

CLAIMS:

1. A reactive media system of an amusement attraction, the reactive media system comprising:

a motion control system, comprising:

an animated figure having a body and a set of actuators configured to adjust a figure portion of the body in response to interactive data received from one or more interactive data sources; and

a set of trackers coupled to the figure portion of the body; and

a media control system, comprising:

a tracking camera configured to generate signals indicative of a current position and a current orientation of the figure portion based on the set of trackers;

a media controller coupled to the tracking camera and configured to:

receive the signals indicative of the current position and the current orientation;

determine the current position and the current orientation based on the signals; and

generate data indicative of images to be projected onto an external surface of the figure portion having the current position and the current orientation; and

a projector communicatively coupled to the media controller, wherein the projector is configured to: receive the data indicative of the images from the media controller and project the images onto the external surface of the figure portion having the current position and the current orientation.

2. The reactive media system of claim 1, comprising the one or more interactive data sources, wherein the one or more interactive data sources is configured to generate the interactive data as input data that is variable over time and responsive to a current state of the animated figure.

3. The reactive media system of claim 1, wherein the one or more interactive data sources comprise a guest sensor configured to generate sensor signals indicative of guest input as the interactive data, wherein the motion control system comprises a figure controller coupled to the guest sensor and the set of actuators, wherein the figure controller is configured to:

determine the guest input based on the sensor signals from the guest sensor;
generate an interactive response of the animated figure to the guest input; and
instruct the set of actuators to perform the interactive response.

4. The reactive media system of claim 3, wherein the guest sensor comprises a transducer that transmits the sensor signals indicative of the guest input based on monitoring a guest area of the amusement attraction.

5. The reactive media system of claim 3, wherein the guest sensor comprises an optical transducer, a mechanical transducer, an electro-mechanical transducer, an electro-magnetic transducer, an auditory transducer, a pressure transducer, or a temperature transducer.

6. The reactive media system of claim 3, comprising a show controller communicatively coupled to the guest sensor and at least one output device disposed within the amusement attraction, wherein the show controller is configured to control the at least one output device to provide an output in conjunction with the interactive response of the animated figure, and wherein the at least one output device comprises a light output device, an audio output device, or both.

7. The reactive media system of claim 1, comprising the one or more interactive data sources, which comprise a guest sensor configured to detect guest input from a guest of the amusement attraction as the interactive data, and wherein the guest input comprises a position, a movement, or an action of the guest that is detectable by the guest sensor.

8. The reactive media system of claim 1, wherein the media control system is configured to project the images onto the external surface of the figure portion without receiving position, velocity, or acceleration information from the set of actuators of the animated figure.

9. The reactive media system of claim 1, wherein each tracker of the set of trackers is an active device that is integrated into a power supply circuit of the animated figure and configured to emit an individualized signal, and wherein the tracking camera is configured to receive and distinguish the individualized signal from each tracker of the set of trackers to enable the media controller to resolve the current position and the current orientation of the figure portion.

10. The reactive media system of claim 1, wherein each tracker of the set of trackers is a passive device that is concealed on or within a surface of the figure portion of the animated figure, and wherein the tracking camera is configured to visibly distinguish each tracker of the set of trackers to enable the media controller to resolve the current position and the current orientation of the figure portion.

11. The reactive media system of claim 1, wherein the figure portion comprises an actuatable portion of a character that is coupled to a support structure of the character.

12. The reactive media system of claim 11, wherein the figure portion comprises a head portion, an arm portion, a torso portion, or a leg portion of the body of the animated figure.

13. The reactive media system of claim 1, wherein the media control system comprises a plurality of tracking cameras that comprises the tracking camera, and wherein the plurality of tracking cameras is coupled to a camera network device that is coupled to the media controller.

14. The reactive media system of claim 1, wherein the figure portion of the animated figure comprises a face portion of the body having a moveable jaw with at least one degree of freedom onto which the projector is configured to project at least a portion of the images, wherein a portion of the set of actuators is configured to actuate the moveable jaw, and wherein the motion control system is configured to instruct the portion of the set of actuators to actuate the moveable jaw in response to the interactive data.

15. A method of operating a reactive media system of an amusement attraction, the method comprising:

receiving, via a figure controller of an animated figure, interactive data from one or more interactive data sources of the amusement attraction;

generating, via the figure controller, an interactive response of the animated figure based on the interactive data;

instructing, via the figure controller, actuators disposed within the animated figure to perform the interactive response by moving at least a portion of a body of the animated figure;

receiving, via a media controller, sensor feedback indicative of a current position and orientation of the body of the animated figure from a tracking camera coupled to the media controller, wherein the tracking camera is configured to sense the current position and orientation based on at least one tracker concealed on the body of the animated figure;

generating, via the media controller, a set of images to be projected onto an external surface of the body of the animated figure having the current position and orientation; and

instructing, via the media controller, a projector to contour map the set of images onto the external surface of the body having the current position and orientation.

