CLAIMS

1. A positioning method, comprising:

acquiring an identification image captured at a first site;

determining, according to identification information of a first identifier extracted from the identification image, position information of the first identifier; and

determining position information of the first site based on the position information of the first identifier and projection information of the first identifier in the identification image.

2. The method of claim 1, wherein determining, according to the identification information of the first identifier extracted from the identification image, the position information of the first identifier comprises:

determining an image region of a projection of the first identifier in the identification image;

performing identifier identification on the image region according to at least one identification feature of the image region to obtain the identification information of the first identifier; and

determining, according to a pre-established correspondence between identification information and position information, position information corresponding to the identification information of the first identifier as the position information of the first identifier.

3. The method of claim 1 or 2, further comprising:

determining, according to the position information of the first identifier, a positioning region of the first site in a present scenario, wherein a difference value between position information of the first site and the position information of the first identifier in the positioning region is less than a preset value.

4. The method of claim 3, wherein determining, according to the position information of the first identifier, the positioning region of the first site in the present scenario comprises:

determining, according to the position information of the first identifier, a floor and a floor region where the first site is located.

5. The method of any one of claims 1 to 4, wherein determining the position information of the first site based on the position information of the first identifier and the projection information of the first identifier in the identification image comprises:

determining relative position information between the first site and the first identifier according to the projection information of the first identifier in the identification image; and

determining the position information of the first site according to the position information of the first identifier and the relative position information.

6. The method of claim 5, wherein determining the relative position information between the first site and the first identifier according to the projection information of the first identifier in the identification image comprises:

establishing, based on orientation information of the first identifier, a reference coordinate system where the first identifier is located;

determining reference coordinates of the first identifier in the reference coordinate system;

determining projection coordinates of the first identifier according to the projection information of the first identifier in the identification image; and

determining the relative position information between the first site and the first identifier based on the reference coordinates and the projection coordinates of the first identifier.

7. The method of claim 6, wherein determining the projection coordinates of the first identifier according to the projection information of the first identifier in the identification image comprises:

acquiring an image size and an image resolution of the identification image;

determining image coordinates of at least one pixel point in the identification image according to the image size and the image resolution; and

determining projection coordinates of at least one projection point of the first identifier in the identification image according to the projection information of the first identifier in the identification image and the image coordinates of the at least one pixel point.

8. The method of claim 6 or 7, wherein determining the relative position information between the first site and the first identifier according to the reference coordinates and the projection coordinates of the first identifier comprises:

acquiring at least one device parameter of an image capturing device, wherein the image capturing device is configured to capture the identification image;

determining, according to the device parameter of the image capturing device, a projection transformation relationship of transforming the reference coordinates of the first identifier into the projection coordinates; and

determining the relative position information between the first site and the first identifier based on the projection transformation relationship as well as the reference coordinates and the projection coordinates of the first identifier.

9. The method of claim 5, wherein determining the position information of the first site according to the position information of the first identifier and the relative position information comprises:

determining a distance and a direction of the first site relative to the first identifier according to the relative position information; and

determining the position information of the first site in a coordinate system of a present scenario according to the position information of the first identifier and the distance and the direction of the first site relative to the first identifier.

10. The method of any one of claims 1 to 9, further comprising:

acquiring identification information of a second identifier;

determining position information of a second site according to the identification information of the second identifier; and

determining a plan route from the first site to the second site according to the position information of the first site and the position information of the second site.

11. A positioning device, comprising:

an acquisition module, configured to acquire an identification image captured at a first site;

a first determination module, configured to determine, according to identification information of a first identifier extracted from the identification image, position information of the first identifier; and

a second determination module, configured to determine position information of the first site based on the position information of the first identifier and projection information of the first identifier in the identification image.

12. The device of claim 11, wherein the first determination module comprises:

a first determination submodule, configured to determine an image region of a projection of the first identifier in the identification image;

an identification submodule, configured to perform identifier identification on the image region according to at least one identification feature of the image region to obtain the identification information of the first identifier; and

a second determination submodule, configured to determine, according to a pre-established correspondence between identification information and position information, position information corresponding to the identification information of the first identifier as the position information of the first identifier.

13. The device of claim 11 or 12, further comprising:

a third determination module, configured to determine, according to the position information of the first identifier, a positioning region of the first site in a present scenario, wherein a difference value between position information of the first site and the position information of the first identifier in the positioning region is less than a preset value.

~~14. The device of claim 13, wherein the third determination module is specifically configured to determine, according to the position information of the first identifier, a floor and a floor region where the first site is located.~~

~~15~~14. The device of any one of claims 11 to ~~14~~13, wherein the second determination module comprises:

a third determination submodule, configured to determine relative position information between the first site and the first identifier according to the projection information of the first identifier in the identification image; and

a fourth determination submodule, configured to determine the position information of the first site according to the position information of the first identifier and the relative position information.

~~16~~15. The device of claim ~~15~~14, wherein the third determination submodule is specifically configured to:

establish, based on orientation information of the first identifier, a reference coordinate system where the first identifier is located;

determine reference coordinates of the first identifier in the reference coordinate system;

determine projection coordinates of the first identifier according to the projection information of the first identifier in the identification image; and

determine the relative position information between the first site and the first identifier based on the reference coordinates and the projection coordinates of the first identifier.

~~17~~16. The device of claim ~~16~~15, wherein the third determination submodule is specifically configured to:

acquire an image size and an image resolution of the identification image;

determine image coordinates of at least one pixel point in the identification image according to the image size and the image resolution; and

determine projection coordinates of at least one projection point of the first identifier in the identification image according to the projection information of the first identifier in the identification image and the image coordinates of the at least one pixel point.

~~18~~17. The device of claim ~~16~~ 15 or ~~17~~16, wherein the third determination submodule is specifically configured to:

acquire at least one device parameter of an image capturing device, wherein the image capturing device is configured to capture the identification image;

determine, according to the device parameter of the image capturing device, a projection transformation relationship of transforming the reference coordinates of the first identifier into the projection coordinates; and

determine the relative position information between the first site and the first identifier based on the projection transformation relationship as well as the reference coordinates and the projection coordinates of the first identifier.

~~19. The device of claim 15, wherein the fourth determination submodule is specifically configured to:~~

~~determine a distance and a direction of the first site relative to the first identifier according to the relative position information; and~~

~~determine the position information of the first site in a coordinate system of a present scenario according to the position information of the first identifier and the distance and the direction of the first site relative to the first identifier.~~

~~20. The device of any one of claims 11 to 19, further comprising: a route planning module, configured to:~~

~~acquire identification information of a second identifier;~~

~~determine position information of a second site according to the identification information of the second identifier; and~~

~~determine a plan route from the first site to the second site according to the position information of the first site and the position information of the second site.~~

~~21~~18. An electronic device, comprising:

a processor; and

a memory, configured to store an instruction executable by the processor,

wherein the processor is configured to call the instruction stored in the memory to execute the method of any one of claims 1 to 10.

~~22~~19. A computer-readable storage medium, having stored thereon a computer program instruction that, when executed by a processor, causes the processor to implement the method of any one of claims 1 to 10.

~~23~~20. A computer program, comprising a computer-readable code that, when being run in an electronic device, cause a processor in the electronic device to perform the method of any one of claims 1 to 10.