

2. The touch-screen display as in claim 1, wherein said gel layer further comprises:

a first matrix of electrodes disposed on a top surface of said gel layer; and

a second matrix of electrodes disposed on a bottom surface of said gel layer and oriented orthogonal to said first matrix of electrodes, each pair of electrodes from said first matrix of electrodes and said second matrix of electrodes being vertically aligned with an individual cell of said plurality of cells.

3. The touch-screen display as in claim 1, wherein said hydrogel is electrically reactive, said hydrogel being in an expanded state when a first electrical polarity is applied, a contracted state when an opposite electrical polarity is applied, and a rest state when no electrical energy is applied.

4. The touch-screen display as in claim 1, wherein said display layer is a liquid crystal display (LCD) panel.

5. The touch-screen display as in claim 1, wherein said display layer is a light emitting diode (LED) display panel.

6. The touch-screen display as in claim 1, wherein said digitizer layer is a resistive digitizer.

7. The touch-screen display as in claim 1, wherein said digitizer layer is a capacitive digitizer.

8. The touch-screen display as in claim 1, wherein said digitizer layer is a near-field digitizer.

9. A tactile feedback unit for providing tactile feedback on a touch-screen display, said tactile feedback unit comprising:

a gel layer having a honeycomb structure having a plurality of cells, each cell of said honeycomb structure containing a quantity of hydrogel;

a first matrix of electrodes disposed on a top surface of said gel layer;

a second matrix of electrodes disposed on a bottom surface of said gel layer and oriented orthogonal to said first matrix of electrodes, each pair of electrodes from said first matrix of electrodes and said second matrix of electrodes being vertically aligned with an individual cell of said plurality of cells; and

a tactile feedback controller for controlling deformation of said gel layer.

10. The tactile feedback unit as in claim 9, wherein said hydrogel is electrically reactive, said hydrogel being in an expanded state when a first electrical polarity is applied, a contracted state when an opposite electrical polarity is applied, and a rest state when no electrical energy is applied.

11. The tactile feedback unit as in claim 9, wherein said display layer is a liquid crystal display (LCD) panel.

12. The tactile feedback unit as in claim 9, wherein said display layer is a light emitting diode (LED) display panel.

13. The tactile feedback unit as in claim 9, wherein said digitizer layer is a resistive digitizer.

14. The tactile feedback unit as in claim 9, wherein said digitizer layer is a capacitive digitizer.

15. The tactile feedback unit as in claim 9, wherein said digitizer layer is a near-field digitizer.

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