CLAIMS

1. A device comprising:

a light detection and ranging (LIDAR) device, wherein the LIDAR device comprises:

a light source configured to emit light within a wavelength range, wherein the light source comprises a fiber laser;

a scanning portion configured to direct the emitted light in a reciprocating manner about a first axis; and

a plurality of detectors configured to sense light within the wavelength range;

a housing, wherein at least the scanning portion is disposed within the housing, and wherein a wall of the housing comprises a light filter configured to allow light within the wavelength range to propagate through the light filter;

a rotational mount configured to rotate about a second axis; and

a controller configured to:

receive target information based on an initial three-dimensional (3D) representation of the environment of the device, wherein the target information is indicative of at least one of: a type of object, a size of an object, a shape of an object, a position, a location, or an angle range;

in response to receiving the target information, cause the rotational mount to rotate so as to adjust a pointing direction of the LIDAR;

cause the LIDAR to scan a field-of-view (FOV) of the environment, wherein the FOV extends away from the LIDAR along the pointing direction; and

determine a 3D representation of the environment based on data from scanning the FOV.

2. The device of claim 1 wherein a wavelength of the emitted light comprises 1550 nm.

3. The device of claim 1 wherein the housing is positioned at a top side of a vehicle, wherein the second axis comprises an axis passing through the top side of the vehicle, and wherein the rotational mount is configured to rotate within a 360 degree range of motion about the second axis.

4. The device of claim 1 wherein the light filter has a dome shape.

5. The device of claim 1 wherein the light filter is configured to reduce an amount of visible light propagating through the light filter.

6. The device of claim 1 wherein the controller is further configured to identify at least one object in the environment based on the 3D representation.

7. The method of claim 1, wherein the first axis is normal to the second axis.

8. The device of claim 1, further comprising a further LIDAR device, wherein the further LIDAR device is configured to rotate independent from the LIDAR device, wherein the LIDAR device is configured to obtain data within a first region, wherein the further LIDAR device is configured to obtain data within a second region, and wherein the first and second regions do not fully overlap.

9. The device of claim 1, further comprising a further LIDAR device, wherein the further LIDAR device is configured to rotate independent from the LIDAR device, wherein the LIDAR device is associated with a first data resolution, and the further LIDAR device is associated with a second data resolution, wherein the first data resolution is higher than the second data resolution.

10. A system comprising:

a vehicle;

a sensing device configured to provide environmental data indicative of an environment around the vehicle, wherein the sensing device is coupled to the vehicle;

a light detection and ranging (LIDAR) device, wherein the LIDAR device is coupled to the vehicle;

a controller configured to:

receive the environmental data;

determine, based on the environmental data, target information indicative of an initial three-dimensional (3D) representation of the environment of the vehicle, wherein the target information is further indicative of at least one of: a type of object, a size of an object, a shape of an object, a position, a location, or an angle range;

cause the rotational mount to rotate so as to adjust a pointing direction of the LIDAR based at least on the target information;

cause the LIDAR to scan a field-of-view (FOV) of the environment, wherein the FOV extends away from the LIDAR along the pointing direction; and

determine a 3D representation of the environment based on data from scanning the FOV.

11. The system of claim 10 wherein the LIDAR comprises a light source configured to emit light within a wavelength range, wherein the laser light source comprises a fiber laser, and wherein causing the LIDAR to scan a FOV comprises causing the LIDAR to emit light comprising light at least at 1550 nm.

12. The system of claim 11 wherein the LIDAR further comprises a scanning portion configured to direct the emitted light in a reciprocating manner about a first axis.

13. The system of claim 12 wherein at least the scanning portion of the LIDAR is disposed within a housing, wherein the housing is positioned at a top side of the vehicle, wherein a second axis comprises an axis passing through the top side of the vehicle, and wherein the rotational mount is configured to rotate within a 360 degree range of motion about the second axis.

14. The system of claim 13 wherein the housing comprises a light filter, wherein the light filter has a dome shape, and wherein the light filter is configured to reduce an amount of visible light propagating through the light filter.

15. The system of claim 10 wherein the controller is further configured to identify at least one object in the environment based on the 3D representation.

16. A method comprising:

receiving target information by a controller of a light detection and ranging (LIDAR) device, wherein the target information is based on an initial three-dimensional (3D)

representation of the environment of the LIDAR and is indicative at least one of: a type of object, a size of an object, a shape of an object, a distance, a position, or an angle range;

causing a light source of the LIDAR to emit light within a wavelength range, wherein the light source comprises a fiber laser;

causing a scanning portion of the LIDAR to direct the emitted light in a reciprocating manner about a first axis;

in response to receiving the target information, causing a rotational mount coupled to the LIDAR to rotate so as to adjust a pointing direction of the LIDAR, wherein the rotational mount is configured to rotate about a second axis;

causing the LIDAR to scan a field-of-view (FOV) of the environment, wherein the FOV extends away from the LIDAR along the pointing direction; and

determining a 3D representation of the environment based on data from scanning the FOV.

17. The method of claim 16 wherein at least the scanning portion of the LIDAR is disposed within a housing, and wherein a wall of the housing comprises a light filter configured to allow light within the wavelength range to propagate through the light filter, wherein the housing is positioned at a top side of a vehicle, wherein the second axis comprises an axis passing through the top side of the vehicle, and wherein the rotational mount is configured to rotate within a 360 degree range of motion about the second axis.

18. The method of claim 17 wherein the light filter has a dome shape, wherein the light filter is configured to reduce an amount of visible light propagating through the light filter.

19. The method of claim 16 wherein the controller is further configured to identify at least one object in the environment based on the 3D representation.