CLAIMS:

1. An animated figure display system, comprising:

an animated figure having a body and a first tracker coupled to the body;

a projection surface having a second tracker coupled to the projection surface, wherein the projection surface is configured to move between a first position and a second position, and wherein the projection surface is at least partially concealed behind the animated figure in the first position;

a set of actuators configured to adjust the body of the animated figure and the projection surface;

a tracking camera configured to detect the first tracker and the second tracker and configured to generate location data based on the first tracker and the second tracker;

a controller communicatively coupled to the tracking camera, wherein the controller is configured to:

receive the location data provided by the tracking camera;

generate a control signal indicative of an image content to be projected onto the body of the animated figure and the projection surface based on the location data; and

a projector communicatively coupled to the controller, wherein the projector is configured to:

receive the control signal indicative of the image content from the controller; and

project the image content onto the body of the animated figure and the projection surface.

2. The system of claim 1, wherein the controller is configured to determine a current position and a current orientation of the projection surface based on the location data.

3. The system of claim 1, wherein the controller is configured to determine a current position and a current orientation of the body of the animated figure based on the location data.

4. The system of claim 1, wherein the controller is configured to instruct the projector to

change an operating state based on the location data.

5. The system of claim 1, wherein the projector is configured to:

project the image content onto the body of the animated figure in the first position; and

project the image content onto the body of the animated figure and the projection surface in the second position.

6. The system of claim 1, wherein the tracking camera is configured to determine a current position and a current orientation of the projection surface based on the location data.

7. The system of claim 1, comprising an actuator controller communicatively coupled to the set of actuators, wherein the actuator controller is configured to:

receive a control signal to begin a motion sequence for the animated figure and the projection surface; and

instruct the set of actuators to begin the motion sequence.

8. The system of claim 7, wherein the actuator controller is configured to generate actuator control data based on a position and an orientation of the set of actuators.

9. The system of claim 8, wherein the controller is configured to:

receive the actuator control data;

determine a first current position and a first current orientation of the body of the animated figure based on the actuator control data; and

determine a second current position and a second current orientation of the projection surface based on the actuator control data.

10. The system of claim 9, wherein the controller is configured to generate a second control signal indicative of a second image content to be projected onto the body of the animated figure and the projection surface based on the actuator control data.

11. The system of claim 1, wherein the first tracker is one of a first set of trackers and the

second tracker is one of a second set of trackers, each tracker of the first and second sets of trackers being configured to emit an infrared signal, and wherein the tracking camera is an infrared camera configured to detect infrared signals.

12. The system of claim 1, wherein:

the controller is further configured to:

receive actuator control data provided by the actuator controller; and

generate the location data indicative of the position and the orientation of the body of the animated figure and the projection surface further based on the actuator control data.

13. The system of claim 12, wherein the animated figure is at least partially concealed within a portion of the projection surface during a portion of the motion sequence.

14. The system of claim 12, wherein the projection surface is at least partially concealed within a portion of the animated figure during a portion of the motion sequence.

15. The system of claim 12, wherein the projection surface is at least partially concealed behind the animated figure during a portion of the motion sequence.

16. A method of operating an animated figure projection system, the method comprising:

instructing, via a controller, a set of actuators to begin a motion sequence for an animated figure and a projection surface wherein the projection surface is at least partially concealed behind the animated figure during at least a portion of the motion sequence;

receiving, via the controller, location data indicative of a current position and a current orientation of the animated figure and the projection surface;

generating, via the controller, a control signal indicative of an image content to be projected onto a body of the animated figure and an exposed surface of the projection surface based on the current position and the current orientation; and

instructing, via the controller, a projector to project the image content onto the body of the animated figure and the exposed surface of the projection surface.

17. The method of claim 16, comprising receiving, via the controller, actuator control data indicative of a current position and a current orientation of each actuator of the set of actuators.

18. The method of claim 17, comprising determining, via the controller, the current position and the current orientation of the animated figure and the projection surface based on the actuator control data.

19. The method of claim 16, comprising receiving, via the controller, tracking data from a tracking camera coupled to the controller, wherein the tracking camera is configured to detect a set of trackers coupled to the exposed surface of the projection surface and the body of the animated figure.