

What is claimed is:

1. A light field (LF) display system comprising:
a processing engine configured to generate holographic content for display by light field display assemblies, the holographic content displayed as electromagnetic energy;
a light field display assembly in a gaming environment comprising:
one or more of the display surfaces configured to project holographic content;
and
one or more the energy devices configured to receive holographic content from the processing engine and generate electromagnetic energy to project to one or more viewers as holographic content via the display surfaces.
2. The LF display system of claim 1, wherein the display surfaces are incorporated into a holographic gaming station or a holographic gambling table.
3. The LF display system of claim 2, wherein the holographic gaming station is a slot machine, a gaming table game, or an electronic game.
4. The LF display system of claim 1, wherein the display surfaces are incorporated into walls of the gaming environment.
5. The LF display system of claim 1, further comprising:
a tracking system configured to obtain information about the one or more viewers viewing the holographic content.
6. The LF display system of claim 5, wherein the information obtained by the tracking system includes:
viewer responses to holographic content, and
characteristics of the one or more viewers viewing the holographic content.
7. The LF display system of claim 5, wherein the information about the one or more viewers includes any of a position of a viewer of the one or more viewers, a movement of the viewer, a gesture of the viewer, an expression of the viewer, an age of a viewer, a sex of the viewer, and a clothing worn by the viewer.
8. The LF display system of claim of 5, wherein the holographic content generated by the processing engine is altered in response to one or more viewers' age, sex, position, movement, gestures, or facial expressions identified by the tracking system.

9. The LF display system of claim 1, further comprising:
a viewer profiling system configured to
identify the one or more viewers viewing the holographic content presented by
the LF display modules, and
generate a viewer profile for each of the one or more identified viewers.
10. The LF display system of claim 9, wherein viewer responses to the holographic content or characteristics of viewers viewing the holographic content are included in the viewer profiles.
11. The LF display system of claim 9, wherein the viewer profiling system accesses social media accounts of the one or more identified viewers to generate a viewer profile.
12. The LF display system of claim 8, wherein the holographic content is altered according to an AI model.
13. The LF display system of claim 9, wherein the LF processing engine is configured to create the holographic content based in part on the characteristics of one or more viewers identified in the gaming environment, each identified viewer viewing the holographic content displayed by the LF display system and associated with a viewer profile including one or more characteristics.
14. The LF display system of claim 13, wherein the characteristics includes any of a position of the viewer, a motion of the viewer, a gesture of the viewer, a facial expression of the user, a sex of the user, an age of the user, and a clothing of the user.
15. The LF display system of claim 9, wherein the processing engine further comprises:
a processor configured to apply a model to:
identify a particular viewer of the one or more viewers viewing the displayed
holographic content using information obtained by a tracking system,
identify one or more characteristics of the particular viewer based on the viewer
profile for the identified particular user,
determine a preference for the particular viewer based on the identified
characteristics, and
create holographic content for presentation by the LF display system to the
particular viewer according to the determined preference.
16. The LF display system of claim 14, wherein the model is an artificial intelligence model.

17. The LF display system of claim 1, the plurality of energy devices comprise:
one or more energy sensors configured to sense energy incident on the one or more display surfaces.
18. The LF display system of claim 17, wherein the one or more energy sensors are configured to capture a light field from electromagnetic energy incident on the display surface.
19. The LF display system of claim 18, wherein the LF display assembly is configured to simultaneously project holographic content and capture a light field.
20. The LF display system of claim 1, wherein the holographic content includes a holographic character.
21. The LF display system of claim 20, further comprising:
a sensory feedback system comprising at least one sensory feedback device that is configured to provide sensory feedback as the holographic character is presented.
22. The LF display system of claim 21, wherein the sensory feedback includes tactile feedback, audio feedback, aroma feedback, temperature feedback, or any combination thereof.
23. The LF display system of claim 22, wherein the tactile feedback is configured to provide a tactile surface coincident with a surface of the holographic character that the one or more viewers may interact with via touch.
24. The LF display system of claim 20, further comprising:
a tracking system comprising one or more tracking devices configured to obtain information about the one or more viewers of the gaming environment; and
wherein the controller is configured to generate the holographic character for the one or more viewers of the gaming environment based on the information obtained by the tracking system.
25. The LF display system of claim 1, wherein the holographic content includes a first type of energy and a second type of energy.
26. The LF display system of claim 25, wherein the first type of energy is electromagnetic energy and the second type of energy is ultrasonic energy.

27. The LF display system of claim 26, wherein the first type of energy and second type of energy are presented at the same location such that the LF display assembly presents a volumetric tactile surface near or coincident with the surface of a holographic object.

28. The LF display system of claim 24, wherein the information obtained by the tracking system includes any of: a position of the viewer, a movement of the viewer, a gesture of the viewer, an expression of the viewer, a gaze of the viewer, an age of a viewer, a gender of the viewer, an identification of a piece of a garment worn by the viewer, and auditory feedback of the viewer.

