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 a first surface of the figure portion of the body, wherein each tracker of the set of trackers is configured to emit a respective sensor signal; and

a media control system, comprising:

a tracking camera configured to:

receive the respective sensor signals from the set of trackers;

determine a position of the set of trackers relative to one another, relative to the tracking camera, or both based on receipt of the respective sensor signals; and

generate state signals indicative of a current position and a current orientation of the figure portion based on the position of the set of trackers;

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

receive the state signals indicative of the current position and the current orientation of the figure portion;

determine the current position and the current orientation of the figure portion based on the state signals; and

generate data indicative of images to be projected onto at least a second surface of the figure portion having the current position and the current orientation, wherein the second surface comprises an external surface and wherein the second surface is different than the first surface; 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 second surface of the figure portion having the current position and the current orientation.

2. The reactive media system of claim 1, wherein the one or more interactive data sources comprise a guest sensor configured to generate guest 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 guest 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.

3. The reactive media system of claim 2, wherein the guest sensor comprises at least an optical transducer, a mechanical transducer, an electro-mechanical transducer, an electromagnetic transducer, an auditory transducer, a pressure transducer, or a temperature transducer.

4. The reactive media system of claim2, comprising a show controller communicatively coupled to the guest sensor and to 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.

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

6. 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.

7. The reactive media system of claim 1, wherein the media control system is configured to

project the images onto the second surface of the figure portion without receiving position, velocity, or acceleration information from the set of actuators of the animated figure.

8. The reactive media system of claim 1, wherein each tracker of the set of trackers is concealed from view to a guest and disposed within a surface of the figure portion of the animated figure, and each tracker is configured to emit the respective sensor signal through the surface for receipt by the tracking camera .

9. 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.

10. 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.

11. 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.

12. The reactive media system of claim 1, wherein the respective sensor signal emitted by each tracker of the set of trackers comprises a unique identifier, and the tracking camera is configured to distinguish each tracker of the set of trackers from one another based on the unique identifier of the respective sensor signals to determine the position of the set of trackers relative to one another, relative to the tracking camera, or both.

13. The reactive media system of claim 1, wherein the animated figure comprises a translucent layer disposed over the body, wherein the set of trackers and the first surface are disposed beneath the translucent layer.

14. The reactive media system of claim 1, wherein the tracking camera is configured to generate the data indicative of additional images to be projected onto the first surface.

15. 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;

a motion control system comprising:

an animated figure disposed within the amusement attraction, wherein the animated figure comprises 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 to the one or more interactive data sources, wherein the figure controller is configured to:

based on the interactive data received 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;

a set of trackers coupled to the figure portion of the animated figure, and

a media control system comprising:

a tracking camera configured to:

visibly distinguish each tracker of the set of trackers to obtain a visualization of the set of trackers;

determine a respective position of each tracker of the set of trackers based on the visualization of the set of trackers; and

generate a signal indicative of a current position and of a current orientation of the animated figure based on the respective position of each tracker of the set of trackers; and

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

receive the signal indicative of the current position and of the current

orientation of the animated figure from the tracking camera; and

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 the interactive response;

wherein the media controller is configured to identify a non-operational portion of the animated figure based on the determined respective position of each tracker of the set of trackers and to adjust the generated content based on the identified non-operational portion.

16. The reactive media system of claim 15,

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

17. The reactive media system of claim 16, 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.

18. The reactive media system of claim 15, 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.

19. The reactive media system of claim 18, wherein the actuatable motion device is at least partially disposed underneath the animated figure.

20. The reactive media system of claim 15, wherein the set of trackers comprises a first tracker disposed on the moveable joint of the figure portion and comprises a second tracker disposed on a different portion of the animated figure that is distinct from the moveable joint, wherein the tracking camera is configured to determine a first position of the first tracker, a second position of

the second tracker, a current distance between the first tracker and the second tracker based on the first position relative to the second position, and generate the signal indicative of the current position and of the current orientation of the animated figure based on the current distance .

21. The reactive media system of claim 15, 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.

22. The reactive media system of claim 15, wherein each tracker of the set of trackers is concealed within a surface of the figure portion of the animated figure, and the tracking camera is configured to visibly distinguish each tracker of the set of trackers through the surface to obtain the visualization of the set of trackers.

23. The reactive media system of claim 15, wherein the media controller is configured to generate the signal indicative of the current position and the current orientation of the animated figure without using position, velocity, and/or acceleration information from actuators of the animated figure.

24. The reactive media system of claim 15, wherein the figure controller is configured to switch from a detailed control instruction set to a simplified control instruction set based on the interactive data, wherein the detailed control instruction set comprises a greater number of movements of the animated figure relative to the simplified control instruction set.