider portion **902** that can be moved across surface **126** within the confines of slider element **900** by the action of a user's finger. As the user's finger is placed in contact with slide portion **902**, the user can experience a haptic sensation consistent with haptic profile $H_{slider}(x)$ shown in FIG. **9**B. In the described embodiment, as the user's finger (while still in contact with slide portion **902**) moves slide portion **902** from left to right (or vice versa), then the user can experience vibro-tactile feedback based upon haptic profile $H_{slider}(x)$ where, for example, the haptic sensations monotonically increase from left to right and monotonically decrease from right to left, or vice versa. In some cases, $H_{slider}(x)$ can be a linear function of touch co-ordinate x (as shown in FIG. **9**B) or can be non-linear depending of course on the application for which slider **900** is being used.

FIGS. **10**A-**10**B illustrates yet another embodiment whereby a user can "feel" an edge of image feature **612** presented on display **112** shown in FIG. **6**. In this embodiment, the user can "feel" edge E of feature **612** due to the fact that the haptic profile $H_{edge}(x)$ provides a haptic response in a region R in proximity to the edge E of feature **612**. In some cases, the haptic response $H_{edge}(x)$ can be asymmetric (as shown in FIG. **10**B) where a user approaching edge E from an interior portion of feature **612** will feel a gradually intensifying haptic response indicating to the user that edge E is being approached from the interior of feature **612**. On the other hand, if the user's finger is approaching edge E of feature **612** from a region exterior to feature **612**, then the haptic response $H_{edge}(x)$ will cause the user to experience a sharp step increase in haptic sensation at or near edge E itself. In the case where the haptic profile $H_{edge}(x)$ is symmetric, then the user will experience a haptic sensation of substantially equal no matter if edge E is approached from the interior or exterior regions of feature **612**.

FIG. **11** is a diagram of a zoom gesture method **1100** in accordance with an embodiment of the invention. The zoom gesture can be performed on multi-touch multi-haptic surface **126**. It should be noted that initially, the haptic devices associated with the surface **126** can be in the passive state whereby the controller can monitor the condition of each of the haptic nodes by determining if there is voltage Vp is being generated by the haptic device indicative of pressure being applied in the vicinity of the haptic node. Accordingly, the zoom gesture method **1100** generally begins at block **1102** where the presence of at least a first finger and a second finger are detected on a touch sensitive surface of the surface **126** at about the same time. In the described embodiment, the nature of the multi-touch event can be determined based upon either the presence of at least two fingers indicating that the touch is gestural (i.e., multi-touch) rather than a tracking touch based on one finger and/or by the pressure asserted by the fingers on the surface **126**. The pressure asserted by the fingers on the touch screen can be determined by monitoring the voltage Vp described above. If it is determined at block **1104** that the presence of the two fingers represents a gesture, then the haptic devices nearest the touch point are set to active mode in order to provide a vibro-tactile response at **1106** to each of the fingers during the gesture. In the described embodiment, the vibro-tactile response provided to each finger can have the same profile or different profiles. For example, if it the pressure applied by one finger is substantially greater than that applied by the other finger, then the vibro-tactile response for the two fingers can be different due to the varying pressure applied by each finger. For the most part, however, the haptic profiles will be correlated to assure that the user has a perception that the haptic effects are consonant with each other. Furthermore, it should be noted that in some cases, the presence of only two fingers indicates that the touch is a gestural touch. In other cases, any number of more than two fingers indicates that the touch is a gestural touch. In fact, the gestural touch may be configured to operate whether two, three, four or more fingers are touching, and even if the numbers change during the gesture, i.e., only need a minimum of two fingers at any time during the gesture.

Following block **1106**, the zoom gesture method **1100** proceeds to block **1108** where the distance between at least the two fingers is compared. The distance may be from finger to finger or from each finger to some other reference point as for example the centroid. If the distance between the two fingers increases (spread apart) at **1110**, a zoom-in signal is generated at **1112**, otherwise a zoom out signal is generated at block **1114**. The zoom-in signal, in turn, causes the haptic devices associated with the two fingers to provide a zoom-in haptic signal at **1116**. Such a zoom in haptic signal can be, for example, faster (or slower) or more intense (or less intense) vibration as the distance between the two fingers increases. If the distance between two fingers decreases (close together), the zoom-out signal generated at block **1114** can cause the haptic devices associated with the two fingers to provide a zoom out haptic signal at **1118**.

In most cases, the set down of the fingers will associate or lock the fingers to a particular GUI object being displayed. For example, the touch sensitive surface can be a touch screen, and the GUI object can be displayed on the touch screen. This typically occurs when at least one of the fingers is positioned over the GUI object. As a result, when the fingers are moved apart, the zoom-in signal can be used to increase the size of the embedded features in the GUI object and when the fingers are pinched together, the zoom-out signal can be used to decrease the size of embedded features in the object. The zooming typically occurs within a predefined boundary such as the periphery of the display, the periphery of a window, the edge of the GUI object, and/or the like. In some cases, a haptic effect can be provided giving the user a warning that the predefined boundary is being approached. The embedded features may be formed on a plurality of layers, each of which represents a different level of zoom. In most cases, the amount of zooming and the associated haptic effect varies according to the distance between the two objects. Furthermore, the zooming typically can occur substantially simultaneously with the motion of the objects. For instance, as the fingers spread apart or closes together, the object zooms in or zooms out at the same time and the corresponding haptic effect will change. Although this methodology is directed at zooming, it should be noted that it may also be used for enlarging or reducing. The zoom gesture method **1100** may be particularly useful in graphical programs such as publishing, photo, and drawing programs.