INFORMATION PROCESSING DEVICE, METHOD, AND PROGRAM

BACKGROUND

Technical Field

The present disclosure relates to an information processing device, an information processing method, and a program.

Related Art

Conventionally, devices each of which controls by voice respective devices mounted in a vehicle have been known. For example, see U.S. Patent No. 9580028.

However, a technology disclosed in U.S. Patent No. 9580028 does not take into consideration a case in which driving operation of a vehicle is performed by voice. For example, in a case in which a dialogue device that has a dialogue with passengers who are on board a vehicle is installed in the vehicle and driving operation of the vehicle is performed according to an utterance, the driving operation is required to be performed only according to utterances from the driver.

However, since the technology disclosed in U.S. Patent No. 9580028 sometimes causes a case in which driving operation is performed based on an utterance emitted by a passenger who is not the driver, the technology is not appropriate.

SUMMARY

The present disclosure provides an information processing device, an information processing method, and a program that are capable of performing driving operation of a vehicle appropriately even if plural passengers are on board the vehicle, in a case in which the driving operation of the vehicle is performed according to an utterance of a driver.

An information processing device according to a first aspect of the present disclosure includes an acquisition unit that can acquire utterances from plural passengers who are on board a vehicle, a recognition unit that can, in a case in which an utterance is acquired by the acquisition unit, recognize one of the passengers who emitted the utterance, and a control unit that can control driving operation of the vehicle indicated by the utterance emitted by the passenger, based on a recognition result of the passenger who emitted the utterance, the recognition result being obtained by the recognition unit, and on setting information that is information having been set in advance with respect to each of the plural passengers and that is information about whether or not the passenger is a passenger who is permitted to perform the driving operation of the vehicle. The setting information further includes information

about whether or not the passenger is a passenger who is permitted to perform vehicle operation that is different from the driving operation. The control unit can, based on a recognition result of the passenger obtained by the recognition unit and the setting information, output a first control signal that indicates performing driving operation of the vehicle according to a content of an utterance emitted from a first passenger, in a case in which the first passenger who is recognized to have emitted the utterance is a passenger who is permitted to perform the driving operation and the content of the utterance emitted from the first passenger relates to the driving operation. The control unit also can, based on a recognition result of the passenger obtained by the recognition and the setting information, to output a second control signal that indicates performing the vehicle operation different from the driving operation of the vehicle according to a content of a utterance emitted from a second passenger, in a case in which the second passenger who is recognized to have emitted the utterance is a passenger who is not permitted to perform the driving operation of the vehicle and is a passenger who is permitted to perform the vehicle operation different from the driving operation of the vehicle, and the content of the utterance emitted from the second passenger relates to the vehicle operation different from the driving operation of the vehicle.

The information processing device of the first aspect recognizes a passenger who

emitted an utterance according to the acquired utterance. The information processing device controls driving operation of the vehicle indicated by the utterance from the passenger, based on a recognition result of the passenger and setting information. For example, in a case in which an utterance emitted by the driver has a content instructing driving operation of the vehicle, the driving operation is permitted. In a case in which an utterance emitted by a passenger who is not the driver has a content instructing driving operation of the vehicle, the driving operation is restricted. This configuration enables driving operation of the vehicle to be performed appropriately even in a case in which plural passengers are on board the vehicle when driving operation of the vehicle is performed according to an utterance emitted by the driver. The setting information is information with respect to each of the plurality of passengers and information about whether or not each passenger is a passenger who is permitted to perform driving operation of the vehicle. Since use of the setting information enables whether or not a passenger who emitted an utterance is a driver who is permitted to perform driving operation of the vehicle to be identified, it is possible to perform the driving operation of the vehicle according to an utterance emitted by the driver even in a case in which plural passengers are on board the vehicle.

An information processing device according to a second aspect of the present disclosure is configured such that, in the first aspect, the control unit can, based on a recognition result of the passenger obtained by the recognition unit and the setting information, in a case in which the passenger who emitted the utterance acquired by the acquisition unit is a passenger who is not permitted to perform the driving operation of the vehicle and the content of the utterance is a content relating to the driving operation of the vehicle, output a control signal that indicates restricting the driving operation according to the content of the utterance from the passenger.

In the information processing device of the second aspect, driving operation of the vehicle is performed according to a content of an utterance emitted by a passenger and whether or not the passenger is permitted to perform the driving operation of the vehicle. This configuration enables driving operation in accordance with a content of an utterance emitted by the driver to be performed. This configuration also enables driving operation of the vehicle to be restricted even in a case in which an utterance having a content relating to the driving operation was emitted by a passenger who is not the driver.

In the information processing device of the first aspect, in a case in which, even when a passenger who emitted an utterance is a passenger who is not permitted to perform driving operation of the vehicle, the passenger is permitted to perform vehicle operation different from the driving operation of the vehicle and a content of the utterance is

a content relating to the vehicle operation different from the driving operation of the vehicle, the vehicle operation is performed according to the content of the utterance. Thus, in a case in which a passenger is permitted to perform vehicle operation different from driving operation, it is possible to instruct the vehicle operation by the utterance.

