CLAIMS:

1. A device (400) configured for performing localization using a set of sensors (401, 402, 403), including a first sensor and a second sensor, that are transportable with the device (400), the device (400) comprising:

at least one processor (409) operationally connected to the set of sensors (401, 403, 405);

at least one memory (404) storing program code that configures the at least one processor to:

determine (601) a first set of device poses (PA) where the first sensor satisfies a localization performance rule for the first sensor, which is deemed to be satisfied when data from the first sensor processed by a localization operation results in device localization with an accuracy which satisfies a condition for the first sensor;

determine (603) a second set of device poses (PB) where the second sensor satisfies a localization performance rule for the second sensor, which is deemed to be satisfied when data from the second sensor processed by the localization operation results in device localization with an accuracy which satisfies a condition for the second sensor;

direct (701) movement of the device (400) to transition a pose of the device (400) from not being within to being within the second set of device poses (PB); and

activate (605) the second sensor while the first sensor is active based on a pose of the device transitioning from not being within to being within the second set of device poses (PB).

2. The device of Claim 1, wherein the program code further configures the at least one processor to deactivate (607) the first sensor based on a pose of the device transitioning from being within to not being within the first set of device poses (PA) while poses of the device remain within the second set of device poses (PB).

3. The device of Claim 1, wherein the directing (701) of the movement of the device comprises providing information through a user interface of the device that guides movement of the device to transition poses of the device from not being within to being within the second set of device poses (PB).

4. The device of any of Claims 2 to 3, wherein the directing (701) of the movement of the device comprises providing guidance information to a navigation system of the device that controls movement of the device to transition poses of the device from not being within to being within the second set of device poses (PB).

5. The device of any of Claims 2 to 4, further comprising:

searching (801) among the second set of device poses (PB) to identify a subset of at least one device pose where localization performance of the second sensor satisfies the localization performance rule for the second sensor,

wherein the directing (701) of the movement of the device is performed to guide movement of the second sensor toward the at least one device pose in the subset.

6. The device of Claim 5, wherein the searching (801) among the second set of device poses (PB) to identify the subset of at least one device pose where localization performance of the second sensor satisfies the localization performance rule for the second sensor, is constrained to identifying only poses among the second set of device poses (PB) that are within a threshold distance away from a present location of the device.

7. The device of Claim 6, wherein the threshold distance is determined based on at least one of remaining battery power within the device, remaining time before occurrence of a deadline for performing sensor transition, and an amount of deviation from a current movement trajectory of the device that would be needed for the device to be moved to one of the second set of device poses (PB).

8. The device of any of Claims 5 to 7, wherein the searching (801) among the second set of device poses (PB) to identify the subset of at least one device pose where localization performance of the second sensor satisfies the localization performance rule for the second sensor, is performed to identify poses among the second set of device poses (PB) where the first and second sensors will both have localization performance that satisfy the localization performance rule for the first sensor and the second sensor, respectively.

9. The device of any of Claims 2 to 7, wherein the directing (701) movement of the device to transition a pose of the device from not being within to being within the second set of device poses (PB), comprises:

identifying a sequence of device poses from among the second set of device poses (PB); and

directing movement of the device to transition the device through the sequence of device poses while performing operations to activate the second sensor and deactivate the first sensor.

10. The device of any of Claims 1 to 9, wherein:

the determination (601) of the first set of device poses (PA) where the first sensor satisfies the localization performance rule for the first sensor comprises:

determining a localization performance score for the first sensor at one or more poses based on at least one of a determined number of false re-localizations determined based on data from the first sensor, a determined number and quality of measurements of features in a region measured by data from the first sensor, a localization error determined based on data from the first sensor, and an amount of uncertainty in measurements based on data from the first sensor, and

determining whether the localization performance score of the first sensor at the one or more poses satisfies the localization performance rule for the first sensor; and

the determination (603) of the second set of device poses (PB) where the second sensor satisfies the localization performance rule for the second sensor comprises:

determining a localization performance score for the second sensor at one or more poses based on at least one of a determined number of false re-localizations determined based on data from the second sensor, a determined number and quality of features in a region measured by data from the second sensor, and a localization error determined based on data from the second sensor, and

determining whether the localization performance score of the second sensor at the one or more poses satisfies the localization performance rule for the second sensor.

