

CLAIMS

We claim:

1. A distortion reducing system comprising:

a display having a lens arranged to view an image;

5 an image mapping module, in communication with an image input source, to map a received image onto one or more of a plurality of distortion meshes;

a radial aberration compensation module, in communication with the image mapping module, to compensate for radial distortions within the received image and output a radially corrected image;

10 a chromatic aberration compensation module, in communication with the image mapping module, to compensate for chromatic distortions within the received image and output a chromatically corrected image; and

a blending module, in communication with the radial aberration compensation module and the chromatic aberration compensation module, to adaptively blend the radially corrected image and the chromatically corrected image into a composite corrected image to reduce distortions within the received image, and output the composite corrected image to be viewed via the display.

2. The system of claim 1, wherein the composite corrected image includes reduced.

20 3. The system of any one of claims 1 or 2, wherein each of the plurality of distortion meshes are distorted in a barrel shape.

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

25 5. 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.

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

7. A distortion reducing apparatus comprising:
an image mapping module to map a received image onto one or more of a plurality of distortion meshes;

a radial aberration compensation module to compensate for radial distortions within the received image and output a radially corrected image;

a chromatic aberration compensation module to compensate for chromatic distortions within the received image and output a chromatically corrected image; and

a blending module to adaptively blend the radially corrected image and the chromatically corrected image into a composite corrected image to reduce distortions within the received image, and output the composite corrected image to be viewed via a display having a lens.

8. The apparatus of claim 7, wherein the composite corrected image includes reduced distortions.

9. The apparatus of any one of claims 7 or 8, wherein each of the plurality of distortion meshes are distorted in a barrel shape.

10. The apparatus of claim 9, wherein each of the plurality of distortion meshes include a triangulation grid.

11. The apparatus of claim 7, wherein each of the plurality of distortion meshes corresponds to a red color channel, a green color channel, or a blue color channel.

12. The apparatus of claim 11, wherein each of the color channels includes lens specific parameters to compensate for chromatic aberrations.

13. A distortion reducing method comprising:
mapping a received image onto one or more of a plurality of distortion meshes;
compensating for radial distortions within the received image and outputting a radially corrected image;
compensating for chromatic distortions within the received image and outputting a chromatically corrected image;

adaptively blending the radially corrected image and the chromatically corrected image into a composite corrected image to reduce distortions within the received image; and outputting the composite corrected image to be viewed via a display having a lens.

5 14. The method of claim 13, wherein the composite corrected image includes reduced distortions.

15 15. The method of any one of claims 13 or 14, wherein each of the plurality of distortion meshes are distorted in a barrel shape.

10 16. The method of claim 15, wherein each of the plurality of distortion meshes include a triangulation grid.

15 17. The method of claim 16, wherein each of the plurality of distortion meshes corresponds to a red color channel, a green color channel, or a blue color channel.

18. The method of claim 17, wherein each of the color channels includes lens specific parameters to compensate for chromatic aberrations.

20 19. 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 one or more of a plurality of distortion meshes;

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

25 compensate for chromatic distortions within the image and output a chromatically corrected received image;

adaptively blend the radially corrected image and the chromatically corrected image into a composite corrected image to reduce distortions within the received image; and

output the composite corrected image to be viewed via a display having a lens.

30 20. The medium of claim 19, wherein the composite corrected image includes reduced distortions.

21. The medium of any one of claims 19 or 20, wherein each of the plurality of distortion meshes are distorted in a barrel shape.

22. The medium of claim 21, wherein each of the plurality of distortion meshes include
5 a triangulation grid.

23. The medium of claim 19, wherein each of the plurality of distortion meshes corresponds to a red color channel, a green color channel, or a blue color channel.

10 24. The medium of claim 23, wherein each of the color channels includes lens specific parameters to compensate for chromatic aberrations.

