CLAIMS:

1. A first electronic device (130) configured for controlling a second electronic device (100, 500) to measure a position of the first electronic device (130), the first electronic device (130) comprising:

a motion sensor (740) configured to sense motion of the first electronic device (130);

a network interface circuit (730) configured to communicate with the second electronic device (100, 500);

a processor (710) connected to the motion sensor (740) and the network interface circuit (730); and

a memory (720) storing program code that is executed by the processor (710) to perform operations comprising:

responsive to determining (204, 308, 408) that the first electronic device (130) is stationary or has a constant velocity, as sensed by the motion sensor (740),

transmitting (206, 310, 410) a request to the second electronic device (100, 500) to measure the position of the first electronic device (130);

sensing and storing (208, 316, 416) the position of the first electronic device (130) in the memory (720); and

receiving (222, 340, 440) an acknowledgement from the second electronic device (100, 500) indicating that it has stored sensor data that can be used to measure the position of the first electronic device (130) sensed by the second electronic device (100, 500).

2. The first electronic device (130) of Claim 1, wherein:

the first electronic device (130) comprises a haptic device configured to perform at least one of measuring movement of the haptic device by a user and providing haptic feedback to a user; and

the request is transmitted to the second electronic device (100, 500) that comprises a computer generated reality, CGR, device configured to display graphics as an overlay on real world objects.

3. The first electronic device (130) of any of Claims 1 to 2, wherein the operations further comprise:

receiving (234) from the second electronic device (100, 500) a measurement of the position of the first electronic device (130) sensed by the second electronic device (100, 500);

determining (236) a transformation matrix for transforming a pose referenced in a first coordinate system to a pose referenced in a second coordinate system based on the position of the first electronic device (130) sensed by the first electronic device (130) and based on the position of the first electronic device (130) sensed by and received from the second electronic device (100, 500), wherein one of the first and second coordinate systems is used to reference a pose of one of the first and second electronic devices and the other one of the first and second coordinate systems is used to reference a pose of the other one of the first and second electronic devices.

4. The first electronic device (130) of Claim 3, further comprising:

a haptic feedback generation device (750) connected to the processor (710),

wherein the operations further comprise:

transforming a pose of the first electronic device (130) from one of the first and second coordinate systems to the other one of the first and second coordinate systems using the transformation matrix, to generate a transformed pose; and

controlling (238) generation of haptic feedback by the haptic feedback generation device (750) based on the transformed pose.

5. The first electronic device (130) of any of Claims 1 to 4, wherein the operations further comprise:

determining (224, 360, 460) whether an abort condition has occurred in which the first electronic device (130) has ceased to be stationary or have a constant velocity, as sensed during a time interval between when the request was transmitted to the second electronic device (100, 500) and when the acknowledgement was received from the second electronic device (100, 500); and

responsive to the abort condition occurring, transmitting (226) an abort message to the second electronic device (100, 500) to abort operations for measuring the position of the first electronic device (130).

6. The first electronic device (130) of any of Claims 1 to 5, further comprising:

determining (204) that the first electronic device (130) is stationary responsive to the first electronic device (130) remaining stationary during a time interval between when the request was transmitted to the second electronic device (100, 500) and when the acknowledgement was received from the second electronic device (100, 500).

7. The first electronic device (130) of any of Claims 1 to 6, further comprising:

determining (204) that the first electronic device (130) has a constant velocity responsive to the first electronic device (130) being determined to have a velocity that did not change more than a defined threshold amount during a time interval between when the request was transmitted to the second electronic device (100, 500) and when the acknowledgement was received from the second electronic device (100, 500);

estimating an updated position of the first electronic device (130) based on an amount that the position of the first electronic device (130) retrieved from the memory is determined to have changed due to the velocity of the first electronic device (130) over at least a portion of the time interval;

receiving (234) from the second electronic device (100, 500) a measurement of the position of the first electronic device (130) sensed by the second electronic device (100, 500);

determining (236) a transformation matrix for transforming a pose referenced in a first coordinate system to a pose referenced in a second coordinate system based on the updated position of the first electronic device (130) sensed by the first electronic device (130) and based on the position of the first electronic device (130) sensed by and received from the second electronic device (100, 500), wherein one of the first and second coordinate systems is used to reference a pose of one of the first and second electronic devices and the other one of the first and second coordinate systems is used to reference a pose of the other one of the first and second electronic devices.

8. The first electronic device (130) of any of Claims 1 to 7, further comprising:

determining (224, 360, 460) whether an abort condition has occurred in which a level of motion of the first electronic device (130) has ceased to be stationary or have a constant velocity, as sensed during a time interval between when the request was transmitted to the second electronic device (100, 500) and when the acknowledgement was received from the second electronic device (100, 500); and

responsive to the abort condition occurring, transmitting (362, 462) an abort message to a server (140) to abort operations for determining a transformation matrix for transforming a pose referenced in a first coordinate system to a pose referenced in a second coordinate system, wherein one of the first and second coordinate systems is used to reference a pose of one of the first and second electronic devices and the other one of the first and second coordinate systems is used to reference a pose of the other one of the first and second electronic devices.

