CLAIMS

[Claim 1]

A passage detection system detecting passage of a vehicle at a predetermined position, the passage detection system comprising:

a positioning device configured to measure an own position using radio navigation and autonomous navigation; and

a passage detection device configured to detect the passage of the vehicle at the predetermined position;

wherein the passage detection device includes:

a position specifying unit configured to specify a position of the vehicle by correcting a positioning result measured by the positioning device on the basis of systematic error information prepared in advance regarding a systematic error of the positioning result of the positioning device and on the basis of a travel state of the vehicle, the systematic error is assumed to be an error, which exhibits a consistent trend, measured when position coordinates of the positioning result systematically deviate from genuine position coordinates of the position of the vehicle when the position is measured at the same position and in the same travel state; and

a passage determination unit configured to determine whether the vehicle has passed the predetermined position on the basis of a variation with time in the position specified by the position specifying unit.

[Claim 2]

The passage detection system according to claim 1,

wherein the passage detection device further includes a travel state specifying unit configured to specify the travel state of the vehicle on the basis of the variation with time in the position specified by the position specifying unit up to a present time; and

wherein the position specifying unit specifies the position of the vehicle by correcting the positioning result measured by the positioning device on the basis of the systematic error information prepared in advance regarding the system error of the positioning result measured by the positioning device and on the basis of the travel state of the vehicle specified by the travel state specifying unit.

[Claim 3]

A passage detection method of detecting passage of a vehicle at a predetermined position, the method comprising:

a position specifying step of specifying a position of the vehicle by correcting a positioning result measured by a positioning device which measures an own position using radio navigation and autonomous navigation on the basis of systematic error information prepared in advance regarding a systematic error of the positioning result measured by the positioning device and on the basis of a travel state of the vehicle, the systematic error is assumed to be an error, which exhibits a consistent trend, measured when position coordinates of the positioning result systematically deviate from genuine position coordinates of the position of the vehicle when the position is measured at the same position and in the same travel state; and

a passage determination step of determining whether the vehicle has passed the predetermined position on the basis of a variation with time in the position specified in the position specifying step.

[Claim 4]

A passage detection device detecting passage of a vehicle at a predetermined position, the passage detection device comprising:

a position specifying unit configured to specify a position of the vehicle by correcting a positioning result measured by a positioning device which measures an own position using radio navigation and autonomous navigation on the basis of systematic error information prepared in advance regarding a systematic error of the positioning result measured by the positioning device and on the basis of a travel state of the vehicle, the systematic error is assumed to be an error, which exhibits a consistent trend, measured when position coordinates of the positioning result systematically deviate from genuine position coordinates of the position of the vehicle when the position is measured at the same position and in the same travel state; and

a passage determination unit configured to determine whether the vehicle has passed the predetermined position on the basis of a variation with time in the position specified in the position specifying unit.

[Claim 5]

A program causing a computer to function as a passage detection device detecting passage of a vehicle at a predetermined position, the program causing the computer to function as:

a position specifying unit configured to specify a position of the vehicle by correcting a positioning result measured by a positioning device which measures an own position using radio navigation and autonomous navigation on the basis of systematic error information prepared in advance regarding a systematic error of the positioning result measured by the positioning device and on the basis of a travel state of the vehicle, the systematic error is assumed to be an error, which exhibits a consistent trend, measured when position coordinates of the positioning result systematically deviate from genuine position coordinates of the position of the vehicle when the position is measured at the same position and in the same travel state; and

a passage determination unit configured to determine whether the vehicle has passed the predetermined position on the basis of a variation with time in the position specified in the position specifying unit.

[Claim 6]

A recording medium that records a program causing a computer to function as a passage detection device detecting passage of a vehicle at a predetermined position, the recording medium recording the program causing the computer to function as:

a position specifying unit configured to specify a position of the vehicle by correcting a positioning result measured by a positioning device which measures an own position using radio navigation and autonomous navigation on the basis of systematic error information prepared in advance regarding a systematic error of the positioning result measured by the positioning device and on the basis of a travel state of the vehicle, the systematic error is assumed to be an error, which exhibits a consistent trend, measured when position coordinates of the positioning result systematically deviate from genuine position coordinates of the position of the vehicle when the position is measured at the same position and in the same travel state; and

a passage determination unit configured to determine whether the vehicle has passed the predetermined position on the basis of a variation with time in the position specified in the position specifying unit.