

CLAIMS:

1. A system comprising:

a display having a lens arranged to view an image, wherein the display is head mounted or wearable;

an image mapping module, implemented at least partly in one or more of configurable logic or fixed functionality logic hardware, in communication with an image input source, to map a received image onto a plurality of distortion meshes;

a radial aberration compensation module, implemented at least partly in one or more of configurable logic or fixed functionality logic hardware, in communication with the image mapping module, to compensate for radial distortions within the received image when the received image is viewed on the display via the lens and output a radially compensated image;

a chromatic aberration compensation module, implemented at least partly in one or more of configurable logic or fixed functionality logic hardware, in communication with the image mapping module, to compensate for chromatic distortions within the received image when the received image is viewed on the display via the lens and output a chromatically compensated image, wherein the chromatic aberration compensation module is to independently compensate for chromatic aberrations for each of multiple different color channels of the received image; and

a blending module, implemented at least partly in one or more of configurable logic or fixed functionality logic hardware, in communication with the radial aberration compensation module and the chromatic aberration compensation module, to adaptively blend the radially compensated image and the chromatically compensated image into a composite image to reduce distortions within the received image, and output the composite image to be viewed on the display via the lens.

2. The system of claim 1, wherein each of the plurality of distortion meshes are distorted in a barrel shape.

3. The system of claim 2, wherein each of the plurality of distortion meshes include a triangulation grid.

4. The system of claim 1, wherein each of the plurality of distortion meshes corresponds to a red color channel, a green color channel, or a blue color channel.

5. The system of claim 4, wherein each of the multiple different color channels includes lens specific parameters to compensate for chromatic aberrations.

6. An apparatus comprising:

an image mapping module, implemented at least partly in one or more of configurable logic or fixed functionality logic hardware, to map a received image onto a plurality of distortion meshes;

a radial aberration compensation module, implemented at least partly in one or more of configurable logic or fixed functionality logic hardware, to compensate, via at least one of the plurality of distortion meshes, for radial distortions within the received image and output a radially compensated image;

a chromatic aberration compensation module, implemented at least partly in one or more of configurable logic or fixed functionality logic hardware, to compensate, via multiple distortion meshes of the plurality of distortion meshes, for chromatic distortions within the received image and output a chromatically compensated image, wherein the chromatic aberration compensation module is to independently compensate for chromatic aberrations for each of multiple different color channels of the received image; and

a blending module, implemented at least partly in one or more of configurable logic or fixed functionality logic hardware, to adaptively blend the radially compensated image and the chromatically compensated image into a composite image to reduce distortions within the received image when the received image is viewed on a display via a lens, and output the composite image to be viewed on the display via the lens, wherein the display is a head mounted or wearable display having the lens.

7. The apparatus of claim 6, wherein each of the plurality of distortion meshes are distorted in a barrel shape.
8. The apparatus of claim 7, wherein each of the plurality of distortion meshes include a triangulation grid.
9. The apparatus of claim 6, wherein each of the plurality of distortion meshes corresponds to a red color channel, a green color channel, or a blue color channel.
10. The apparatus of claim 9, wherein each of the multiple different color channels includes lens specific parameters to compensate for chromatic aberrations.
11. A method comprising:
mapping a received image onto a plurality of distortion meshes;
compensating, using at least one of the plurality of distortion meshes, for radial distortions within the received image and outputting a radially compensated image;
compensating, using multiple distortion meshes of the plurality of distortion meshes, for chromatic distortions within the received image and outputting a chromatically compensated image, wherein the chromatic distortions are independently compensated for each of multiple different color channels of the received image;
adaptively blending the radially compensated image and the chromatically compensated image into a composite image to reduce distortion within the received image when viewing the received image on a display through a lens; and
outputting the composite image to be viewed on the display via the lens, wherein the display is a head mounted or wearable display having the lens.
12. The method of claim 11, wherein the composite image comprises reduced distortions.
13. The method of claim 11, wherein each of the plurality of distortion meshes are distorted in a barrel shape.

14. The method of claim 13, wherein each of the plurality of distortion meshes include a triangulation grid.

15. The method of claim 14, wherein each of the plurality of distortion meshes corresponds to a red color channel, a green color channel, or a blue color channel.

16. The method of claim 15, wherein each of the multiple different color channels includes lens specific parameters to compensate for chromatic aberrations.

17. A non-transitory computer-readable storage medium comprising a set of instructions which, if executed by a processor, cause a computer to:

- map a received image onto a plurality of distortion meshes;

- compensate for radial distortions within the received image and output a radially compensated image;

- compensate for chromatic distortions within the received image and output a chromatically compensated image, wherein the chromatic distortions are independently compensated for each of multiple different color channels of the received image;

- adaptively blend the radially compensated image and the chromatically compensated image into a composite image to reduce distortions within the received image when the received image is viewed on a display through a lens; and

- output the composite image to be viewed on the display via the lens, wherein the display is head mounted or wearable and includes the lens.

18. The medium of claim 17, wherein the composite image comprises reduced distortions.

19. The medium of claim 17, wherein each of the plurality of distortion meshes are distorted in a barrel shape.

20. The medium of claim 19, wherein each of the plurality of distortion meshes include a triangulation grid.

21. The medium of claim 17, wherein each of the plurality of distortion meshes corresponds to a red color channel, a green color channel, or a blue color channel.

22. The medium of claim 21, wherein each of color channel includes lens specific parameters to compensate for chromatic aberrations.