CLAIMS

1. A method for operating a mobility platform in a construction site based on an indication of one or more tasks to be performed at one or more task locations in the construction site and one or more passive landmarks in the construction site, wherein the mobility platform includes at least one tool mounting location, the method comprising, with at least one processor:

generating a path for the mobility platform from a current location to the one or more task locations based on locations of the one or more passive landmarks and the one or more task locations by iteratively adjusting the path to increase a projected position accuracy of the mobility platform as the mobility platform travels along the path, wherein the projected position accuracy is based on projected errors in position estimation from continuous displacement and on sensing position relative to the one or more passive landmarks along the path; and

providing task commands to a controller disposed on the mobility platform based on the generated path and the one or more tasks.

2. The method of claim 1, further comprising, with the controller, based on executing the task commands, generating control signals to move the mobility platform along the generated path and perform the one or more tasks.

3. The method of claim 1, wherein the one or more passive landmarks are control points or control lines.

4. The method of claim 1, wherein increasing the projected position accuracy includes iteratively adjusting the path to increase an amount of segments of the path disposed within a threshold distance of the one or more passive landmarks.

5. The method of claim 4, wherein the threshold distance is based on a detectability of the one or more passive landmarks by at least one sensor selected from a group of a stereo

camera, mono camera, and LiDAR unit, wherein the threshold distance is set where the one or more passive landmarks are detectable by the at least one sensor.

6. The method of claim 1, further comprising outputting the path on a graphical user interface.

7. The method of claim 1, wherein:

generating the path comprises ending the iterative adjusting based on a trigger condition; and

the trigger condition comprises receiving input from a human user through a graphical user interface accepting the path.

8. The method of claim 1, further comprising:

re-generating the path based on the locations of the one or more passive landmarks and the one or more task locations based on a trigger condition; and

the trigger condition comprises receiving input from a human user through a graphical user interface rejecting the path.

9. The method of claim 1, further comprising, with the controller, controlling the mobility platform to move along the path based on the path and the task commands.

10. The method of claim 9, further comprising sensing the one or more passive landmarks with at least one sensor selected from a group of a stereo camera, mono camera, and LiDAR unit when the mobility platform is moved along the path.

11. The method of claim 10, further comprising correcting movement of the mobility platform based on information received from the at least one sensor.

12. The method of claim 10, wherein the at least one sensor comprises a first sensor, wherein the method further comprises integrating information from the first sensor to compute a first position of the mobility platform in the construction site.

13. The method of claim 12, wherein the at least one sensor comprises a second sensor, wherein the method further comprises;

continuously detecting the one or more passive landmarks with the second sensor to compute a second position of the mobility platform in the construction site; and

comparing the first position to the second position to compute a position accuracy value.

14. The method of claim 13, further comprising:

comparing the position accuracy value to a position accuracy threshold;

moving the mobility platform toward one of the one or more passive landmarks upon the position accuracy value falling below the position accuracy threshold; and

calibrating the first sensor by sensing the one landmark of the one or more passive landmarks with the second sensor.

15. The method of claim 14, further comprising changing one or more parameters of the controller based on the position accuracy value for integrating the information from the first sensor to increase the position accuracy value above the position accuracy threshold.

16. The method of claim 1, further comprising:

identifying the locations of the one or more passive landmarks in the construction site prior to generating the path; and

identifying the one or more tasks to be performed at the one or more task locations in the construction site prior to generating the path.

17. A method for operating a mobility platform in a construction site, wherein the platform comprises a plurality of sensors having an operational range within which the sensors are capable of detecting passive landmarks, the method comprising:

identifying locations of one or more passive landmarks in the construction site;

identifying one or more tasks to be performed at one or more task locations in the construction site; and

generating a path for the mobility platform from a current location to the one or more task locations based on locations of the one or more passive landmarks and the one or more task locations by iteratively adjusting the path to increase a projected position accuracy of the mobility platform as the mobility platform travels along the path, wherein the projected position accuracy is based on based on projected errors in position estimation from continuous displacement and on sensing position relative to the one or more passive landmarks along the path.

18. The method of claim 16, wherein increasing the projected position accuracy includes iteratively adjusting the path to increase an amount of segments of the path disposed within a threshold distance of the one or more passive landmarks, wherein the threshold distance is based on the operational range of the plurality of sensors.

19. The method of claim 16, further comprising outputting the path on a graphical user interface.

20. The method of claim 16, wherein:

generating the path comprises ending the iteratively adjusting based on a trigger condition; and

the trigger condition comprises receiving input from a human user through a graphical user interface accepting the path.

21. The method of claim 16, further comprising:

re-generating the path based on the locations of the one or more passive landmarks and the one or more task locations based on a trigger condition; and

the trigger condition comprises receiving input from a human user at the graphical user interface rejecting the path.

22. The method of claim 17, wherein the one or more passive landmarks are control points or control lines.

23. The method of claim 17, wherein iteratively adjusting the path to increase a projected position accuracy of the mobility platform is also based on sensing position relative to one or more passive landmarks along the path.