CLAIMS

1. A fluidic tactile sensor comprising:

a core comprising an outer core portion, an inner core portion, and a plurality of first channels having first openings at a plurality of first surface portions of the outer core portion, wherein the outer core portion comprises a network of second channels;

an elastic skin disposed over the first surface portions, wherein portions of the elastic skin extend into and sealingly engage the network of second channels; ~~and~~

a plurality of cells formed between the first surface portions and the elastic skin and fluidly connected to the plurality of first channels, each of the cells containing a fluid, wherein a contact force applied to the elastic skin at a first location corresponding to one of the cells produces a measurable change in fluid pressure inside the one of the cells; and

a plurality of pressure transducers arranged to measure fluid pressure in the cells.

2. The fluidic tactile sensor of claim 1, wherein the fluid is a gas or a liquid.

3. The fluidic tactile sensor of claim 1, wherein the pressure transducers are barometric pressure transducers.

4. The fluidic tactile sensor of claim 1, wherein the pressure transducers are disposed in pockets formed at spaced locations within the inner core portion and are exposed to the fluid pressure in the cells via the first channels.

5. The fluidic tactile sensor of claim 4, further comprising a flexible circuit board disposed in a chamber formed within the inner core portion, wherein the pressure transducers are coupled to portions of the flexible circuit board extending over the pockets.

6. The fluidic tactile sensor of claim 1, wherein the elastic skin is impermeable to the fluid.

7. The fluidic tactile sensor of claim 1, wherein the portions of the elastic skin form shared boundaries between the plurality of cells, and wherein the contact force applied at the first location corresponding to the one of the cells produces a measurable change in fluid pressure in at least another one of the cells adjacent to the one of the cells.

8. The fluidic tactile sensor of claim 7, wherein the network of second channels form a plurality of facets in the outer core portion, and wherein each facet provides one of the first surface portions.

9. The fluidic tactile sensor of claim 8, wherein the facets are arranged in a honeycomb pattern.

10. The fluidic tactile sensor of claim 1, wherein the elastic skin is mechanically coupled to the core.

11. The fluidic tactile sensor of claim 1, wherein the cells are hermetically sealed.

12. The fluidic tactile sensor of claim 1, wherein an edge portion of the elastic skin sealingly engages the outer core portion.

13. The fluidic tactile sensor of claim 1, wherein the first surface portions comprise curved surfaces.

14. The fluidic tactile sensor of claim 1, wherein the core is nonplanar.

15. A fluidic tactile sensor comprising:

a core comprising an outer core portion, an inner core portion, and a plurality of first channels having first openings at a plurality of first surface portions of the outer core portion;

an elastic skin disposed over the first surface portions;

a plurality of cells formed between the first surface portions and the elastic skin and fluidly connected to the plurality of first channels, each of the cells containing a fluid, wherein a contact force applied to the elastic skin at a first location

corresponding to one of the cells produces a measurable change in fluid pressure inside the one of the cells; and

a plurality of pressure transducers arranged to measure fluid pressure in the cells;

wherein the core comprises at least one port communicatively coupled to the plurality of first channels, and further comprising a valve arranged in the at least one port.

16. The fluidic tactile sensor of claim 1, wherein the elastic skin comprises an elastomer.

17. The fluidic tactile sensor of claim 2, wherein the fluid is compressed.

18. The fluidic tactile sensor of claim 2, wherein the fluid is ambient air.