25. A distortion reducing apparatus comprising:
means for mapping a received image onto one or more of a plurality of distortion meshes;
15 means for compensating for radial distortions within the received image and outputting a radially corrected image;
means for compensating for chromatic distortions within the received image and outputting a chromatically corrected image; and
means for adaptively blending the radially corrected image and the chromatically corrected
20 image into a composite corrected image to reduce distortions within the received image, and outputting the composite corrected image to be viewed via a display having a lens.

CLAIMS

We claim:

1. A system comprising:
 - a display having a lens arranged to view an image;
 - an image mapping module, in communication with an image input source, to map a received image onto one or more of a plurality of distortion meshes;
 - a radial aberration compensation module, in communication with the image mapping module, to compensate for radial distortions within the received image and output a radially corrected image;
 - a chromatic aberration compensation module, in communication with the image mapping module, to compensate for chromatic distortions within the received image and output a chromatically corrected image; and
 - a blending module, in communication with the radial aberration compensation module and the chromatic aberration compensation module, to adaptively blend the radially corrected image and the chromatically corrected image into a composite corrected image to reduce distortions within the received image, and output the composite corrected image to be viewed via the display.
2. The system of claim 1, wherein the composite corrected image comprises reduced distortions .
3. The system of claim 1, wherein each of the plurality of distortion meshes are distorted in a barrel shape.
4. The system of claim 3, wherein each of the plurality of distortion meshes include a triangulation grid.
5. 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.
6. The system of claim 5, wherein each of the color channels includes lens specific parameters to compensate for chromatic aberrations.
7. An apparatus comprising:

an image mapping module to map a received image onto one or more of a plurality of distortion meshes;

a radial aberration compensation module to compensate for radial distortions within the received image and output a radially corrected image;

a chromatic aberration compensation module to compensate for chromatic distortions within the received image and output a chromatically corrected image; and

a blending module to adaptively blend the radially corrected image and the chromatically corrected image into a composite corrected image to reduce distortions within the received image, and output the composite corrected image to be viewed via a display having a lens.

8. The apparatus of claim 7, wherein the composite corrected image comprises reduced distortions.

9. The apparatus of claim 7, wherein each of the plurality of distortion meshes are distorted in a barrel shape.

10. The apparatus of claim 9, wherein each of the plurality of distortion meshes include a triangulation grid.

11. The apparatus of claim 7, wherein each of the plurality of distortion meshes corresponds to a red color channel, a green color channel, or a blue color channel.

12. The apparatus of claim 11, wherein each of the color channels includes lens specific parameters to compensate for chromatic aberrations.

13. A method comprising:
mapping a received image onto one or more of a plurality of distortion meshes;
compensating for radial distortions within the received image and outputting a radially corrected image;
compensating for chromatic distortions within the received image and outputting a chromatically corrected image;
adaptively blending the radially corrected image and the chromatically corrected image into a composite corrected image to reduce distortions within the received image; and

outputting the composite corrected image to be viewed via a display having a lens.

14. The method of claim 13, wherein the composite corrected image comprises reduced distortions.

15. The method of claim 13, wherein each of the plurality of distortion meshes are distorted in a barrel shape.

16. The method of claim 15, wherein each of the plurality of distortion meshes include a triangulation grid.

17. The method of claim 16, wherein each of the plurality of distortion meshes corresponds to a red color channel, a green color channel, or a blue color channel.

18. The method of claim 17, wherein each of the color channels includes lens specific parameters to compensate for chromatic aberrations.

19. 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 one or more of a plurality of distortion meshes;

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

compensate for chromatic distortions within the received image and output a chromatically corrected image;

adaptively blend the radially corrected image and the chromatically corrected image into a composite corrected image to reduce distortions within the received image; and

output the composite corrected image to be viewed via a display having a lens.

20. The medium of claim 19, wherein the composite corrected image comprises reduced distortions.

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

22. The medium of claim 21, wherein each of the plurality of distortion meshes include a triangulation grid.

23. The medium of claim 19, wherein each of the plurality of distortion meshes corresponds to a red color channel, a green color channel, or a blue color channel.

24. The medium of claim 23, wherein each of the color channels includes lens specific parameters to compensate for chromatic aberrations.