

CLAIMS:

1. A system of an amusement park attraction, the system comprising:
an optical sensor configured to detect light and provide optical data based on the detected light; and
a controller comprising circuitry communicatively coupled to the optical sensor and configured to:
 - receive the optical data;
 - process the optical data to detect movement of a plurality of users and movement of a plurality of handheld or wearable objects;
 - identify a first handheld or wearable object and a second handheld or wearable object based on the movement of the plurality of handheld or wearable objects;
 - compare a first movement of the first handheld or wearable object with the movement of the plurality of users to detect a first correlation between the first movement and a second movement of a first user of the plurality of users;
 - compare a third movement of the second handheld or wearable object with the movement of the plurality of users to detect a second correlation between the third movement and a fourth movement of a second user of the plurality of users;
 - determine the first handheld or wearable object is possessed by the first user based on the first correlation; and
 - determine the second handheld or wearable object is possessed by the second user based on the second correlation.
2. The system of claim 1, wherein the optical sensor and the controller are configured to cooperate to detect the plurality of handheld or wearable objects based on a trackable reference element of each handheld or wearable object of the plurality of handheld or wearable objects.
3. The system of claim 2, wherein the trackable reference element comprises a retroreflective material that is configured to reflect light having a wavelength within a limited bandwidth.

4. The system of claim 1, wherein the controller is configured to detect individual users of the plurality of users based on application of a facial recognition algorithm to the optical data.

5. The system of claim 1, wherein the controller is configured to detect a skeletal structure of individual users of the plurality of users based on an application of a physical feature recognition algorithm to the optical data.

6. The system of claim 5, wherein the controller is configured to identify at least one arm joint of the first user of the plurality of users based on the skeletal structure and wherein the second movement is a movement of the at least one arm joint.

7. The system of claim 5, wherein the plurality of handheld or wearable objects includes a handheld elongate object, the second movement is a movement of a hand of the first user, and the first movement is a movement of a tip of the handheld elongate object.

8. The system of claim 1, wherein the controller is configured to:
identify a profile associated with the first user;
detect a fifth movement of the first handheld or wearable object, wherein the fifth movement is indicative of an interaction with a prop;
select a special effect based on the profile associated with the first user in response to detection of the fifth movement; and
output a signal to activate the special effect.

9. The system of claim 8, wherein the fifth movement of the first handheld or wearable object is indicative of the first handheld or wearable object being in contact with the prop.

10. The system of claim 1, wherein the optical sensor comprises a first sensor including a filter configured to facilitate detection of a reference element on each handheld or wearable object of the plurality of handheld or wearable objects, and the optical sensor comprises a second sensor configured to detect individual users of the plurality of users.

11. The system of claim 1, wherein the controller is configured to:

- identify a first profile associated with the first user;
- identify a second profile associated with the second user;
- detect a fifth movement of the first handheld or wearable object, wherein the fifth movement is indicative of an interaction between the first user and the second user via the first handheld or wearable object; and
- update the first profile, update the second profile, or both, based on detection of the fifth movement.

12. A controller for an attraction system, the controller comprising a non-transitory computer readable medium storing executable instructions that, when executed by a processor of the controller, are configured to cause the processor to:

- receive optical data from an optical sensor of the attraction system;
- detect movement of a plurality of users based on the optical data;
- detect movement of a plurality of handheld or wearable objects based on the optical data;
- identify a first movement of a first handheld or wearable object and a second movement of a second handheld or wearable object based on the movement of the plurality of handheld or wearable objects;
- compare the movement of the plurality of users with the first movement of the first handheld or wearable object to detect a first correlation between the first movement and a third movement of a first user of the plurality of users;
- compare the movement of the plurality of users with the second movement of the second handheld or wearable object to detect a second correlation between the second movement and a fourth movement of a second user of the plurality of users;
- determine the first user is in possession of the first handheld or wearable object based on the first correlation; and
- determine the second user is in possession of the second handheld or wearable object based on the second correlation.

13. The controller of claim 12, comprising detecting the third movement of the first user by detecting imagery of the first user via a physical feature recognition algorithm applied to the optical data.

14. The controller of claim 13, wherein the first correlation between the first movement and the third movement is based on a detected positioning of a reference element on the first handheld or wearable object and a body mechanics algorithm applied to the detected imagery of the first user.

15. The controller of claim 13, wherein the executable instructions, when executed by the processor, are configured to cause the processor to:

determine a plurality of features of the imagery, wherein the plurality of features of the imagery is associated with a plurality of points and a plurality of line segments connecting the plurality of points to one another; and

associate the imagery with the first user based on the plurality of features of the imagery.

16. The controller of claim 12, wherein the executable instructions, when executed by the processor, are configured to cause the processor to:

identify an action based on the first movement and the third movement, wherein the action is associated with a prop of the attraction system; and

output a signal to activate a special effect based on the action.

17. An attraction system of an amusement park, the attraction system comprising:
an optical sensor configured to detect light and provide optical data based on the detected light;

a database configured to store data associated with the attraction system; and

a controller communicatively coupled to the optical sensor and to the database, the controller configured to:

receive the optical data;

process the optical data to detect movement of a plurality of users and movement of a plurality of objects;

identify a first object of the plurality of objects and a second object of the plurality of objects based on the optical data;

compare the movement of the plurality of users with a first movement of the first object to detect a first correlation between the first movement and a second movement of a first user of the plurality of users;

compare the movement of the plurality of users with a third movement of the second object to detect a second correlation between the third movement and a fourth movement of a second user of the plurality of users;

determine the first user is in possession of the first object based on the first correlation;

determine the second user is in possession of the second object based on the second correlation;

identify an interaction associated with the first object possessed by the first user based on the first movement;

identify a profile associated with the first user in response to identifying the interaction, wherein the profile is stored in the database; and

update the profile in response to determining the interaction.

18. The attraction system of claim 17, wherein the data associated with the attraction system comprises a first user profile associated with the first user, and wherein updating the database comprises assigning a point value to the first user profile.

19. The attraction system of claim 17, wherein the first correlation and the second correlation include associations based on a facial recognition algorithm.

20. The attraction system of claim 17, wherein the interaction is associated with a positioning of the first object with respect to a selected prop of a plurality of props of the attraction system, wherein updating the profile is based on the selected prop.