CLAIMS

1. An imaging system comprising:

a time of flight imaging sensor;

first and second different illumination sources each having a respective wavelength in the near infrared range; and

a controller operable to apply a modulation frequency to the time of flight imaging sensor and to the first and second illumination sources such that the time of flight imaging sensor and the first and second illumination sources are synchronized with one another, and such that during an exposure, when the first illumination source is on, the second illumination source is off, and when the second illumination source is on, the first illumination source is off,

the imaging system being operable to process an image of a scene being illuminated by the first and second illumination sources.

2. The imaging system according to claim 1, wherein the wavelengths of the first and second illumination sources differ from one another.

3. The imaging system according to claim 1, wherein at least one of the illumination sources is a structured illumination source.

4. The imaging system according to claim 1, wherein at least one of the illumination sources is a uniform illumination source.

5. The imaging system according to claim 1, wherein at least one of the illumination sources is a illumination source which is temporally modulated.

6. The imaging system according to claim 1, wherein the first and second different illumination sources are on the same light emitting die.

7. The imaging system according to claim 1, wherein the imaging sensor is a time of flight sensor.

8. An imaging system comprising:

a time of flight sensor having a pixel architecture designed to handle operation at 10 MHz or more;

an illumination source;

a controller operable to apply a modulation frequency in a range of 100 Hz to 1 MHz to the time of flight sensor and to the illumination source such that the time of flight sensor and the illumination source are synchronized with one another,

the controller further operable to sample output signals from the time of flight sensor based on light produced by the illumination source and reflected by an object.

9. The imaging system according to claim 8, wherein the imaging system is operable to perform a direct subtraction at a pixel level of the time of flight sensor.

10. The imaging system according to claim 8, wherein the illumination source includes a structured illumination source.

11. The imaging system according to claim 8 comprising at least two illumination sources having different wavelengths from one another, wherein the controller is operable to synchronize each of the illumination sources with the time of flight sensor.

12. The imaging system according to claim 8, illumination source includes a pseudo-random modulated illumination source.

13. The imaging system according to claim 1 wherein the first illumination source is operable to produce a random speckle pattern, and the second illumination source is operable to produce a stripe shape pattern.

14. The imaging system according to claim 1 wherein the a time of flight imaging sensor includes a plurality of pixels each of which has a respective first and second storage node, wherein the imaging system is operable such that light produced by the first illumination source, reflected by an object and detected by a particular pixel is transferred to the pixel's first storage node, and such that light produced by the second illumination source, reflected by the object and detected by the particular pixel is transferred to the pixel's second storage node.