

wherein the actuator assembly outputs a first haptic effect upon two or more piezo-electric transducers operating simultaneously, and

wherein the actuator assembly outputs a second haptic effect upon two or more piezo-electric transducers operating at different times, wherein a magnitude of the first haptic effect is stronger than that of the second haptic effect.

4. A haptic enabled electronic device comprising:

a housing;

a touch screen coupled to the housing;

a diaphragm coupled to the touch screen;

an actuator coupled to the diaphragm, the actuator further comprising

a circular body having a first surface and a second surface opposite to the first surface, wherein the first surface is proximal to the touch screen and the second surface is distal to the touch screen;

a mass positioned at the center of the circular body on the second surface; and

means for powering the actuator, wherein the actuator moves in a direction perpendicular to the touchscreen

to output a haptic effect to be felt by a user in contact with the housing.

5. A method of outputting haptic effects in an electronic device having a touch screen, the method comprising;

displaying graphical object through a touch screen capable of receiving input from a user to manipulate the graphical objects;

sensing input from the user via the touch screen via a sensor coupled to the touch screen, wherein the sensor outputs a sensor signal;

outputting an activating signal to at least one of a plurality of piezo-electric transducers coupled to the touch screen in response to the sensor signal, the piezo-electric transducers positioned adjacent to one another;

outputting a first haptic effect from at least two of the piezo electric transducers operating in response to receiving the activating signal;

outputting a second haptic effect from at least one of the piezo electric transducers operating in response to receiving the activating signal, wherein a magnitude of the first haptic effect is greater than that of the second haptic effect.

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