11. The device of any of Claims 1 to 10, wherein:

the determination (601) of the first set of device poses (PA) where the first sensor satisfies the localization performance rule for the first sensor comprises:

determining (901) localization of the device relative to a map defined by a data structure identifying previously sensed features of a localized environment,

determining (903) a localization performance score for the first sensor with the device at one or more poses based on whether the first sensor senses the previously sensed features identified by the data structure, and

determining (905) whether the localization performance score for the first sensor with the device at the one or more poses satisfies the localization performance rule for the first sensor; and

the determination (603) of the second set of device poses (PB) where the second sensor satisfies the localization performance rule for the second sensor comprises:

determining (1001) a localization performance score for the second sensor with the device at one or more poses based on whether the second sensor senses the previously sensed features identified by the data structure, and

determining (1003) whether the localization performance score for the second sensor with the device at the one or more poses satisfies the localization performance rule for the second sensor based on whether the second sensor senses the previously sensed features identified by the data structure.

12. The device of any of Claims 1 to 11, wherein:

the determination (601) of the first set of device poses (PA) where the first sensor satisfies the localization performance rule for the first sensor comprises:

determining (1101) localization of the device relative to a map defined by a data structure identifying positions of features of a localized environment,

determining (1103) a localization performance score for the first sensor with the device one or more poses based on comparison of where the first sensor identifies the positions of the features to where the data structure identifies the positions of the features, and

determining (1105) whether the localization performance score for the first sensor with the device at the one or more poses satisfies the localization performance rule for the first sensor; and

the determination (603) of the second set of device poses (PB) where the second sensor satisfies the localization performance rule for the second sensor comprises:

determining (1201) a localization performance score for the second sensor with the device at one or more poses based on comparison of where the second sensor identifies the positions of the features to where the data structure identifies the positions of the features, and

determining (1203) whether the localization performance score for the second sensor with the device at the one or more poses satisfies the localization performance rule for the second sensor.

13. The device of any of Claims 1 to 12, wherein:

the determination (601) of the first set of device poses (PA) where the first sensor satisfies the localization performance rule for the first sensor comprises:

determining (1301) localization of the device to locations within a map defined by a data structure which identifies localization performance scores for devices at the locations;

retrieving (1303) a localization performance score for the first sensor from the data structure based on the localization of the device to the locations; and

determining (1305) whether the localization performance score for the first sensor satisfies the localization performance rule for the first sensor; and

the determination (603) of the second set of device poses (PB) where the second sensor satisfies the localization performance rule for the second sensor comprises:

retrieving (1401) a localization performance score for the second sensor from the data structure based on the localization of the device to the locations; and

determining (1403) whether the localization performance score for the second sensor satisfies the localization performance rule for the second sensor.

14. The device of any of Claims 1 to 13, wherein the determination (601) of the first set of device poses (PA) where the first sensor satisfies the localization performance rule for the first sensor and the determination (603) of the second set of device poses (PB) where the second sensor satisfies the localization performance rule for the second sensor, are determined based on obtaining a listing of sensors that are presently active for use by a proximately located other device.

15. The device of any of Claims 1 to 14, further comprising initiating (1501) activation of the second sensor based on determining at least one of a currently measured decrease in localization performance of the first sensor and a predicted decrease in localization performance of the first sensor.

16. A method by a device performing localization using a set of sensors, including a first sensor and a second sensor, that are transported with the device, the method comprising:

determining (601) a first set of device poses (PA) where the first sensor satisfies a localization performance rule for the first sensor, which is deemed to be satisfied when data from the first sensor processed by a localization operation results in device localization with an accuracy which satisfies a condition for the first sensor;

determining (603) a second set of device poses (PB) where a second sensor satisfies a localization performance rule for the second sensor, which is deemed to be satisfied when data from the second sensor processed by a localization operation results in device localization with an accuracy which satisfies a condition for the second sensor;

directing (701) movement of the device (400) to transition a pose of the device (400) from not being within to being within the second set of device poses (PB); and

activating (605) the second sensor while the first sensor is active based on a pose of the device transitioning from not being within to being within the second set of device poses (PB).

17. The method of Claim 16, further comprising performing operations of any of Claims 2 to 15.

18. A computer program product for performing localization of a device using a set of sensors, including a first sensor and a second sensor, that are transported with the device, the computer program product comprising:

a non-transitory computer readable medium storing program code that is executable by at least one processor of the device to configure the at least one processor to:

determine a first set of device poses (PA) where the first sensor satisfies a localization performance rule for the first sensor, which is deemed to be satisfied when data from the first sensor processed by a localization operation results in device localization with an accuracy which satisfies a condition for the first sensor;

determine a second set of device poses (PB) where the second sensor satisfies a localization performance rule for the second sensor, which is deemed to be satisfied when data from the second sensor processed by the localization operation results in device localization with an accuracy which satisfies a condition for the second sensor;

direct (701) movement of the device (400) to transition a pose of the device (400) from not being within to being within the second set of device poses (PB); and

activate the second sensor while the first sensor is active based on a pose of the device transitioning from not being within to being within the second set of device poses (PB).

19. The computer program product of Claim 18, wherein the program code further configures the at least one processor to perform operations of any of Claims 2 to 15.