CLAIMS

1. A point cloud fusion method, comprising:

determining, according to at least two influence factors in scene information and/or camera information, depth confidences of pixel points in a current frame depth map, wherein the scene information and the camera information each at least comprises one influence factor; and

performing point cloud fusion processing on the pixel points in the current frame depth map according to the depth confidences.

2. The method according to claim 1, wherein determining, according to the at least two influence factors in the scene information and/or the camera information, the depth confidences of the pixel points in the current frame depth map comprises:

obtaining at least one depth-valid pixel point in the current frame depth map; and

determining, according to the at least two influence factors in the scene information and/or the camera information, a depth confidence of each of the at least one depth-valid pixel point; and

wherein performing point cloud fusion processing on the pixel points in the current frame depth map according to the depth confidences comprises:

performing point cloud fusion processing on the at least one depth-valid pixel point in the current frame depth map according to the depth confidences.

3. The method according to claim 2, wherein obtaining the at least one depth-valid pixel point in the current frame depth map comprises:

detecting, according to at least one reference frame depth map, whether depths of the pixel points in the current frame depth map are valid; and

reserving the at least one depth-valid pixel point in the current frame depth map,

wherein the at least one reference frame depth map comprises at least one frame depth map obtained before the current frame depth map is obtained.

4. The method according to claim 3, wherein detecting, according to the at least one reference frame depth map, whether the depths of the pixel points in the current frame depth map are valid comprises:

performing depth consistency check on the depths of the pixel points in the current frame depth map by using the at least one reference frame depth map; and

determining a depth of a pixel point passing the depth consistency check as valid, and determining a depth of a pixel point not passing the depth consistency check as invalid.

5. The method according to claim 4, wherein performing depth consistency check on the depths of the pixel points in the current frame depth map by using the at least one reference frame depth map comprises:

obtaining a plurality of reference frame depth maps;

determining whether a first pixel point in the current frame depth map and a corresponding pixel point in each of the plurality of reference frame depth maps satisfy a depth consistency condition, the first pixel point being any one of the pixel points in the current frame depth map; and

if a quantity of corresponding pixel points satisfying the depth consistency condition with the first pixel point is greater than or equal to a set value, determining that the first pixel point passes the depth consistency check; or if the quantity of corresponding pixel points satisfying the depth consistency condition with the first pixel point is less than the set value, determining that the first pixel point does not pass the depth consistency check.

6. The method according to claim 5, wherein determining whether the first pixel point in the current frame depth map and the corresponding pixel point in each of the plurality of reference frame depth maps satisfy the depth consistency condition comprises:

projecting the first pixel point to each of the plurality of reference frame depth maps to obtain a projection position and a projection depth of a projection point in each of the plurality of reference frame depth maps;

obtaining a measured depth value of the projection position in each of the plurality of reference frame depth maps;

obtaining a difference between the projection depth of the projection point and the

measured depth value of the projection position in each of the plurality of reference frame depth maps; and

if the difference is less than or equal to a first set depth threshold, determining that the first pixel point and a corresponding pixel point in its corresponding reference frame depth map satisfy the depth consistency condition; or if the difference is greater than the first set depth threshold, determining that the first pixel point and the corresponding pixel point in the corresponding reference frame depth map do not satisfy the depth consistency condition.

7. The method according to any one of claims 1 to 7, wherein the scene information comprises at least one influence factor in a scene structure and a scene texture, and the camera information at least comprises a camera configuration.

8. The method according to claim 8, wherein determining, according to the at least two influence factors in the scene information and/or the camera information, the depth confidences of the pixel points in the current frame depth map comprises:

respectively obtaining, for the pixel points in the current frame depth map, weights corresponding to at least two influence factors in the scene structure, the camera configuration, and the scene texture; and

fusing the weights corresponding to the at least two influence factors to obtain the depth confidences of the pixel points in the current frame depth map.

9. The method according to claim 8, wherein respectively obtaining, for the pixel points in the current frame depth map, the weights corresponding to the at least two influence factors in the scene structure, the camera configuration, and the scene texture comprises:

respectively obtaining the weights corresponding to at least two influence factors in the scene structure, the camera configuration, and the scene texture according to attribute information of the pixel point in the current frame depth map, the attribute information at least comprising: a position and/or a normal vector.

10. The method according to claim 8, wherein fusing the weights corresponding to the at least two influence factors to obtain the depth confidences of the pixel points in the current frame depth map comprise:

multiplying the weights corresponding to the at least two influence factors to obtain a joint weight; and obtaining the depth confidences of the pixel points in the current frame depth map according to the joint weight.