29. The LF display system of claim 28, wherein the tracked information of the viewer includes the gaze of the viewer, and wherein the LF display assembly is configured to update eyes of the holographic character to maintain eye-contact with the gaze of the viewer.

30. The LF display system of claim 28, wherein the one or more viewers include a first viewer and a second viewer and the tracked response includes the gaze of the first viewer and the second viewer, and wherein the LF display assembly is configured to update eyes of the holographic character to alternate directing eye-contact between the first viewer and the second viewer.

31. The LF display system of claim 28, wherein the controller is configured to use the information obtained by the tracking system and an artificial intelligence model to generate the holographic character.

32. The LF display system of claim 28, further comprising:

a viewer profiling module configured to:

access the information obtained by the tracking system;

process the information to identify a viewer of the one or more viewers of the gaming environment; and

generate a viewer profile for the viewer, and

wherein the controller is configured to generate the holographic character for the viewer based in part on the viewer profile.

33. The system of claim 32, wherein the holographic character is configured to act as a personal assistant to the viewer.

34. The LF display system of claim 32, wherein the controller is configured to use the viewer profile and an artificial intelligence model to generate the holographic character.

35. The LF display system of claim 34, wherein the viewer profiling module is further configured to:

update the viewer profile using information from a social media account of the viewer;
and
wherein the controller is configured to generate the holographic character based in part on the updated viewer profile.

36. The LF display system of claim 32, wherein the controller is configured to use the updated viewer profile and an artificial intelligence model to generate the holographic character.

37. A light field (LF) display system comprising:

a holographic display having a display area in a gaming environment, the holographic display presenting holographic content to viewers of the gaming environment in a holographic object volume that corresponds to at least a portion of the gaming environment;
one or more game stations in the holographic object volume of the gaming environment, the holographic display presenting holographic content in association with and augmenting one or more visual aspects of the one or more game stations; and
a tracking system configured to obtain information about viewers playing a game provided by each of the one or more game stations and viewing the holographic content, the information including viewer responses to holographic content, and characteristics of viewers viewing the holographic content, wherein the holographic content for the viewers is augmented based on the information obtained by the tracking system.

38. The system of claim 37, wherein the holographic display is a plurality of LF display modules forming one or more surfaces in the gaming environment, each LF display module being tiled together to form a seamless display surface that has an effective display area that together is larger than the display area of a single LF display module, and wherein the holographic content includes at least one holographic object presented at a location in holographic object volume of the gaming environment.

39. The system of claim 38, wherein the holographic object is a holographic character, wherein the tracking system is further configured to:

receive one or more interactions from a viewer with the holographic character;
and
generate, using an artificial intelligence (AI) model, a holographic character response to the one or more interactions from the viewer.

40. The system of claim 39, wherein the holographic character is configured to act as a personal assistant to the viewer.

41. The system of claim 37, wherein the holographic object is live holographic content of a second viewer presented to a first viewer in the gaming environment, wherein the second viewer is playing a game remote from the first viewer also playing the game in the gaming environment, wherein the LF display system is further configured to:

receive image data of the second viewing user; and
generate a live holographic representation of the second viewer within the gaming environment for presentation to the first viewer while the first viewer and the second viewer simultaneously play the game in different physical locations.

42. The system of claim 37, wherein the holographic content is a holographic character, wherein the tracking system is further configured to:

identify one or more contextual user characteristics, wherein the one or more contextual user characteristics include at least one of: wins or losses of the viewer, one or more classified instances of body language of the viewer, one or more classified facial expressions of the viewer, a vocalization analysis of the viewer, or some combination thereof; and
cause, using an artificial intelligence (AI) model, the holographic character to at least one of respond to or perform one or more behaviors in response to the identified one or more contextual user characteristics from the viewer.

43. The system of claim 41, wherein the response from the holographic character is at least one of: a spoken remark of encouragement, a spoken remark of excitement, a spoken remark of condolence, a smile, a gesture, a body motion, a hand clapping motion, or some combination thereof.

44. The system of claim 37, further comprising:
a viewer profiling system configured to:

identify viewer responses to the holographic content and characteristics of viewers viewing the holographic content, and
generate viewer profiles describing the characteristics and preferences of viewers viewing the holographic content based on the identified characteristics and responses.

45. The system of claim 37, wherein the holographic content is individually augmented for each viewer based on the information obtained by the tracking system.

46. The system of claim 37, wherein the holographic content presented to a first viewer is different from the holographic content presented to a second viewer in the gaming environment.

47. The system of claim 45, wherein audio content presented to the first viewer in association with the holographic content is different from the audio content presented to a second viewer.

48. The system of claim 37, wherein the gaming environment is a casino and the one or more game stations include slot machines or gambling tables.