An information processing device according to a third aspect of the present disclosure is configured such that, in the first to second aspects, the control unit can set the information processing device in a state in which the driving operation can be performed according to an utterance emitted by the passenger in a case in which a position of the information processing device is inside the vehicle.

The information processing device of the third aspect can set the information processing device in a state in which driving operation can be performed by an utterance in a case in which a position of the information processing device itself is inside the vehicle. This setting enables driving operation performed by an utterance emitted by the driver to be started smoothly.

An information processing device according to a fourth aspect of the present disclosure is configured such that, in the first to third aspects, the recognition unit can recognize whether or not the passenger who emitted the utterance is a driver and the control unit can output a control signal that indicates performing the driving operation according to a content of the utterance emitted by the driver.

In the information processing device of the fourth aspect, it is possible to recognize a driver and perform driving operation according to an utterance emitted by the driver.

An information processing device according to a fifth aspect of the present disclosure is configured such that, in the first to fourth aspects, the information processing device is a dialogue device that performs a dialogue with the passengers.

Since the information processing device of the fifth aspect is a dialogue device, the information processing device may perform an operation different from vehicle operation for a vehicle. For example, it is possible to play music inside a vehicle according to a content of an instruction indicated by an utterance from a passenger.

A program according to a sixth aspect of the present disclosure is a program causing a computer to execute processing including acquiring utterances from plural passengers who are on board a vehicle, in a case in which an utterance is acquired by an acquisition unit, recognizing one of the passengers who emitted the utterance, controlling driving operation of the vehicle indicated by the utterance emitted by the passenger, based on a recognition result of the passenger who emitted the utterance, the recognition result being obtained by a recognition unit, and on setting information that is information having been set in advance

with respect to each of the plural passengers, that is information about whether or not the passenger is a passenger who is permitted to perform the driving operation of the vehicle and that includes information about whether or not the passenger is a passenger who is permitted to perform vehicle operation that is different from the driving operation, outputting a first control signal that indicates performing driving operation of the vehicle according to a content of an utterance emitted from a first passenger, in a case in which the first passenger who is recognized to have emitted the utterance is a passenger who is permitted to perform the driving operation and the content of the utterance emitted from the first passenger relates to the driving operation, and outputting a second control signal that indicates performing the vehicle operation different from the driving operation of the vehicle according to a content of a utterance emitted from a second passenger, in a case in which the second passenger who is recognized to have emitted the utterance is a passenger who is not permitted to perform the driving operation of the vehicle and is a passenger who is permitted to perform the vehicle operation different from the driving operation of the vehicle, and the content of the utterance emitted from the second passenger relates to the vehicle operation different from the driving operation of the vehicle.

An information processing method according to a seventh aspect of the present disclosure includes, in a case in which an utterance emitted by one of plural passengers who are on board a vehicle is acquire, recognizing the passenger who emitted the utterance, controlling driving operation of the vehicle indicated by the utterance emitted by the passenger, based on a recognition result of the passenger who emitted the utterance and on setting information that is information having been set in advance with respect to each of the plural passengers, that is information about whether or not the passenger is a passenger who is permitted to perform the driving operation of the vehicle and that includes information about whether or not the passenger is a passenger who is permitted to perform vehicle operation that is different from the driving operation, outputting a first control signal that indicates performing driving operation of the vehicle according to a content of an utterance emitted from a first passenger, in a case in which the first passenger who is recognized to have emitted the utterance is a passenger who is permitted to perform the driving operation and the content of the utterance emitted from the first passenger relates to the driving operation, and outputting a second control signal that indicates performing the vehicle operation different from the driving operation of the vehicle according to a content of a utterance emitted from a second passenger, in a case in which the second passenger who is recognized to have emitted the utterance is a passenger who is not permitted to perform the driving operation of the vehicle and is a passenger who is permitted to perform the vehicle operation different from the driving operation of the vehicle, and the content of the utterance emitted from the second passenger relates to the vehicle operation different from the driving operation of the vehicle.

As described above, the present disclosure enables driving operation of a vehicle to be performed appropriately even in a case in which plural passengers are on board the vehicle when the driving operation of the vehicle is performed according to an utterance emitted by a driver.

