CLAIMS

1. A mobility platform configured to execute one or more tasks in a worksite comprising a first passive landmark disposed at a first known landmark position, the mobility platform comprising:

a chassis;

a drive system supporting the chassis, wherein the drive system comprises at least two wheels, wherein the drive system is configured to move the mobility platform within the worksite;

a first laser rangefinder disposed on the chassis at a first location; and

at least one processor configured to:

sweep the first passive landmark with the first laser rangefinder to collect a first plurality of distance measurements for a first plurality of yaw angles;

fit a first shape to the first plurality of distance measurements based on a predetermined shape of the first passive landmark; and

determine a position of a geometric center of the first passive landmark relative to the first location of the first laser rangefinder based on the fit first shape.

2. The mobility platform of claim 1, wherein the at least one processor is further configured to:

sweep a second passive landmark disposed at a second known landmark position with the first laser rangefinder to collect a second plurality of distance measurements for a second plurality of yaw angles;

fit a second shape to the second plurality of distance measurements based on a predetermined shape of the second passive landmark; and

determine a position of a geometric center of the second passive landmark relative to the first location of the first laser rangefinder based on the fit second shape.

3. The mobility platform of claim 1, further comprising a second laser rangefinder disposed on the chassis at a second location different the first location, wherein the at least one processor is further configured to:

sweep a second passive landmark disposed at a second known landmark position with the second laser rangefinder to collect a second plurality of distance measurements for a second plurality of yaw angles;

fit a second shape to the second plurality of distance measurements based on a predetermined shape of the second passive landmark; and

determine a position of a geometric center of the second passive landmark relative to the second location of the second laser rangefinder based on the fit second shape.

4. The mobility platform of claim 3, wherein the at least one processor is further configured to determine a first orientation of the mobility platform based on first yaw angle information from at least one of the first laser rangefinder and the second laser rangefinder.

5. The mobility platform of any one of claims 3-4, wherein the at least one processor is further configured to determine a first position of the chassis based on the position of the geometric center of the first passive landmark relative to the first location, and the position of the geometric center of the second passive landmark relative to the second location.

6. The mobility platform of any one of claims 3-5, wherein the at least one processor is further configured to:

sweep a third passive landmark disposed at a third known landmark position with the first laser rangefinder to collect a third plurality of distance measurements for a third plurality of yaw angles;

fit a third shape to the third plurality of distance measurements based on a predetermined shape of the third passive landmark; and

determine a position of a geometric center of the third passive landmark relative to the first location of the first laser rangefinder based on the fit third shape.

7. The mobility platform of claim 6, wherein the at least one processor is further configured to transmit the position of the geometric center of the third passive landmark to a remote server.

8. The mobility platform of any of claims 1-7, further comprising a marking device disposed on the chassis and configured to deposit marking material on a floor of the worksite.

9. The mobility platform of any of claims 1-8, further comprising a camera and an infrared light source disposed on the first laser rangefinder, wherein the at least one processor is further configured to:

illuminate the first passive landmark with the infrared light source;

image the first passive landmark with the camera;

detect one or more characteristics of the first passive landmark based on a reflective pattern of infrared light; and

determine a targeting yaw angle based on the reflective pattern.

10. The mobility platform of claim 9, the at least one processor is further configured to determine the first plurality of yaw angles based on the targeting yaw angle.

11. The mobility platform of claim 9, wherein the at least one processor is further configured to, based on information from the camera, track the first passive landmark with the first laser rangefinder.

12. The mobility platform of any of claims 1-11, wherein the at least one processor is further configured to command the drive system to move the mobility platform along a drive path to perform the one or more tasks at one or more task locations in the worksite.

13. The mobility platform of claim 12, wherein the one or more tasks comprise marking a floor of the worksite with a marking material.

14. The mobility platform of any of claims 1-13, wherein the first shape is an ellipse.

15. The mobility platform of any of claims 1-14, wherein the first laser rangefinder is a phase shift rangefinder.