[0010] FIGs. 6A-6B is a process flow diagram illustrating a method of real-time trailer orientation and position detection in accordance with various embodiments of the present disclosure.

[0011] FIG. 7 is a process flow diagram illustrating a method of trailer detection in accordance with various embodiments of the present disclosure.

[0012] FIG. 8 illustrates an example trailer detection system that processes input data and generates output data in accordance with various embodiments of the present disclosure.

[0012a] FIG. 9 is a diagram illustrating a sample computing device architecture for implementing various aspects described herein in which certain components can be omitted depending on the application.

SUMMARY

[0013] In one aspect, a method for detecting location aspects of an autonomous vehicle to avoid collisions includes receiving, from a first scanning device, data comprising a plurality of points characterizing a trailer of an autonomous vehicle. A first plane associated with the trailer is defined based on the plurality of points exceeding a first predetermined threshold. An angle associated with the first plane and a second plane associated with a head of the autonomous vehicle is evaluated. An orientation of the trailer as the first plane based on the angle. Maneuvering of the autonomous vehicle is controlled through one or more commands based on the orientation.

[0014] In some variations, the method can also include receiving, from a second scanning device, a plurality of side points characterizing a side of the trailer. A second plane associated with a side of the trailer can be defined based on the plurality of side points exceeding a second predetermined threshold. It can be determined whether the second plane is perpendicular to the ground. The orientation of the trailer is updated to include aspects of the first plane based on the difference being less than a third predetermined threshold when the second plane is perpendicular to the ground.

[0015] In other variations, the second predetermined threshold can be at least four times larger than the first predetermined threshold.