Summary of the Invention

[0006] Embodiments of the present invention provide a method of modulating display imagery for barcode simulation. In accordance with an embodiment, barcode information is received into a portable device. The portable device includes an image capture system, the image capture system including an image sensor that is configured to convert light into discrete signals. The image capture system has an image sensor controller that is configured to control the image sensor. The image capture system has an image processor that is configured to convert the discrete signals into formatted image data. The portable device has a display system having a display screen configured to display formatted image data. The barcode information is used to manipulate the image capture system such that the display screen displays a light simulated barcode.

[0006a] Embodiments of the present invention provides a system for modulating display imagery for barcode simulation comprising: an image capture system, the image capture system being included in a portable device and having an image sensor that is configured to convert light into discrete signals and the image capture system having an image sensor controller that is configured to control parameters of the image sensor and the image capture system having an image processor that is configured to convert the discrete signals into formatted image data; and a display system included in the portable device, the display system having a display screen configured to display formatted image data, wherein the system is configured to manipulate the image capture system such that the display screen displays a light simulated barcode.

[0007] The above and other embodiments are described herein.

[0007a] According to a first aspect of the present invention, there is provided a method of modulating display imagery for barcode simulation by a portable device comprising an image sensor, an image processor, a modulation device, and a display screen, the method comprising steps of: receiving barcode information into the portable device via the image sensor, wherein the image sensor is configured to convert the received barcode information from light into discrete signals; processing, by the image processor located in a first signal path between the image sensor and the display screen,

the discrete signals into formatted image data; displaying imagery, by the display screen, based on the formatted image data; and modulating, by the modulation device located in a second signal path between the image sensor and the display screen, light characteristics of the imagery emitted by the display screen while switching the display screen back-and-forth between display of the imagery and a solid color, to simulate the barcode information as a light-simulated barcode.

[0007b] According to a second aspect of the present invention, there is provided a portable device that modulates display imagery to simulate a barcode, comprising: an image sensor that converts received light into discrete signals; an image processor that converts the discrete signals into formatted image data; a display screen that displays imagery based on the formatted image data; and a modulation device that, in response to the portable device receiving barcode information via the image sensor, modulates light characteristics of the imagery emitted by the display while switching the display back-and-forth between display of the imagery and a solid color, to simulate the barcode information as a light-simulated barcode, wherein the image processor is located in a first signal path between the image sensor and the display screen, and the modulation devices is located in a second signal path between the image sensor and the display screen.

Brief Description of the Drawings

[0008] The present invention is described with respect to particular exemplary embodiments thereof and reference is accordingly made to the drawings in which:

[0009] Figure 1 illustrates a schematic block diagram of a portable electronic device configured to modulate display imagery in accordance with an embodiment of the present invention;

[0010] Figure 2 illustrates a one-dimensional barcode that can be communicated in accordance with an embodiment of the present invention;

[0011] Figure 3 illustrates a graph of a modulated characteristic of a signal for communicating a one-dimensional barcode in accordance with an embodiment of the present invention;

[0012] Figure 4 illustrates a schematic block diagram of an image capture system of a portable electronic device in accordance with an embodiment of the present invention;

[0013] Figure 5 illustrates a schematic block diagram of a portable electronic device configured to modulate display imagery in accordance with an embodiment of the present invention; and

Claims

What is claimed is:

1. A method of modulating display imagery for barcode simulation by a portable device comprising an image sensor, an image processor, a modulation device, and a display screen, the method comprising steps of:

receiving barcode information into the portable device via the image sensor, wherein the image sensor is configured to convert the received barcode information from light into discrete signals;

processing, by the image processor located in a first signal path between the image sensor and the display screen, the discrete signals into formatted image data;

displaying imagery, by the display screen, based on the formatted image data; and

modulating, by the modulation device located in a second signal path between the image sensor and the display screen, light characteristics of the imagery emitted by the display screen while switching the display screen back-and-forth between display of the imagery and a solid color, to simulate the barcode information as a light-simulated barcode.

2. The method according to claim 1, wherein the modulating of the light characteristics comprises modulating brightness of the imagery displayed by the display screen.

3. The method according to claim 1, wherein modulating the light characteristics comprises manipulating color of the imagery displayed by the display screen.

4. The method according to claim 1, wherein the modulating of the light characteristics comprises manipulating signals supplied to the image sensor.

5. The method according to claim 1, wherein the modulating of the light characteristics comprises manipulating the discrete signals generated by the image sensor.

6. The method according to claim 1, further comprising storing modulated image data prior to displaying the modulated image data on the display screen.

7. The method according to claim 1, wherein the modulation device modulates the light characteristics while switching the display screen back-and-forth to simulate the light-simulated barcode in real time while an image comprising the barcode information is being captured by the image sensor.

8. The method according to claim 1, wherein the received barcode information is representative of a multidimensional barcode and further comprising converting the multidimensional barcode to a one dimensional barcode prior to modulating the light characteristics to simulate the barcode information as the light-simulated barcode.

9. A portable device that modulates display imagery to simulate a barcode, comprising:

an image sensor that converts received light into discrete signals;

an image processor that converts the discrete signals into formatted image data;

a display screen that displays imagery based on the formatted image data; and

a modulation device that, in response to the portable device receiving barcode information via the image sensor, modulates light characteristics of the imagery emitted by the display while switching the display back-and-forth between display of the imagery and a solid color, to simulate the barcode information as a light-simulated barcode,

wherein the image processor is located in a first signal path between the image sensor and the display screen, and the modulation devices is located in a second signal path between the image sensor and the display screen.

10. The portable device according to claim 9, wherein the modulation device modulates brightness of the imagery displayed by the display screen to modulate the light characteristics.

11. The portable device according to claim 9, wherein the modulation device modulates color of the imagery displayed by the display screen to modulate the light characteristics.

12. The portable device according to claim 9, wherein the modulation device manipulates signals supplied to image sensor to modulate the light characteristics.

13. The portable device according to claim 9, wherein the modulation device modulates the discrete image signals generated by the image sensor to modulate the light characteristics.

14. The portable device according to claim 9, further comprising a memory coupled to the image processor, wherein the memory stores the formatted image data prior to display of the light-simulated barcode.

15. The portable device according to claim 9, wherein the modulation device modulates the light characteristics while switching the display screen back-and-forth to simulate the light simulated barcode in real time while an image comprising the barcode information is being captured by the image sensor.

16. The portable device according to claim 9, further comprising a display controller that receives the formatted image data for display on the display screen and wherein the display controller controls parameters of the display screen.

17. The portable device according to claim 9, wherein the received barcode information is representative of a multidimensional barcode and wherein the multidimensional barcode is converted to a one dimensional barcode prior to modulating the light characteristics to simulate the barcode information as the light- simulated barcode.

18. The portable device according to claim 9, wherein the modulation device is implemented by one or more of a complex programmable logic device, a custom integrated circuit, or a dedicated processing resource connected to the image sensor.