49. The system of claim 48, wherein the holographic content is a holographic character in the gaming environment and the haptic surface coincides with a hand of the holographic character.

50. The system of claim 37, further comprising:
a plurality of ultrasonic speakers configured to generate a haptic surface that coincides with at least a portion of the holographic content.

51. A Light Field (LF) display system comprising:
a network interface configured to receive holographic content via a network connection, the holographic content for display to one or more viewers as electromagnetic energy; and
a light field display assembly in a gaming environment comprising:
one or more display surfaces configured to project holographic content; and
one or more energy devices configured to receive holographic content from the network interface and generate the electromagnetic energy to project to one or more users as holographic content via the display surfaces.

52. The LF display system of claim 50, further comprising:

a decoder configured to decode the holographic content into a format that is presentable by the LF display assembly.

53. The LF display system of claim 50, further comprising:

a processor storing computer instructions, the computer instructions, when executed, causing the processor to:
receive holographic content in a first format from the network connection via the network interface; and
decode the holographic data in the first format into holographic content in a second format.

54. The LF display system of claim 52, wherein the first format is a vectorized data format and the second format is a rasterized data format.

55. The LF display system of claim of claim 52, wherein the computer instructions, when executed, further cause the processor to:

determine a hardware configuration of the LF display system; and
decode the holographic content into the second format based on the hardware configuration.

56. The LF display system of claim of claim 52, wherein the computer instructions, when executed, further cause the processor to:

determine a layout of the gaming environment;
decode the holographic content into the second format based on the layout of the gaming environment.

57. The LF display system of claim of claim 52, wherein the computer instructions, when executed, further cause the processor to

determine a configuration of the LF display assembly, the configuration including any of:
a resolution,
an angles per degree,
a field of view, and
a display area.

58. The LF display system of claim 52, further comprising:

a rights management module configured to manage the digital rights of holographic content received via the network, the digital rights management module allowing

the LF display assembly to project holographic content for which the rights management module has a digital key.

59. The LF display system of claim 52, wherein the holographic content is received from a holographic content repository connected to the LF display system via the network.

60. A light field (LF) display system comprising:

a plurality of LF display modules forming one or more surfaces in a gaming environment, each LF display module having a display area, being tiled together to form a seamless display surface that has an effective display area that together is larger than the area of any individual LF display module, and presenting holographic content to viewers of the gaming environment in a holographic object volume that corresponds to at least a portion of the gaming environment; and

one or more game stations in the holographic object volume of the gaming environment, the plurality of LF display modules presenting holographic content in association with the one or more game stations.

61. The LF display system of claim 59, further comprising:

a tracking system configured to obtain information about viewers playing a game provided by each of the one or more game stations and viewing the holographic content, the information including viewer responses to holographic content, and characteristics of viewers viewing the holographic content, wherein the holographic content for the viewers is augmented based on the information obtained by the tracking system.

62. The LF display system of claim 59, wherein the holographic content is a holographic character, wherein the tracking system is further configured to:

receive one or more interactions from a viewer with the holographic character; identify an intent associated with the one or more received interactions from the viewer; and generate, using an artificial intelligence (AI) model, a holographic character response to the one or more interactions from the viewer.

63. The LF display system of claim 59, further comprising:

a plurality of ultrasonic speakers configured to generate a haptic surface that coincides with at least a portion of the holographic content.

64. The LF display system of claim 62, wherein the holographic content is a holographic character in the gaming environment and the haptic surface coincides with a body part of the holographic character.

65. The LF display system of claim 59, wherein the holographic content is a holographic character, wherein the tracking system is further configured to:

identify one or more contextual user characteristics, wherein the one or more contextual user characteristics include at least one of: wins or losses of the viewer, one or more classified instances of body language of the viewer, one or more classified facial expressions of the viewer, a vocalization analysis of the viewer, or some combination thereof; and
cause, using an artificial intelligence (AI) model, the holographic character to at least one of respond to or perform one or more behaviors in response to the identified one or more contextual user characteristics from the viewer.

66. The LF display system of claim 64, wherein the response from the holographic character is at least one of: a spoken remark of encouragement, a spoken remark of excitement, a spoken remark of condolence, a smile, a gesture, a body motion, a hand clapping motion, or some combination thereof.

67. The LF display system of claim 59, wherein the holographic content is live holographic content of a second viewer presented to a first viewer in the gaming environment, wherein the second viewer is playing a game remote from the first viewer also playing the game in the gaming environment, wherein the LF display system is further configured to:

receive image data of the second viewing user; and
generate a live holographic representation of the second viewer within the gaming environment for presentation to the first viewer while the first viewer and the second viewer simultaneously play the game in different physical locations.

68. The LF display system of claim 59, wherein the gaming environment is a casino and the one or more game stations include slot machines or gambling tables.