CLAIMS

What is claimed is:

1. A product comprising one or more tangible computer-readable non-transitory storage media comprising computer-executable instructions operable to, when executed by at least one computer processor, enable the at least one computer processor to determine one or more optical parameters of a lens of eyeglasses, the instructions, when executed, result in:

processing at least one image of an object, the image of the object captured by an image-capturing device via said lens when said lens is between the image-capturing device and the object; and

determining the one or more optical parameters of said lens based on said at least one image, wherein determining the one or more optical parameters of the lens comprises identifying an existence of a cylindrical axis of the lens based on said image, determining an imaged dimension of the object in the image, determining a first power of the lens corresponding to said cylindrical axis based at least on a magnification between a dimension of the object and said imaged dimension of the object, determining a second power of said lens corresponding to a perpendicular axis, which is perpendicular to said cylindrical axis, and determining a cylindrical power of said lens based on said first and second powers.

2. The product of claim 1, wherein the instructions, when executed, result in determining at least one of the first power or the second power of the lens based on autofocus information of an autofocus of said image-capturing device, when said image is captured.

3. The product of claim 2, wherein the instructions, when executed, result in processing a first image of said object captured via said lens at a first distance between said object and said image-capturing device, and a second image of said object captured without said lens at a second distance between said object and said image-capturing device, and determining the at least one of the first power or the second power of the lens based on said first and second distances, first autofocus information of said image-capturing device when said first image is captured, and second autofocus information of said image-capturing device when said second image is captured.

4. The product of claim 1, wherein the instructions, when executed, result in determining the one or more optical parameters of the lens based on a sharpness parameter of a sharpness of one or more spatial frequencies in said image.

5. The product of claim 4, wherein the instructions, when executed, result in processing a plurality of images of said object captured not via said lens at a respective plurality of distances between said object and said image-capturing device, determining a sharpest image of said plurality of images comprising the one or more spatial frequencies, and determining the one or more optical parameters of the lens based on a first distance between said object and said image-capturing device, when said sharpest image is captured and a second distance between said object and said image-capturing device, when said at least one image is captured via said lens.

6. The product of claim 1, wherein the imaged dimension of the object in the image comprises an imaged dimension of an element of the object corresponding to the cylindrical axis.

7. The product of claim 1, wherein the instructions, when executed, result in determining a spherical power of the lens based on the first power.

8. The product of claim 1, wherein the instructions, when executed, result in identifying the existence of the cylindrical axis of the lens based on one or more visual effects of one or more spatial frequencies in said image.

9. The product of claim 8, wherein the instructions, when executed, result in determining said cylindrical axis based at least on an angle of a non-symmetrical blur of said one or more spatial frequencies.

10. The product of claim 8, wherein the instructions, when executed, result in determining existence of said cylindrical axis based at least on an angle of a sharpest portion of said spatial frequencies.

11. The product of claim 1, wherein the instructions, when executed, result in determining the cylindrical axis of said lens based on a comparison between one or more spatial elements of said object and one or more imaged spatial elements in said image.

12. The product of claim 11, wherein the instructions, when executed, result in processing a plurality of images corresponding to a plurality of rotations of said spatial elements in a plurality of angles, determining a plurality of magnifications between said one or more spatial elements of said object and said one or more imaged spatial elements, and determining said cylindrical axis based on said magnifications.

13. The product of claim 1, wherein the instructions, when executed, result in determining the one or more optical parameters of said lens based on a distance between said object and said image-capturing device, when said image is captured.

14. The product of claim 13, wherein the instructions, when executed, result in determining the distance between said object and said image-capturing device, based on acceleration information indicating an acceleration of said image-capturing device.

15. The product of claim 1, wherein the instructions, when executed, result in determining a pupillary distance between said lens and an other lens of said eyeglasses based on a distance between a first center of said lens and a second center of the other lens.

16. The product of claim 15, wherein the instructions, when executed, result in:

processing a first image of said object, which is captured without the lens;

identifying a second image captured via said lens, which co-aligns with said first image;

determining a first location when said second image is captured;

identifying a third image captured via the other lens, which co-aligns with said first image;

determining a second location when said third image is captured; and

determining said pupillary distance based on said first and second locations.

17. The product of claim 1, wherein the instructions, when executed, result in determining a sign of said lens based on said at least one image.

18. The product of claim 17, wherein the instructions, when executed, result in identifying a movement pattern in a plurality of captured images, the plurality of captured images comprising images of said object captured via said lens when the lens is moved in a particular direction, and determining the sign of said lens based on said movement pattern.

19. The product of any one of claims 1-18, wherein the instructions, when executed, result in determining the one or more optical parameters of said lens based on a single frame including said at least one image of said object via said lens.

20. The product of any one of claims 1-18, wherein determining the one or more optical parameters of said lens comprises determining one or more of a spherical power, and a pupillary distance between lenses of said eyeglasses.

21. The product of any one of claims 1-18, wherein the instructions, when executed, result in causing a display device to display said object.

22. The product of claim 21, wherein the instructions, when executed, result in calibrating a display size of said object on said display device.

23. The product of any one of claims 1-18, wherein the object comprises an object having one or more known dimensions, the instructions, when executed, result in determining said optical parameters based on said dimensions.

24. The product of any one of claims 1-18, wherein the object comprises a circularly symmetric or rotationally symmetric object.

25. The product of any one of claims 1-18, wherein the instructions, when executed, result in instructing a user to place said lens between said image-capturing device and said object, and causing said image-capturing device to capture the image of said object via said lens.

26. A mobile device configured to determine one or more optical parameters of a lens of eyeglasses, the mobile device comprising:

a camera to capture at least one image of an object via said lens when said lens is between the camera and the object; and

a lensometer to determine the one or more optical parameters of said lens based on said at least one image, the lensometer configured to identify an existence of a cylindrical axis of the lens based on said image, to determine an imaged dimension of the object in the image, to determine a first power of the lens corresponding to said cylindrical axis based at least on a magnification between a dimension of the object and said imaged dimension of the object, to determine a second power of said lens corresponding to a perpendicular axis, which is perpendicular to said cylindrical axis, and to determine a cylindrical power of said lens based on said first and second powers.

27. The mobile device of claim 26 configured to determine a spherical power of the lens based on the first power.

28. The mobile device of claim 26 or 27 configured to determine the one or more optical parameters of said lens based on a distance between said object and the camera, when said image is captured.

29. A method of determining one or more optical parameters of a lens of eyeglasses, the method comprising:

processing at least one image of an object, the image of the object captured by an image-capturing device via said lens when said lens is between the image-capturing device and the object; and

determining the one or more optical parameters of said lens based on said at least one image, wherein determining the one or more optical parameters of the lens comprises identifying

an existence of a cylindrical axis of the lens based on said image, determining an imaged dimension of the object in the image, determining a first power of the lens corresponding to said cylindrical axis based at least on a magnification between a dimension of the object and said imaged dimension of the object, determining a second power of said lens corresponding to a perpendicular axis, which is perpendicular to said cylindrical axis, and determining a cylindrical power of said lens based on said first and second powers.

30. The method of claim 29 comprising determining the one or more optical parameters of said lens based on a distance between said object and said image-capturing device, when said image is captured.