11. The method according to any one of claims 1 to 7, wherein performing point cloud fusion processing on the pixel points in the current frame depth map according to the depth confidences comprises:

indicating each of the pixel points in the current frame depth map by using at least one surface element, each surface element at least comprising a depth confidence of a corresponding pixel point; and

performing, according to a surface element set of a current frame, set update on an existing surface element set of an updated previous frame, to obtain an existing surface element set of an updated current frame, wherein the existing surface element set of the updated current frame indicates a point cloud fusion processing result of the current frame depth map, and the surface element set of the current frame comprises a set of surface elements corresponding to depth-valid pixel points in the current frame depth map, and

wherein the set update comprises at least one of the following operations: surface element addition, surface element update, or surface element deletion.

12. The method according to claim 11, wherein each of the at least one surface element further comprises a position, a normal vector, an interior point weight, and an exterior point weight of the corresponding pixel point, wherein the interior point weight is configured to indicate a probability that the corresponding pixel point is an interior point, the exterior point weight is configured to indicate a probability that the corresponding pixel point is an exterior point, and a difference between the interior point weight and the exterior point weight is configured to indicate the depth confidence of the corresponding pixel point.

13. The method according to claim 11, wherein performing, according to the surface element set of the current frame, the set update on the existing surface element set of the updated previous frame comprises:

if a first surface element uncovered by the existing surface element set of the updated previous frame exists in the surface element set of the current frame, adding the first surface element to the existing surface element set of the updated previous frame.

14. The method according to claim 11, wherein performing, according to the surface element set of the current frame, the set update on the existing surface element set of the updated previous frame comprises:

adding the second surface element to the existing surface element set of the updated previous frame when the following conditions are met:

a second surface element covered by the existing surface element set of the updated previous frame exists in the surface element set of the current frame, a depth of the second surface element is greater than a projection depth of a corresponding surface element in the existing surface element set of the updated previous frame, and a difference between the depth of the second surface element and the projection depth of the corresponding surface element in the existing surface element set of the updated previous frame is greater than or equal to a first set depth threshold.

15. The method according to claim 12, wherein performing, according to the surface element set of the current frame, the set update on the existing surface element set of the updated previous frame comprises:

adding an exterior point weight value of the corresponding surface element in the existing surface element set of the updated previous frame when the following conditions are met:

the second surface element uncovered by the existing surface element set of the updated previous frame exists in the surface element set of the current frame, the depth of the second surface element is less than the projection depth of the corresponding surface element in the existing surface element set of the updated previous frame, and the difference between the depth of the second surface element and the projection depth of the corresponding surface element in the existing surface element set of the updated the previous frame is greater than or equal to a second set depth threshold.

16. The method according to claim 12, wherein performing, according to the surface element set of the current frame, the set update on the existing surface element set of the updated previous frame comprises:

updating the position and the normal vector of the corresponding surface element in the existing surface element set of the updated previous frame and adding an interior point

weight value of the corresponding surface element in the existing surface element set of the updated previous frame, when the following conditions are met:

the second surface element uncovered by the existing surface element set of the updated previous frame exists in the surface element set of the current frame, the difference between the depth of the second surface element and the projection depth of the corresponding surface element in the existing surface element set of the updated previous frame is less than a third set depth threshold, and an included angle between a normal vector of the corresponding surface element in the existing surface element set of the updated previous frame and a normal vector of the second surface element is less than or equal to a set angle value.

17. The method according to claim 12, wherein performing, according to the surface element set of the current frame, the set update on the existing surface element set of the updated previous frame comprises:

adding the exterior point weight value of the corresponding surface element in the existing surface element set of the updated previous frame when the following conditions are met:

the second surface element uncovered by the existing surface element set of the updated previous frame exists in the surface element set of the current frame, the difference between the depth of the second surface element and the projection depth of the corresponding surface element in the existing surface element set of the updated previous frame is less than the third set depth threshold, and the included angle between the normal vector of the corresponding surface element in the existing surface element set of the updated previous frame and the normal vector of the second surface element is greater than the set angle value.

18. The method according to claim 11, wherein performing, according to the surface element set of the current frame, the set update on the existing surface element set of the updated previous frame comprises:

if a surface element satisfying a preset deletion condition exists in the surface element set of the current frame, deleting the surface element satisfying the preset deletion condition in the surface element set of the current frame, wherein the surface element satisfying the preset deletion condition is: a surface element of the corresponding pixel point having a depth

confidence lower than a set confidence threshold.

19. An electronic device, comprising a processor and a memory configured to store a computer program executable by the processor, wherein

the processor is configured to execute, when the computer program is run, the method according to any one of claims 1 to 18.

20. A computer storage medium having a computer program stored thereon, wherein the computer program, when being executed by a processor, causes the processor to implement the method according to any one of claims 1 to 18.