CLAIMS

What is claimed is:

1. An optical imaging system comprising:

an image sensor comprising a plurality of sensor elements, the sensor elements configured to represent respective pixels in captured images;

an optical element coupled to the image sensor and configured to define a focus distance setting of the captured images; and

a controller comprising a memory and at least one processor, wherein the processor is configured to execute instructions stored in the memory so as to carry out operations, the operations comprising:

causing the image sensor to capture a plurality of images, the images captured with different respective focus distance settings defined by the optical element;

combining the plurality of images into an aggregate image;

based on the aggregate image, determining a condition of a particular sensor element of the plurality of sensor elements;

causing the image sensor to capture a payload image; and

adjusting, in the payload image, a value of a particular pixel that is associated with the particular sensor element.

2. The optical imaging system of claim 1, wherein the operations further comprise metering a field of view of the image sensor and, based on the metering, selecting a shutter speed and a sensitivity of the image sensor with which to capture the plurality of images.

3. The optical imaging system of claim 1, wherein the operations further comprise mapping the determined condition in a sensor element condition map, and wherein adjusting the value of the particular pixel is based on the sensor element condition map.

4. The optical imaging system of claim 3, wherein the operations further comprise associating the sensor element condition map with a time and providing a historical record of a plurality of sensor element condition maps associated with a corresponding plurality of different times, and

wherein adjusting the value of the particular pixel is further based on the historical record.

5. The optical imaging system of claim 1, wherein causing the image sensor to capture a plurality of images comprises causing the image sensor to carry out an autofocus process, wherein the autofocus process comprises adjusting a position of the optical element with respect to the image sensor to achieve the different respective focus distance settings for the respective images.

6. The optical imaging system of claim 1, wherein combining the plurality of images into the aggregate image comprises averaging associated pixel values of the plurality of images.

7. The optical imaging system of claim 1, wherein determining the condition of a particular sensor element comprises:

comparing a value of a pixel in the aggregate image and associated with the particular sensor element to that of at least one neighboring pixel in the aggregate image; and

determining, based on the comparison, that a difference between the pixel and the at least one neighboring pixel is above a predetermined threshold.

8. The optical imaging system of claim 1, wherein the determined condition comprises at least one of: a non-defective sensor element, a hot sensor element, a dark sensor element, or an occluded sensor element.

9. The optical imaging system of claim 1, wherein adjusting the value of the particular pixel comprises setting the value of the particular pixel based on a corresponding value of at least one neighboring pixel.

10. The optical imaging system of claim 1, wherein adjusting the value of the particular pixel comprises setting the value of the particular pixel to a corresponding average value of a plurality of neighboring pixels.

11. A method comprising:

capturing a plurality of images via an image sensor, wherein the image sensor comprises

a plurality of sensor elements, the sensor elements configured to represent respective pixels in the captured plurality of images;

while capturing the plurality of images, adjusting at least one property of an optical element, wherein the optical element is coupled to the image sensor;

combining the plurality of images into an aggregate image;

based on the aggregate image, determining a condition of a particular sensor element of the plurality of sensor elements; and

adjusting, in a payload image, a value of a particular pixel that is associated with the particular sensor element.

12. The method of claim 11, wherein adjusting the at least one property of the optical element comprises at least one of: adjusting a field of view of the optical element, adjusting a zoom setting of the optical element, adjusting an aperture setting of the optical element, or adjusting a position of the optical element.

13. The method of claim 11 further comprising metering a field of view of the image sensor and, based on the metering, selecting a shutter speed and a sensitivity of the image sensor with which to capture the plurality of images.

14. The method of claim 11 further comprising mapping the determined condition in a sensor element condition map, and wherein adjusting the value of the particular pixel is based on the sensor element condition map.

15. The method of claim 11 wherein adjusting the at least one property of the optical element comprises causing the optical element to carry out an autofocus process, wherein the autofocus process comprises adjusting a position of the optical element with respect to the image sensor to provide different respective focus distance settings for each respective image.

16. The method of claim 11 further comprising combining the plurality of images into the aggregate image comprises averaging associated pixel values of the plurality of images.

17. The method of claim 11, wherein determining the condition of a particular sensor element comprises:

comparing a value of the respective pixel to that of at least one neighboring pixel in the aggregate image; and

determining, based on the comparison, that a difference between the respective pixel and the at least one neighboring pixel is above a predetermined threshold.

18. The method of claim 11, wherein the determined condition comprises at least one of: a non-defective sensor element, a hot sensor element, a dark sensor element, or an occluded sensor element.

19. The method of claim 11, wherein adjusting the value of the particular pixel comprises setting the value of the particular pixel to a corresponding value of at least one neighboring pixel.

20. The method of claim 11, wherein adjusting the value of the particular pixel comprises setting the value of the particular pixel to a corresponding average value of a plurality of neighboring pixels.