WHAT IS CLAIMED IS:

1. A method of generating a three-dimensional (3D) geometry of a room from a panorama image of the room, implemented by a computer, the method comprising:

determining two-dimensional (2D) positions of wall corner points of the room in the panorama image of the room based on a user input, each of the wall corner points being in one of a floor plane or a ceiling plane of the room, wherein the user input includes a user selection of the wall corner points of the room and an order of the wall corner points;

wherein at least one of the wall corner points is a first type of wall corner point, the first type of wall corner point indicating a wall plane of the 3D geometry;

wherein at least one of the wall corner points is a second type of wall corner point, the second type of wall corner point indicating an open area plane of the 3D geometry;

calculating 3D positions of the wall corner points based on the 2D positions of the wall corner points, a size of the panorama image, and a distance between the floor plane of the room and a capture position of a device configured to capture the panorama image of the room;

determining a layout of the room based on the order of the wall corner points; and

generating the 3D geometry of the room based on the layout of the room and the 3D positions of the wall corner points.

2. The method of claim 1, wherein the generating comprises:

generating a plane of the 3D geometry based on a type of a predetermined one of two adjacent wall corner points.

3. The method of claim 1, further comprising:

determining, for each 3D position in a plane of the 3D geometry, color information of the respective 3D position based on color information at a 2D position in the panorama image of the room corresponding to the respective 3D position.

4. The method of claim 1, wherein

each wall plane of the 3D geometry is parallel or orthogonal to at least one other wall plane of the 3D geometry, and

the method further includes generating a guide line that assists a user to select one of the wall corner points.

5. The method of claim 1, wherein

each wall plane of the 3D geometry is parallel or orthogonal to at least one other wall plane of the 3D geometry, and

the method further includes adjusting one of the wall corner points that is selected by the user.

6. The method of claim 1, further comprising:

determining 2D positions of two points in the panorama image of the room;

calculating 3D positions of the two points based on the 2D positions of the two points, the size of the panorama image, and the distance between the floor plane of the room and the capture position of the device; and

calculating a distance between the 3D positions of the two points.

7. An apparatus, comprising:

processing circuitry configured to:

determine two-dimensional (2D) positions of wall corner points of a room in a panorama image of the room based on a user input, each of the wall corner points being in one of a floor plane or a ceiling plane of the room, wherein the user input includes a user selection of the wall corner points of the room and an order of the wall corner points;

wherein at least one of the wall corner points is a first type of wall corner point, the first type of wall corner point indicating a wall plane of the 3D geometry;

wherein at least one of the wall corner points is a second type of wall corner point, the second type of wall corner point indicating an open area plane of the 3D geometry;

calculate three-dimensional (3D) positions of the wall corner points based on the 2D positions of the wall corner points, a size of the panorama image, and a distance between the floor plane of the room and a capture position of a device configured to capture the panorama image of the room;

determine a layout of the room based on the order of the wall corner points; and

generate a 3D geometry of the room based on the layout of the room and the 3D positions of the wall corner points.

8. The apparatus of claim 7, wherein the processing circuitry is further configured to:

generate a plane of the 3D geometry based on a type of a predetermined one of two adjacent wall corner points.

9. The apparatus of claim 7, wherein the processing circuitry is further configured to:

determine, for each 3D position in a plane of the 3D geometry, color information of the respective 3D position based on color information at a 2D position in the panorama image of the room corresponding to the respective 3D position.

10. The apparatus of claim 7, wherein

each wall plane of the 3D geometry is parallel or orthogonal to at least one other wall plane of the 3D geometry, and

the processing circuitry is further configured to:

generate a guide line that assists a user to select one of the wall corner points.

11. The apparatus of claim 7, wherein

each wall plane of the 3D geometry is parallel or orthogonal to at least one other wall plane of the 3D geometry, and

the processing circuitry is further configured to:

adjust one of the wall corner points that is selected by the user.

12. The apparatus of claim 7, wherein the processing circuitry is further configured to:

determine 2D positions of two points in the panorama image of the room;

calculate 3D positions of the two points based on the 2D positions of the two points, the size of the panorama image, and the distance between the floor plane of the room and the capture position of the device; and

calculate a distance between the 3D positions of the two points.

13. A non-transitory computer-readable storage medium storing instructions which, when executed by at least one processor, cause the at least one processor to perform:

determining two-dimensional (2D) positions of wall corner points of a room in a panorama image of the room based on a user input, each of the wall corner points being in one of a floor plane or a ceiling plane of the room, wherein the user input includes a user selection of the wall corner points of the room and an order of the wall corner points;

wherein at least one of the wall corner points is a first type of wall corner point, the first type of wall corner point indicating a wall plane of the 3D geometry;

wherein at least one of the wall corner points is a second type of wall corner point, the second type of wall corner point indicating an open area plane of the 3D geometry;

calculating three-dimensional (3D) positions of the wall corner points based on the 2D positions of the wall corner points, a size of the panorama image, and a distance between the floor plane of the room and a capture position of a device configured to capture the panorama image of the room;

determining a layout of the room based on the order of the wall corner points; and

generating a 3D geometry of the room based on the layout of the room and the 3D positions of the wall corner points.