16. The method of claim 15, wherein the one or more interactive data sources comprise a dedicated game engine of the animated figure, a health status monitoring system of the amusement attraction, a main control system of the amusement attraction, a computing

device associated with a technician of the amusement attraction, or a guest sensor disposed within the amusement attraction.

17. The method of claim 15, wherein the one or more interactive data sources comprise a guest sensor, wherein the interactive data comprises guest input indicative of an active movement of a guest or a passive quality of the guest.

18. The method of claim 17, wherein generating the interactive response based on the interactive data comprises:

analyzing the guest input to determine at least one aspect of the guest input, wherein the at least one aspect comprises an audible output of the guest, a detectable movement of the guest, or both; and

generating the interactive response based on each aspect of the at least one aspect of the guest input in substantially real-time.

19. The method of claim 15, comprising:

determining, via the media controller, a baseline performance assessment of the animated figure based on a first operation of the animated figure at a first time period;

determining, via the media controller, a current performance assessment of the animated figure based on a second operation of the animated figure at a later, second time period;

comparing, via the media controller, the current performance assessment to the baseline performance assessment; and

outputting, via the media controller, an alert indicative of a degraded status of the animated figure, in response to determining that the current performance assessment is outside a threshold from the baseline performance assessment.

20. The method of claim 15, wherein generating the set of images to be projected comprises:

storing, via the media controller, a skeletal model of the animated figure that comprises joints and moveable portions of the animated figure; and

updating, via the media controller, the skeletal model based on the sensor feedback from the tracking camera to correspond to the current position and orientation of the animated figure; and

generating, via the media controller, the set of images to be projected based on the updated skeletal model in substantially real-time.

21. The method of claim 15, comprising:

determining, via the media controller, that a particular actuator of the actuators disposed within the animated figure is disabled based on the sensor feedback from the tracking camera;

updating, via the media controller, a skeletal model of the animated figure stored within the media controller to indicate that the particular actuator is disabled; and

generating, via the media controller, the set of images to be projected based on the updated skeletal model.

22. A reactive media system of an amusement attraction, the reactive media system comprising:

one or more interactive data sources configured to generate interactive data that is variable over time; and

a motion control system comprising:

an animated figure disposed within the amusement attraction, wherein the animated figure includes a figure portion that comprises a moveable joint;

a set of actuators disposed within the figure portion and configured to actuate the moveable joint; and

a figure controller communicatively coupled to the set of actuators and the one or more interactive data sources, wherein the figure controller is configured to:

based on the interactive data from the one or more interactive data sources, determine an interactive response of the animated figure corresponding to a current state of the animated figure, wherein the interactive response comprises actuating the moveable joint; and

instruct the set of actuators to perform the interactive response; and

a set of trackers coupled to the figure portion of the animated figure, wherein the set of trackers enables a media control system of the reactive media system to project images onto an external surface of the figure portion of the animated figure in synchronization with the interactive response of the motion control system.

23. The reactive media system of claim 22, comprising the media control system, which comprises:

a tracking camera configured to sense a current position and a current orientation of the animated figure based on the set of trackers;

a media controller coupled to the tracking camera and configured to generate content to be projected onto a portion of the animated figure based on the current position and the current orientation of the animated figure; and

a projector coupled to the media controller, wherein the projector is configured to receive data indicative of the content and project the content onto the animated figure having the current position and the current orientation.

24. The reactive media system of claim 23, wherein the projector is configured to move, based on instructions from the media controller, to align with the current position and the current orientation of the animated figure.

25. The reactive media system of claim 22, wherein the set of trackers include a first tracker disposed on the moveable joint of the figure portion and a second tracker disposed on a different portion of the animated figure that is distinct from the moveable joint,

wherein the set of trackers enable the media control system to determine a current distance between the moveable joint and the different portion of the animated figure.

26. The reactive media system of claim 22, wherein the one or more interactive data sources comprise a guest sensor configured to sense input indicative of an interaction of a guest of the amusement attraction with the animated figure as the interactive data.

27. The reactive media system of claim 22, wherein the motion control system comprises an additional animated figure having an additional figure portion, and wherein the reactive media system comprises an additional set of trackers coupled to the additional figure portion to enable the media control system to project additional images onto the additional figure portion.

28. The reactive media system of claim 22, wherein the motion control system comprises an actuatable motion device physically coupled to the animated figure and communicatively coupled to the figure controller, and wherein the interactive response comprises instructing the actuatable motion device to move the animated figure in at least one direction relative to a stage or ground surface of the amusement attraction.

29. The reactive media system of claim 28, wherein the actuatable motion device comprises an actuatable motion device disposed underneath the animated figure.