

loaded weight estimation device), the speed limit setting unit 5 (i.e., speed limit setting device), and the driving control unit 6 may each be a computer configured by a central processing unit (i.e., CPU), a memory, and the like.

[0015]

5 For example, for a lower part of a transport vehicle (i.e., vehicle), two distance sensors 1 are provided to face in a front-rear direction in a traveling direction as shown in FIG. 21, and furthermore, two distance sensors 1 are provided on a chassis disposed in a direction (i.e., left-right direction) perpendicular to the traveling direction to be separated by a predetermined distance as shown in FIG. 42. That is, the distance sensors
10 1 are attached to four measurement points in total at the left, right, front, and rear of the lower part of the vehicle. Such a distance sensor 1 is a device that measures a distance of a loading platform N from the ground (i.e., height of the loading platform N) by scanning with a laser beam downward in a vertical direction. Further, the distance sensor 1 attached on the front side in the traveling direction can scan a region including a
15 front and rear of the transport vehicle and can also detect an obstacle. The distance sensor 1 may be, for example, a two-dimensional or three-dimensional laser range finder (i.e., LRF) or a two-dimensional or three-dimensional laser imaging detection and ranging (i.e., LIDAR, Light Detection and Ranging). Also, the distance sensor 1 may be one to which data of a sensor used for simultaneous localization and mapping (i.e., SLAM) is
20 applied.

[0016]

 The change amount calculation unit 2 acquires a distance from the chassis of the transport vehicle to the ground from the distance sensor 1. Then, the change amount calculation unit 2 calculates a difference (i.e., amount of change) between distances in
25 each distance sensor 1, the distances being from the chassis of the transport vehicle to the

[CLAIMS]

[Claim 1]

A weight estimation system comprising:

5 a vehicle;

a plurality of measuring devices mounted on the vehicle and which measures heights of a loading platform of the vehicle, the height being from the ground to the loading platform of the vehicle;

10 a change amount calculation ~~device-unit~~ which ~~acquires a~~, based on heights of a the loading platform before loading a ~~the~~ vehicle and a heights of the loading platform after loading the vehicle and that are measured, calculates an ~~amount~~ amounts of change between the heights of the loading platform between before and after the loading; and

15 a loaded weight estimation ~~device-unit~~ which, based on the amounts of change calculated, calculates an average value, and which, based on mapping data stored in advance of a correlation between a loaded weight and an amount of change between height of the loading platform between before and after the loading, estimates a loaded weight corresponding to the average value on the basis of a correlation between the amount of change and a loaded weight stored in advance.

20 ~~[Claim 2]~~

~~———— The weight estimation system according to claim 1, further comprising:—~~

~~———— a measuring device mounted on the vehicle and which measures a height of the loading platform of the vehicle.~~

25 [Claim 3]

The weight estimation system according to claim 2, wherein

~~———— the measuring device is one of a plurality of measuring devices,~~

~~———— the plurality of measuring devices are provided in the vehicle, and~~

~~———— the weight estimation system further comprises comprising:~~

30 a center of gravity position estimation ~~device-unit~~ which, based on mapping data stored in advance of a correlation between a center of gravity position and amounts of change between heights of the loading platform between before and after the loading,

estimates a center of gravity position corresponding to the amounts of change calculated on the basis of differences between the heights of the loading platform after the loading, the heights being obtained from the plurality of measuring devices.

5 [Claim 43]

The weight estimation system according to claim 32, further comprising:

a speed limit setting ~~device~~ unit which, based on mapping data stored in advance of a correlation between a center of gravity position, a loaded weight, and a speed limit of the vehicle that does not cause a load collapse or a rollover, sets a speed limit of the
 10 vehicle corresponding to the center of gravity position and the loaded weight estimated on
the basis of the center of gravity position.