Claims

What is claimed is:

1. A gesture recognition device comprising:

a plurality of emitters, each emitter configured to emit a signal;

at least one receiver configured to receive signals emitted by the plurality of emitters;

a controller configured to control the plurality of emitters to subsequently emit signals in a plurality of patterns, wherein the signals are emitted to a target location;

wherein the plurality of patterns is equal to $2^m - 1$ different patterns;

wherein "m" refers to the number of emitters in said plurality of emitters;

wherein each pattern of the plurality of patterns include at least one signal emitted from one emitter of the plurality of emitters;

wherein each of the at least one receiver is configured to receive signals in the plurality of patterns emitted to the target location;

wherein the controller is configured to periodically repeat the plurality of patterns; and

a gesture recognition circuit configured to determine a gesture of a user of the gesture recognition device based on the signals received by the at least one receiver.

2. The gesture recognition device of claim 1,

wherein the plurality of emitters are provided in at least one of a plane, a triangular shape, a L-shape or on a line.

3. The gesture recognition device of claim 2,

wherein the gesture recognition device comprises the at least one receiver provided in a plane.

4. The gesture recognition device of claim 1,

wherein the plurality of emitters are provided facing at least one of a common direction or a pairwise angularly displaced direction.

5. The gesture recognition device of claim 1,

wherein the plurality of emitters comprises a plurality of infrared emitters or a plurality of ultrasonic sensors.

6. The gesture recognition device of claim 5,

wherein each of the plurality of infrared emitters is configured to emit infrared light.

7. The gesture recognition device of claim 1,

wherein each of the at least one receiver is configured to receive infrared light.

8. The gesture recognition device of claim 1,

wherein each of the at least one receiver is configured to provide an electrical signal based on the signals received from the plurality of emitters.

9. The gesture recognition device of claim 1,

wherein the gesture recognition circuit is configured to classify gestures of the user into a plurality of classes.

10. The gesture recognition device of claim 9, further comprising:

a training circuit configured to train the gesture recognition circuit.

11. A gesture recognition method comprising:

a plurality of emitters each emitting a signal;

receiving signals emitted by the plurality of emitters in at least one receiver;

a controller controlling the plurality of emitters to subsequently emit signals in a plurality of patterns, wherein the signals are emitted to a target location;

wherein the plurality of patterns is equal to $2^m - 1$ different patterns;

wherein "m" refers to the number of emitters in said plurality of emitters;

wherein each pattern of the plurality of patterns include at least one signal emitted from one emitter of the plurality of emitters;

wherein each of the at least one receiver is configured to receive signals in the plurality of patterns emitted to the target location;

wherein the controller periodically repeats the plurality of patterns; and

determining a gesture of a user of a gesture recognition device based on the signals received by the at least one receiver.

12. The gesture recognition method of claim 11,

wherein the plurality of emitters are provided in at least one of a plane, a triangular shape, a L-shape or on a line.

13. The gesture recognition method of claim 12,

receiving signals emitted by the plurality of emitters in the at least one receiver provided in a plane.

14. The gesture recognition method of claim 11,

wherein the plurality of emitters are provided facing at least one of a common direction or a pairwise angularly displaced direction.

15. The gesture recognition method of claim 11,

wherein the plurality of emitters comprises a plurality of infrared emitters or a plurality of ultrasonic sensors.

16. The gesture recognition method of claim 15,

wherein each of the plurality of infrared emitters emits infrared light.

17. The gesture recognition method of claim 11,

wherein each of the at least one receiver receives infrared light.

18. The gesture recognition method of claim 11,

wherein each of the at least one receiver provides an electrical signal based on the signals received from the plurality of emitters.

19. The gesture recognition method of claim 11, further comprising:

classifying gestures of the user into a plurality of classes.

20. A non-transitory computer-readable medium including program instructions which when executed by a processor cause the processor to perform the gesture recognition method of claim 11.