What is claimed is:

1. An electronic display assembly comprising;

a circuit board;

a first microlens layer on a first side of the circuit board, the first microlens layer comprising a first plurality of microlenses;

a second microlens layer on an opposite side of the circuit board from the first microlens layer, the second microlens layer comprising a second plurality of microlenses;

an image sensor layer adjacent to the first microlens layer, the image sensor layer comprising a plurality of sensor pixels configured to detect incoming light through the first plurality of microlenses;

a display layer adjacent to the second microlens array, the display layer comprising a plurality of display pixels configured to emit light through the second plurality of microlenses;

a logic unit layer coupled to the circuit board, the logic unit layer comprising one or more logic units configured to emulate transparency by directing signals from the plurality of sensor pixels to the plurality of display pixels, thereby emitting light from the second plurality of microlenses at angles that correspond to angles of the incoming light detected through the first plurality of microlenses.

2. The electronic display assembly of claim 1, wherein: the first plurality of microlenses are oriented towards a first direction; and the second plurality of microlenses are oriented towards a second direction that is 180 degrees from the first direction.

3. The electronic display assembly of claim 1, wherein:

the image sensor layer is disposed within the first microlens layer; and

the display layer is disposed within the second microlens layer.

4. The electronic display assembly of claim 1, wherein the circuit board is flexible.

5. The electronic display assembly of claim 1, wherein emulating transparency comprises emitting the light from the second plurality of microlenses such that an image is displayed that matches what would be seen if the electronic display assembly was not present.

6. The electronic display assembly of claim 1, wherein the logic unit layer is between the image sensor layer and the circuit board.

7. The electronic display assembly of claim 1, wherein the logic unit layer is between the display layer and the circuit board.

8. The electronic display assembly of claim 1, wherein each microlens of the first and second plurality of microlenses comprises a three-dimensional shape with a collimating lens on one end of the three-dimensional shape, the three dimensional shape comprising:

a triangular polyhedron;

a rectangular cuboid;

a pentagonal polyhedron;

a hexagonal polyhedron;

a heptagonal polyhedron or

an octagonal polyhedron.

9. The electronic display assembly of claim 8, wherein each of the first and second plurality of microlenses further comprise a plurality of opaque walls configured to prevent light from bleeding into adjacent microlenses.

10. An electronic display assembly comprising:

circuit board;

a first microlens layer on a first side of the circuit board, the first microlens layer comprising a first plurality of microlenses;

a second microlens layer on an opposite side of the circuit board from the first microlens layer, the second microlens layer comprising a second plurality of microlenses;

an image sensor layer adjacent to the first microlens layer, the image sensor layer comprising a plurality of sensor pixels configured to detect incoming light through the first plurality of microlenses; and

a display layer adjacent to the second microlens array, the display layer comprising a plurality of display pixels configured to emit light through the second plurality of microlenses;

wherein the electronic display assembly is configured to emulate transparency by emitting light from the second plurality of microlenses at angles that correspond to angles of the incoming light detected through the first plurality of microlenses.

11. The electronic display assembly of claim 10, wherein:

the first plurality of microlenses are oriented towards a first direction; and

the second plurality of microlenses are oriented towards a second direction that is 180 degrees from the first direction.

12. The electronic display assembly of claim 10, wherein;

the image sensor layer is disposed within the first microlens layer; and

the display layer is disposed within the second microlens layer.

13. The electronic display assembly of claim 10, wherein the circuit board is flexible.

14. The electronic display assembly of claim 10, wherein emulating transparency comprises emitting the light from the second plurality of microlenses such that an image is displayed that matches what would be seen if the electronic display assembly was not present.

15. The electronic display assembly of claim 10, wherein each microlens of the first and second plurality of microlenses comprises a three-dimensional shape with a collimating lens on one end of the three-dimensional shape, the three-dimensional shape comprising:

a triangular polyhedron;

a rectangular cuboid;

a pentagonal polyhedron;

a hexagonal polyhedron;

a heptagonal polyhedron; or

an octagonal polyhedron.

16. The electronic display assembly of claim 15, wherein each of the first and second plurality of microlenses further comprise a plurality of opaque walls configured to prevent light from bleeding into adjacent microlenses.