

What is claimed is:

CLAIMS

1. A method comprising the steps of:

assigning at least a first location of at least one embedded device, the embedded device comprising at least one sensor and being associated with at least one joint capable of movement, the first location being captured by the at least one sensor;

assigning at least a second location of the at least one embedded device, the second location being captured by observation of the at least one embedded device by at least one external sensor;

establishing a pose correspondence between the at least first location and the at least second location using a model of the at least one joint; and

calibrating the at least one sensor by tracking a change in a pose captured by the external sensor and a change in a pose captured by the at least one sensor as the joint moves.

2. The method as recited in claim 1, further comprising the steps of:

capturing a plurality of first locations reported by the at least one sensor during movement of the at least one joint;

capturing a plurality of second locations reported by the at least one external sensor during movement of the at least one joint;

determining a plurality of joint poses from the plurality of first locations, the plurality of second locations and the model; and

calculating metrics using the plurality of joint poses.

3. The method as recited in claim 2, further comprising the step of storing tracked data at least comprising, the plurality of first locations, the plurality of second locations, the plurality of joint poses, and the metrics.
4. The method as recited in claim 3, further comprising the step of generating feedback at least in part based on a portion of the tracked data.
5. The method as recited in claim 4, further comprising the step of activating an actuator of the at least one embedded device in response to the feedback.
6. The method as recited in claim 4, further comprising the step of generating a display at least in part based on the feedback.
7. The method as recited in claim 1, in which the joint is associated with a user.
8. The method as recited in claim 1, in which the joint is associated with a spine.
9. A method comprising:

steps for assigning a first location of an embedded device captured by a sensor of the embedded device, the embedded device being associated with a joint;

steps for assigning a second location of the embedded device captured by observation by an external sensor;

steps for establishing a pose correspondence between the first location and the second location;
and

steps for calibrating the sensor.
10. The method as recited in claim 9, further comprising:

steps for capturing a plurality of first locations during movement of the joint;

steps for capturing a plurality of second locations during movement of the joint;

steps for determining a plurality of joint poses; and

steps for calculating metrics.

11. The method as recited in claim 10, further comprising steps for storing tracked data.
12. The method as recited in claim 11, further comprising steps for generating feedback based on the tracked data.
13. The method as recited in claim 12, further comprising steps for activating an actuator in response to the feedback.
14. The method as recited in claim 12, further comprising steps for generating a display based on the feedback.
15. A non-transitory computer-readable storage medium with an executable program stored thereon, wherein the program instructs one or more processors to perform the following steps:
 - assigning at least a first location of at least one embedded device, the embedded device comprising at least one sensor and being associated with at least one joint capable of movement, the first location being captured by the at least one sensor;
 - assigning at least a second location of the at least one embedded device, the second location being captured by observation of the at least one embedded device by at least one external sensor;
 - establishing a pose correspondence between the at least first location and the at least second location using a model of the at least one joint; and

calibrating the at least one sensor by tracking a change in a pose captured by the external sensor and a change in a pose captured by the at least one sensor as the joint moves.

16. The program instructing the one or more processors as recited in claim 15, further comprising the steps of:

capturing a plurality of first locations reported by the at least one sensor during movement of the at least one joint;

capturing a plurality of second locations reported by the at least one external sensor during movement of the at least one joint;

determining a plurality of joint poses from the plurality of first locations, the plurality of second locations and the model; and

calculating metrics using the plurality of joint poses.

17. The program instructing the one or more processors as recited in claim 16, further comprising the step of storing tracked data at least comprising, the plurality of first locations, the plurality of second locations, the plurality of joint poses, and the metrics.
18. The program instructing the one or more processors as recited in claim 17, further comprising the step of generating feedback at least in part based on a portion of the tracked data.
19. The program instructing the one or more processors as recited in claim 18, further comprising the step of activating an actuator of the at least one embedded device in response to the feedback.
20. The program instructing the one or more processors as recited in claim 18, further comprising the step of generating a display at least in part based on the feedback.