9. A second electronic device (100, 500) configured for measuring a position of a first electronic device (130) relative to the second electronic device (100, 500), the second electronic device (100, 500) comprising:

a sensor (110) configured to output sensor data that can indicate the position of the first electronic device (130);

a network interface circuit (830) configured to communicate with the first electronic device (130);

a processor (810) connected to the sensor (110) and the network interface circuit (830); and

a memory (820) storing program code that is executed by the processor (810) to perform operations comprising:

receiving (214, 430) a request to send a measurement by the second electronic device (100, 500) of the position of the first electronic device (130), the request being indicative of that the first electronic device (130) is stationary or has a constant velocity;

responsive to the request, initiating (216, 432) operations for generating a measurement of the position of the first electronic device (130);

storing (218, 434) in the memory (820) sensor data output by the sensor (110) that can indicate the position of the first electronic device (130);

transmitting (220, 436) an acknowledgement indicating that the sensor data has been stored;

generating (230, 454) a measurement of the position of the first electronic device (130) based on the sensor data stored in the memory; and

transmitting (232, 456) the measurement of the position of the first electronic device (130).

10. The second electronic device (100, 500) of Claim 9, wherein the operations further comprise:

determining (228, 230, 452, 454) whether an abort message has been received that indicates that the first electronic device (130) has ceased to be stationary or have a constant velocity, as sensed during a time interval between when the request was received and when the acknowledgement was transmitted by the second electronic device (100, 500),

wherein transmission of the measurement of the position of the first electronic device (130) is performed responsive to the determination (228, 230, 452, 454) being that no abort message has been received.

11. The second electronic device (100, 500) of any of Claims 9 to 10, wherein:

the sensor (110) comprises a camera;

the operations for generating the measurement of the position of the first electronic device (130) based on the sensor data stored in the memory, comprises identifying, in a digital photo from the camera, a position of at least one of markers connected to the first electronic device (130) and a portion of a housing of the first electronic device (130);

12. The second electronic device (100, 500) of any of Claims 9 to 11, wherein:

the second electronic device (100, 500) comprises a computer generated reality, CGR, device; and

the first electronic device (130) comprises a haptic device configured to perform at least one of measuring movement of the haptic device by a user and providing haptic feedback to a user.

13. The second electronic device (100, 500) of any of Claims 9 to 12, wherein transmitting (232, 456) the measurement of the position of the first electronic device (130), comprises:

transmitting (232) the measurement of the position of the first electronic device (130) to the first electronic device (130) for determination of a transformation matrix for transforming a pose referenced in a first coordinate system to a pose referenced in a second coordinate system, wherein one of the first and second coordinate systems is used to reference a pose of one of the first and second electronic devices and the other one of the first and second coordinate systems is used to reference a pose of the other one of the first and second electronic devices.

14. The second electronic device (100, 500) of any of Claims 9 to 13, further comprising:

determining (457) a transformation matrix, for transforming a pose referenced in a first coordinate system to a pose referenced in a second coordinate system, based on the position of the first electronic device (130) sensed by and received from the first electronic device (130) and based on the measurement of the position of the first electronic device (130) sensed by the second electronic device (100, 500), wherein one of the first and second coordinate systems is used to reference a pose of one of the first and second electronic devices and the other one of the first and second coordinate systems is used to reference a pose of the other one of the first and second electronic devices; and

displaying (458) on a display device (850) a graphical object with a pose that is determined based on the transformation matrix.

15. The second electronic device (100, 500) of any of Claims 9 to 14, wherein transmitting (232, 456) the measurement of the position of the first electronic device (130) comprises:

transmitting (456) the measurement of the position of the first electronic device (130) to a server (140) that uses the measurement of the position of the first electronic device (130) to determine a transformation matrix for transforming a pose referenced in a first coordinate system to a pose referenced in a second coordinate system, wherein one of the first and second coordinate systems is used to reference a pose of one of the first and second electronic devices and the

other one of the first and second coordinate systems is used to reference a pose of the other one of the first and second electronic devices.

16. The second electronic device (500) of any of Claims 9 to 15, further comprising:

capturing (600) a digital picture of a reflection from a user's eye using a user-facing camera (502) of the second electronic device (500), wherein the reflection from the user's eye includes a first component that is a reflection of a virtual computer-generated object displayed on a display device (850) of the second electronic device (500) and a second component that is a reflection of light from a real world object;

processing (602) the image to extract a measure of misalignment between the virtual computer-generated object and the real world object; and

responsive to the measure of misalignment not satisfying a defined alignment rule, initiating (604) operations to generate an updated transformation matrix.

