CLAIMS

1. An imaging device comprising:

a plurality of transmitters including:

a first transmitter configured to transmit a first structured light pattern focused at a first distance and having a first depth of field; and

a second transmitter configured to transmit a second structured light pattern focused at a second distance and having a second depth of field, wherein the second depth of field is wider than the first depth of field, the second distance is different than the first distance, and the second structured light pattern is transmitted after transmitting the first structured light pattern;

a receiver configured to:

focus within the first depth of field at the first distance to capture a first image of a scene, the first image representing the first structured light pattern; and

focus within the second depth of field at the second distance to capture a second image of the scene, the second image representing the second structured light pattern; and

an electronic hardware processor configured to generate a depth map of the scene based on the first image and the second image.

2. The imaging device of claim 1, wherein the electronic hardware processor is further configured to adjust image capture parameters of a third image based on the generated depth map, and to capture the third image using the image capture parameters.

3. The imaging device of claim 0, wherein the electronic hardware processor is configured to adjust one or more of an aperture, shutter speed, or illumination parameter of the third image based on the depth map.

4. The imaging device of claim 0, wherein the electronic hardware processor is further configured to store one or more of the depth map and the third image to a stable storage.

5. The imaging device of claim 1, wherein the first transmitter is configured to generate the first structured light pattern to have a first maximum resolution at the first distance

from the imaging device and the second transmitter is configured to generate the second structured light pattern to have a second maximum resolution lower than the first structured light pattern at the second distance from the imaging device.

6. The imaging device of claim 1, wherein the first depth of field overlaps with the second depth of field.

7. The imaging device of claim 6, wherein the first depth of field is contained within the second depth of field.

8. A method of capturing an image with an imaging device, comprising:

generating, using a first light emitter, a first structured light pattern, focused at a first distance and having a first depth of field, onto a scene;

focusing, via an electronic hardware processor, an imaging sensor within the first depth of field at the first distance to capture a first image representing the scene illuminated by the first structured light pattern;

generating, using a second light emitter, a second structured light pattern focused at a second distance and having a second depth of field, wherein the second depth of field is wider than the first depth of field, the second distance is different than the first distance, and the second structured light pattern is generated after generating the first structured light pattern;

focusing the imaging sensor within the second depth of field at the second distance to capture a second image representing the scene illuminated by the second structured light pattern; and

generating, using the electronic hardware processor, a depth map of the scene based on the first image and the second image.

9. The method of claim 8, further comprising:

determining image capture parameters based on the depth map;

adjusting one or more of an aperture, shutter speed, or illumination parameter to capture a third image based on the depth map;

capturing, using the imaging sensor, the third image of the scene based on the image capture parameters; and

storing the third image to a stable storage.

10. The method of claim 8, further comprising storing the depth map to a stable storage.

11. The method of claim 8, further comprising generating the first structured light pattern to have a first maximum resolution at the first distance from the imaging device and the second light emitter is configured to generate the second structured light pattern to have a second maximum resolution lower than the first structured light pattern at the second distance from the imaging device.

12. The method of claim 8, further comprising generating the first depth of field to overlap with the second depth of field.

13. The method of claim 12, further comprising generating the first depth of field to be contained within the second depth of field.

14. A non-transitory computer readable storage medium comprising instructions that when executed cause a processor to perform a method of capturing an image with an imaging device, the method comprising:

generating, using a first light emitter, a first structured light pattern, focused at a first distance and having a first depth of field, onto a scene;

focusing, via an electronic hardware processor an imaging sensor within the first depth of field at the first distance to capture a first image representing the scene illuminated by the first structured light pattern;

generating, using a second light emitter, a second structured light pattern focused at a second distance and having a second depth of field, wherein the second depth of field is wider than the first depth of field the second distance is different than the first distance, and the second structured light pattern is generated after generating the first structured light pattern;

focusing the imaging sensor within the second depth of field at the second distance to capture a second image representing the scene illuminated by the second structured light pattern; and

generating, using the electronic hardware processor, a depth map of the scene based on the first image and the second image.

15. The non-transitory computer readable storage medium of claim 14, the method further comprising generating the first structured light pattern to have a first maximum resolution at the first distance from the imaging device and the second light emitter is configured to generate the second structured light pattern to have a second maximum resolution lower than the first structured light pattern at the second distance from the imaging device.