Claims

[Claim 1]
A travel distance calculation device, comprising:
a first travel distance calculation unit configured to calculate a travel distance of a vehicle on the basis of position information on the vehicle obtained through position determination using a GNSS satellite;
a second travel distance calculation unit configured to calculate a travel distance of the vehicle on the basis of the number of rotations of a tire that the vehicle includes; and
a calculation-means selecting unit configured to select calculation means configured to calculate the travel distance of the vehicle from among the first travel distance calculation unit and the second travel distance calculation unit on the basis of at least one of the position information on the vehicle obtained through position determination using the GNSS satellite and information indicating a state of communication with the GNSS satellite,
wherein
the first travel distance calculation unit is configured to match the position information on the vehicle with map information to identify which road in the map information includes a position indicated by the position information on the vehicle, and
the calculation-means selecting unit is configured to select the calculation means on the basis of information on the road identified by the first travel distance calculation unit.

[Claim 2]
The travel distance calculation device according to claim 1, wherein
the calculation-means selecting unit is configured to select the first travel distance calculation unit in a case where the road that is identified is determined to be a road for which accurate position information is provided.

[Claim 3]
The travel distance calculation device according to claim 2, wherein
the calculation-means selecting unit is further configured to select the first travel distance calculation unit in a case where the state of communication is favorable.

[Claim 4]
The travel distance calculation device according to any one of claims 1 to3, wherein
the calculation-means selecting unit is configured to select the second travel distance calculation unit in a case where the road that is identified is determined not to be a road for which accurate position information is provided or in a case where the state of communication is not favorable.

[Claim 5]
The travel distance calculation device according to any one of claims 1 to 4, further comprising:

a correction factor calculation unit configured to calculate a correction factor for correcting the travel distance based on the number of rotations of a tire, the correction factor being calculated on the basis of a relationship between the travel distance calculated by the first travel distance calculation unit and the travel distance based on the number of rotations of a tire,

wherein the second travel distance calculation unit is configured to correct the travel distance based on the number of rotations of a tire using the correction factor calculated by the correction factor calculation unit.

[Claim 6]

The travel distance calculation device according to claim 5, wherein

the correction factor calculation unit is configured to calculate the correction factor according to a road condition.

[Claim 7]

The travel distance calculation device according to claim 6, further comprising:

a road condition determination unit configured to determine a road condition of a road on which the vehicle travels on the basis of attitude information on the vehicle,

wherein the second travel distance calculation unit is configured to select a correction factor according to the road condition determined by the road condition determination unit from among the correction factors, and calculate the travel distance using the correction factor that is selected.

[Claim 8]

The travel distance calculation device according to any one of claims 5 to 7, wherein

in a case where the vehicle travels on a road for which accurate position information is determined to be provided and the state of communication is favorable, the correction factor calculation unit is configured to record the travel distance calculated by the first travel distance calculation unit in a case that the vehicle travels on the road and the travel distance based on the number of rotations of a tire.

[Claim 9]

The travel distance calculation device according to claim 8, wherein

the correction factor calculation unit is further configured to associate attitude information on a vehicle that travels on the road with the correction factor that is calculated to record the attitude information and the correction factor.

[Claim 10]

The travel distance calculation device according to any one of claims 1 to 9, further comprising:

a travel distance identification unit configured to identify a travel distance of the vehicle for each charge applicable section.

[Claim 11]

The travel distance calculation device according to claim 10, wherein

the travel distance identification unit is configured to identify a travel distance by excluding the travel distance of the vehicle in a toll-free road.

[Claim 12]

A charging system, comprising:

the travel distance calculation device according to any one of claims 1 to 11; and

a charge processing device configured to perform charge processing on the basis of a travel distance calculated by the travel distance calculation device.

[Claim 13]

A travel distance calculation method, comprising:

selecting calculation means configured to calculate a travel distance of a vehicle, from among

means configured to calculate the travel distance of the vehicle on the basis of position information on the vehicle obtained through position determination using a GNSS satellite, and

means configured to calculate a travel distance of the vehicle on the basis of the number of rotations of a tire that the vehicle includes,

on the basis of at least one of a road in map information, which is identified that the road includes a position indicated by the position information on the vehicle by matching the position information on the vehicle obtained through position determination using the GNSS satellite with the map information, and information indicating a state of communication with the GNSS satellite.

[Claim 14]

A program for causing a computer that a travel distance calculation device includes to function as:

first means configured to calculate a travel distance of a vehicle on the basis of position information on the vehicle obtained through position determination using a GNSS satellite;

second means configured to calculate a travel distance of the vehicle on the basis of the number of rotations of a tire that the vehicle includes; and

means configured to select calculation means configured to calculate the travel distance of the vehicle from among the first means and the second means, on the basis of at least one of the position information on the vehicle obtained through position determination using the GNSS satellite and information indicating a state of communication with the GNSS satellite,

wherein

the first means is configured to match the position information on the vehicle with map information to identify which road in the map information includes a position indicated by the position information on the vehicle, and

the means configured to select the calculation means is configured to select the calculation means on the basis of information on the road identified by the first means.

[Claim 15]

A storage medium that stores a program for causing a computer that a travel distance calculation device includes to function as:

first means configured to calculate a travel distance of a vehicle on the basis of position information on the vehicle obtained through position determination using a GNSS satellite;

second means configured to calculate a travel distance of the vehicle on the basis of the number of rotations of a tire that the vehicle includes; and

means configured to select calculation means configured to calculate the travel distance of the vehicle from among the first means and the second means, on the basis of at least one of the position information on the vehicle obtained through position determination using the GNSS satellite and information indicating a state of communication with the GNSS satellite,

wherein

the first means is configured to match the position information on the vehicle with map information to identify which road in the map information includes a position indicated by the position information on the vehicle, and

the means configured to select the calculation means is configured to select the calculation means on the basis of information on the road identified by the first means.