17. A server (140) comprising:

a network interface circuit (930) configured to communicate with a first electronic device (130) and a second electronic device (100, 500);

a processor (910) connected to the network interface circuit (930); and

a memory (920) storing program code that is executed by the processor (910) to perform operations comprising:

observing (338) an acknowledgement communicated from the second electronic device (100, 500) indicating that the second electronic device (100, 500) has stored sensor data that can be used to measure the position of the first electronic device (130);

receiving (320), from the first electronic device (130), a measurement by the first electronic device (130) of the position of the first electronic device (130);

receiving (370) from a second electronic device (100, 500) a measurement by the second electronic device (100, 500) of a position of the first electronic device (130);

determining (372) whether an abort message has been received that indicates that the first electronic device (130) has ceased to be stationary or have a constant velocity, as sensed during a time interval between when a request

was observed for the second electronic device (100, 500) to send the measurement of the position and when the second electronic device (100, 500) communicated the acknowledgement indicating that the second electronic device (100, 500) had stored the sensor data, and

generating (374), only when no abort message was received before receipt of the acknowledgement communicated from the second electronic device (100, 500), a transformation matrix for transforming a pose referenced in a first coordinate system to a pose referenced in a second coordinate system responsive to the position of the first electronic device (130) sensed by and received from the first electronic device (130) and the position of the first electronic device (130) sensed by and received from the second electronic device (100), wherein one of the first and second coordinate systems is used to reference a pose of one of the first and second electronic devices and the other one of the first and second coordinate systems is used to reference a pose of the other one of the first and second electronic devices.

18. The server of Claim 17, wherein:

the first electronic device (130) comprises a haptic device configured to perform at least one of measuring movement of the haptic device by a user and providing haptic feedback to a user; and

the second electronic device (100, 500) comprises a computer generated reality, CGR, device.

19. The server of Claim 17, further comprising:

performing at least one of:

controlling (380) generation of haptic feedback by a haptic feedback generation device (750) using the transformation matrix; and

controlling (380) display on a display device (850) of a graphical object with a pose that is determined based on the transformation matrix, wherein the display device (850) is within the second electronic device (100, 500).

20. A method by a first electronic device (130) for controlling a second electronic device (100, 500) to measure a position of the first electronic device (130), the method comprising:

responsive to determining (204, 308, 408) that the first electronic device (130) is stationary or has a constant velocity,

transmitting (206, 310, 410) a request to the second electronic device (100, 500) to measure the position of the first electronic device (130);

sensing and storing (208, 316, 416) the position of the first electronic device (130) in a memory; and

receiving (222, 340, 440) an acknowledgement from the second electronic device (100, 500) indicating that it has stored sensor data that can be used to measure the position of the first electronic device (130) sensed by the second electronic device (100, 500).

21. A method by a second electronic device (100, 500) for measuring a position of a first electronic device (130) relative to the second electronic device (100, 500), the method comprising:

receiving (214, 430) a request to send a measurement by the second electronic device (100, 500) of the position of the first electronic device (130), the request being indicative of that the first electronic device (130) is stationary or has a constant velocity;

responsive to the request, initiating (216, 432) operations for generating a measurement of the position of the first electronic device (130);

storing (218, 434) in a memory sensor data output by a sensor that can indicate the position of the first electronic device (130);

transmitting (220, 436) an acknowledgement indicating that the sensor data has been stored;

generating a measurement of the position of the first electronic device (130) based on the sensor data stored in the memory; and

transmitting (232, 456) the measurement of the position of the first electronic device (130).

22. A method by a server (140) comprising:

observing (338) an acknowledgement communicated from the second electronic device (100, 500) indicating that the second electronic device (100, 500) has

stored sensor data that can be used to measure the position of the first electronic device (130);

receiving (320), from the first electronic device (130), a measurement by the first electronic device (130) of the position of the first electronic device (130);

receiving (370) from a second electronic device (100, 500) a measurement by the second electronic device (100, 500) of a position of the first electronic device (130);

determining (372) whether an abort message has been received that indicates that the first electronic device (130) has ceased to be stationary or have a constant velocity, as sensed during a time interval between when a request was observed for the second electronic device (100, 500) to send the measurement of the position and when the second electronic device (100, 500) communicated the acknowledgement indicating that the second electronic device (100, 500) had stored the sensor data, and

generating (374), only when no abort message was received before receipt of the acknowledgement communicated from the second electronic device (100, 500), a transformation matrix for transforming a pose referenced in a first coordinate system to a pose referenced in a second coordinate system responsive to the position of the first electronic device (130) sensed by and received from the first electronic device (130) and the position of the first electronic device (130) sensed by and received from the second electronic device (100), wherein one of the first and second coordinate systems is used to reference a pose of one of the first and second electronic devices and the other one of the first and second coordinate systems is used to reference a pose of the other one of the first and second electronic devices.