CLAIMS:

1. A wearable visualization device configured to provide a user with an augmented reality, a virtual reality, and/or a mixed reality experience, the wearable visualization device comprising:

a housing;

a lens portion extending from the housing; a first display screen and a second display screen coupled to the housing and oriented toward the lens portion, wherein the first display screen and the second display screen are configured to project light onto the lens portion, wherein the lens portion is configured to reflect at least a portion of the light toward eyes of the user; and

a camera positioned between the first display screen and the second display screen and oriented toward the lens portion, wherein the camera is configured to acquire image data of the lens portion, wherein the image data comprises the portion of the light projected onto the lens portion by the first display screen and the second display screen and a reflection of the eyes of the user reflected by the lens portion.

2. The wearable visualization device of claim 1, comprising a processor communicatively coupled to the camera, wherein the processor is configured to receive the image data and determine biometric information of the user based on the reflection of the eyes.

3. The wearable visualization device of claim 2, wherein the biometric information comprises an interpupillary distance of the user.

4. The wearable visualization device of claim 2, wherein the processor is configured to control the first display screen and the second display screen to adjust projection of the light onto the lens portion based on the biometric information.

5. The wearable visualization device of claim 1, wherein the first display screen and the second display screen are spaced substantially equidistantly from a centerline of the wearable visualization device, wherein the first display screen is configured to raster virtual features onto the lens portion in a first direction extending outwardly from and crosswise to the centerline and the second display screen is configured to raster additional virtual features onto the lens portion in a second direction extending outwardly from and crosswise to the centerline.

6. The wearable visualization device of claim 1, wherein the lens portion comprises an interior surface oriented toward the first display screen and the second display screen, wherein the interior surface is coated with a reflective layer configured to reflect between 50 percent and 70 percent of the light projected onto the lens portion into the eyes of the user.

7. The wearable visualization device of claim 6, wherein the lens portion comprises an exterior surface opposite the interior surface, wherein the exterior surface is coated with an anti-reflective layer, a scratch resistant coating, or both.

8. An augmented reality, virtual reality, and/or mixed reality (AR/VR) system, comprising:

a wearable visualization device, comprising:

a housing;

a lens portion extending from the housing and configured to extend across a line of sight of a user while the wearable visualization device is in an equipped configuration on the user; and

a display assembly having a frame removably coupled to the housing, wherein a first display screen, a second display screen, and a camera are coupled to the frame, wherein the first display screen and the second display screen are configured to project light onto a surface of the lens portion, wherein the camera is positioned between the first display screen and the second display screen and oriented toward the surface of the lens portion, and wherein the first display screen and the second display screen are removed from the line of sight of the user while the wearable visualization device is in the equipped configuration on the user.

9. The AR/VR system of claim 8, wherein the housing comprises a chassis having a first screen opening, a second screen opening, and a camera opening, wherein the frame is configured to removably couple to the chassis, and, in an engaged configuration with the chassis, is configured to align the first display screen, the second display screen, and the camera with the first screen opening, the second screen opening, and the camera opening, respectively.

10. The AR/VR system of claim 8, comprising a light emitting diode (LED) disposed within an interior of the housing and a light pipe extending between the LED and an exterior surface of the housing.

11. The AR/VR system of claim 8, comprising an interface device configured to couple to a head of the user, wherein the wearable visualization device is configured to removably couple to the interface device.

12. The AR/VR system of claim 11, comprising: a proximity sensor coupled to the housing and configured to provide feedback indicative of a proximity of the housing with respect to a surface of the interface device; and a processor communicatively coupled to the proximity sensor, wherein the processor is configured to determine, based on the feedback, whether the wearable visualization device is coupled to the interface device.

13. The AR/VR system of claim 12, wherein the processor is configured to instruct illumination of a lighting element of the wearable visualization device upon a determination that the wearable visualization device is coupled to the interface device.

14. A wearable visualization device configured to provide a user with an augmented reality, a virtual reality, and/or a mixed reality experience, the wearable visualization device comprising:

a lens portion;

a display screen oriented toward a surface of the lens portion and configured to project virtual features onto a first location of the surface; a camera oriented toward the surface of the lens portion and configured to acquire image data indicative of reflections that are reflected by the surface of the lens portion, wherein the reflections comprise a first reflection of a first eye of the user and a second reflection of a second eye of the user; and

a processor communicatively coupled to the camera and the display screen, wherein the processor is configured to adjust projection of the virtual features from the first location to a second location on the surface of the lens portion based on the image data.

15. The wearable visualization device of claim 14, wherein, based on the image data, the processor is configured to: determine an interpupillary axis extending between a first pupil of the first eye of the user and a second pupil of the second eye of the user; and determine an angle between the interpupillary axis and a reference axis extending along the lens portion, wherein the angle is indicative of an orientation of the wearable visualization device with respect to a head of the user.

16. The wearable visualization device of claim 15, wherein the processor is configured to instruct the display screen to project the virtual features onto the second location of the surface of the lens portion upon a determination that the angle is greater than a tolerance value.

17. The wearable visualization device of claim 16, wherein the processor is configured to generate an alert indicating that the wearable visualization device is misaligned on the head of the user upon a determination that the angle exceeds a threshold value greater than the tolerance value.

18. The wearable visualization device of claim 14, comprising:

a proximity sensor configured to monitor a proximity of the wearable visualization device with respect to a surface; and

an orientation sensor configured to monitor an orientation of the wearable visualization device with respect to gravity, wherein the processor is configured to determine that the wearable visualization device is in a storage configuration upon receiving feedback from the proximity sensor

indicating that the wearable visualization device is within a threshold distance of the surface and upon receiving additional feedback from the orientation sensor indicating that the wearable visualization device is in a storage orientation.

19. The wearable visualization device of claim 18, comprising one or more lighting elements communicatively coupled to the processor, wherein the processor is configured to instruct the one or more lighting elements to illuminate upon a determination that the wearable visualization device is in the storage configuration.

20. The wearable visualization device of claim 1, wherein the lens portion comprises an interior surface and an exterior surface opposite the interior surface, wherein the first display screen and the second display screen are configured to project the light onto the interior surface, wherein, in an equipped configuration of the wearable visualization device on the user, the interior surface is configured to be oriented toward the eyes of the user, is configured to reflect the portion of the light and to generate the reflection of the eyes of the user, and is configured to be sampled by the camera to enable acquisition of the image data.