TRANSIT LOCATION SYSTEMS AND METHODS USING LIDAR

CROSS REFERENCE TO RELATED APPLICATIONS

(01) The present application claims priority to U.S. Provisional Patent Application No. 62/924,017, filed October 21, 2019, entitled "LIDAR RTLS PROJECT," and U.S. Provisional Patent Application No. 62/945,785, filed December 9, 2019, entitled "TRANSIT LOCATION SYSTEMS AND METHODS USING LIDAR," the disclosures thereof incorporated by reference herein in their entirety.

BACKGROUND

(02) The present disclosure relates generally to transportation intelligence, and more specifically to systems and methods for identification of transit location.

SUMMARY

(02a) According to a first aspect of the present invention, there is provided a system, comprising:

a hardware processor; and

a non-transitory machine-readable storage medium encoded with instructions executable by the hardware processor to perform a method comprising:

receiving a 3D image captured from a vehicle on a pathway;

transforming the 3D image into a first 2D image; and

determining a location of the vehicle along the pathway, comprising:

comparing the first 2D image to a plurality of second 2D images each captured at a respective known location along the pathway,

selecting one or more of the second 2D images based on the comparing, and

determining the location of the vehicle along the pathway based on the known location where the selected one or more of the second 2D images was captured.

(02b) According to a second aspect of the present invention, there is provided a non-transitory machine-readable storage medium encoded with instructions executable by a hardware processor of a computing component, the machine-readable storage medium comprising instructions to cause the hardware processor to perform a method comprising:

receiving a 3D image captured from a vehicle on a pathway;

transforming the 3D image into a first 2D image; and

determining a location of the vehicle along the pathway, comprising:

comparing the first 2D image to a plurality of second 2D images each captured at a respective known location along the pathway,

selecting one or more of the second 2D images based on the comparing, and

determining the location of the vehicle along the pathway based on the known location where the selected one or more of the second 2D images was captured.

(02c) According to a third aspect of the present invention, there is provided a computer-implemented method comprising:

receiving a 3D image captured from a vehicle on a pathway;

transforming the 3D image into a first 2D image; and

determining a location of the vehicle along the pathway, comprising:

comparing the first 2D image to a plurality of second 2D images each captured at a respective known location along the pathway,

selecting one or more of the second 2D images based on the comparing, and

determining the location of the vehicle along the pathway based on the known location where the selected one or more of the second 2D images was captured.

(03) Embodiments of the present disclosure provide systems and methods for tracking information relating to transportation vehicles. For example, some embodiments of the disclosure provide a system for enhanced location and data collection from vehicles traveling along a vehicle pathway. For example, the vehicle may be a light rail train, a commuter train, a freight train, an automobile, an airplane, a ship, a space vehicle, a ski lift, a gondola, or other forms of transportation as known in the art. The transportation pathway may be any pathway along which the respective vehicle moves, such as a train track, a road, a canal or shipping lane, a runway, an airway, or other vehicle pathways as known in the art.

(04) The method may include capturing a 3D image from the vehicle on the pathway the vehicle is traveling. The vehicle may employ Light Detection and Ranging (LIDAR) technology to generate the 3D image of the pathway. In one