BRIEF DESCRIPTION OF THE DRAWINGS

Exemplary embodiments of the present disclosure will be described in detail based in the following figures, wherein:

WHAT IS CLAIMED IS:

1. An information processing device comprising:

an acquisition unit that is configured to acquire utterances from a plurality of passengers who are on board a vehicle;

a recognition unit that is configured, in a case in which an utterance is acquired by the acquisition unit, to recognize one of the passengers who emitted the utterance; and

a control unit that is configured to control driving operation of the vehicle indicated by the utterance from the passenger, based on a recognition result of the passenger who emitted the utterance and on setting information that is information having been set in advance with respect to each of the plurality of passengers and that is information about whether or not the passenger is a passenger who is permitted to perform the driving operation of the vehicle; wherein:

the setting information further includes information about whether or not the passenger is a passenger who is permitted to perform vehicle operation that is different from the driving operation;

the control unit is configured, based on a recognition result of the passenger obtained by the recognition unit and the setting information, to output a first control signal that indicates performing driving operation of the vehicle according to a content of an utterance emitted from a first passenger, in a case in which the first passenger who is recognized to have emitted the utterance is a passenger who is permitted to perform the driving operation and the content of the utterance emitted from the first passenger relates to the driving operation; and

the control unit is configured, based on a recognition result of the passenger obtained by the recognition and the setting information, to output a second control signal that indicates performing the vehicle operation different from the driving operation of the vehicle according to a content of a utterance emitted from a second passenger, in a case in which the second passenger who is recognized to have emitted the utterance is a passenger who is not permitted to perform the driving operation of the vehicle and is a passenger who is permitted to perform the vehicle operation different from the driving operation of the vehicle, and the content of the utterance emitted from the second passenger relates to the vehicle operation different from the driving operation of the vehicle.

2. The information processing device according to claim 1, wherein

the control unit is configured, based on a recognition result of the passenger obtained

by the recognition unit and the setting information, to

output a third control signal that indicates restricting the driving operation of the vehicle according to a content of an utterance emitted from a third passenger, in a case in which the third passenger who is recognized to have emitted the utterance is a passenger who is not permitted to perform the driving operation and the content of the utterance emitted from the third passenger relates to the driving operation.

3. The information processing device according to claim 1 or 2,

wherein the control unit is configured to set the information processing device in a state in which the driving operation can be performed according to an utterance from the passenger in a case in which a position of the information processing device is inside the vehicle.

4. The information processing device according to any one of claims 1 to 3, wherein

the recognition unit is configured to recognize whether or not the passenger who emitted the utterance is a driver, and

the control unit is configured to output a fourth control signal that indicates performing the driving operation according to a content of the utterance from the driver.

5. The information processing device according to any one of claims 1 to 4,

wherein the information processing device is a dialogue device that performs a dialogue with the passengers.

6. A program causing a computer to execute processing comprising:

acquiring utterances from a plurality of passengers who are on board a vehicle;

in a case in which an utterance is acquired, recognizing one of the passengers who emitted the utterance;

controlling driving operation of the vehicle indicated by the utterance from the passenger, based on a recognition result of the passenger who emitted the utterance and on setting information that is information having been set in advance with respect to each of the plurality of passengers, that is information about whether or not the passenger is a passenger who is permitted to perform the driving operation of the vehicle and that includes information about whether or not the passenger is a passenger who is permitted to perform vehicle

operation that is different from the driving operation;

outputting a first control signal that indicates performing driving operation of the vehicle according to a content of an utterance emitted from a first passenger, in a case in which the first passenger who is recognized to have emitted the utterance is a passenger who is permitted to perform the driving operation and the content of the utterance emitted from the first passenger relates to the driving operation; and

outputting a second control signal that indicates performing the vehicle operation different from the driving operation of the vehicle according to a content of a utterance emitted from a second passenger, in a case in which the second passenger who is recognized to have emitted the utterance is a passenger who is not permitted to perform the driving operation of the vehicle and is a passenger who is permitted to perform the vehicle operation different from the driving operation of the vehicle, and the content of the utterance emitted from the second passenger relates to the vehicle operation different from the driving operation of the vehicle.

7. An information processing method comprising:

in a case in which an utterance emitted by one of a plurality of passengers who are on board a vehicle is acquired, recognizing the passenger who emitted the utterance;

controlling driving operation of the vehicle indicated by the utterance from the passenger, based on a recognition result of the passenger who emitted the utterance and on setting information that is information having been set in advance with respect to each of the plurality of passengers, that is information about whether or not the passenger is a passenger who is permitted to perform the driving operation of the vehicle and that includes information about whether or not the passenger is a passenger who is permitted to perform vehicle operation that is different from the driving operation;

outputting a first control signal that indicates performing driving operation of the vehicle according to a content of an utterance emitted from a first passenger, in a case in which the first passenger who is recognized to have emitted the utterance is a passenger who is permitted to perform the driving operation and the content of the utterance emitted from the first passenger relates to the driving operation; and

outputting a second control signal that indicates performing the vehicle operation different from the driving operation of the vehicle according to a content of a utterance emitted from a second passenger, in a case in which the second passenger who is recognized to have emitted the utterance is a passenger who is not permitted to perform the driving

operation of the vehicle and is a passenger who is permitted to perform the vehicle operation different from the driving operation of the vehicle, and the content of the utterance emitted from the second passenger relates to the vehicle operation different from the driving operation of the vehicle.