CLAIMS

1. A method of encoding a point cloud into a bitstream of encoded point cloud data representing a physical object, wherein the method comprises:

obtaining, for each point of the point cloud, a sensor index associated with a sensor that captured the point, an azimuthal angle representing a capture angle of said sensor;

ordering points of the point cloud based on the azimuthal angles and the sensor indices; and

encoding, into the bitstream, at least one order index difference representing a difference between order indices of two consecutive ordered points.

2. The method of claim 1, wherein the method further comprises encoding, into the bitstream, radius values.

3. The method of claim 2, wherein the method further comprises encoding, in the bitstream, residuals of three-dimensional cartesian coordinates of ordered points based on their three-dimensional cartesian coordinates, on decoded azimuthal angles obtained from azimuthal angles, on decoded radius values obtained from radius values, and on sensor indices.

4. The method of claim 3, wherein the decoded azimuthal angles are also obtained from residual azimuthal angles associated with ordered points, and wherein the method further comprises encoding, in the bitstream, the residual azimuthal angles.

5. A method of decoding a point cloud from a bitstream of encoded point cloud data representing a physical object, wherein the method comprises:

decoding, from the bitstream, at least one order index difference representing a difference between order indices of two consecutive ordered points of the point cloud; and

obtaining, for each point of the point cloud, a sensor index associated with a sensor that captured the point and an azimuthal angle representing a capture angle of said sensor from an order index obtained from a decoded order index difference.

6. The method of claim 5, wherein the method further comprises decoding radius values from the bitstream and obtaining decoded radius values from the radius values.

7. The method of claim 6, wherein the method further comprises decoding, from the bitstream, residuals of three-dimensional cartesian coordinates of ordered points and obtaining decoded three-dimensional cartesian coordinates of ordered points based on their decoded azimuthal angles obtained from the azimuthal angles, on their decoded radius values and on their sensor indices.

8. The method of claim 7, wherein the method further comprises decoding residual azimuthal angles from the bitstream, and wherein the decoded azimuthal angles are also obtained from the residual azimuthal angles.

9. An apparatus of encoding a point cloud into a bitstream of encoded point cloud data representing a physical object, the apparatus comprising one or more processors configured to:

obtain, for each point of the point cloud, a sensor index associated with a sensor that captured the point, an azimuthal angle representing a capture angle of said sensor;

order points of the point cloud based on the azimuthal angles and the sensor indices; and

encode, into the bitstream, at least one order index difference representing a difference between order indices of two consecutive ordered points.

10. An apparatus of decoding a point cloud from a bitstream of encoded point cloud data representing a physical object, the apparatus comprising one or more processors configured to:

decode, from the bitstream, at least one order index difference representing a difference between order indices of two consecutive ordered points of the point cloud; and

obtain, for each point of the point cloud, a sensor index associated with a sensor that captured the point and an azimuthal angle representing a capture angle of said sensor from an order index obtained from a decoded order index difference.

11. A bitstream of encoded point cloud data representing a physical object, wherein the bitstream comprises at least one order index difference representing a difference between order indices of two consecutive ordered points of the point cloud.

12. A computer program product including instructions which, when the program is executed by one or more processors, causes the one or more processors to carry out a method of encoding a point cloud into a bitstream of encoded point cloud data representing a physical object, the method comprising:

obtaining, for each point of the point cloud, a sensor index associated with a sensor that captured the point, an azimuthal angle representing a capture angle of said sensor;

ordering points of the point cloud based on the azimuthal angles and the sensor indices; and

encoding, into the bitstream, at least one order index difference representing a difference between order indices of two consecutive ordered points.

13. A non-transitory storage medium carrying instructions of program code for executing a method of encoding a point cloud into a bitstream of encoded point cloud data representing a physical object, the method comprising:

obtaining, for each point of the point cloud, a sensor index associated with a sensor that captured the point, an azimuthal angle representing a capture angle of said sensor;

ordering points of the point cloud based on the azimuthal angles and the sensor indices; and

encoding, into the bitstream, at least one order index difference representing a difference between order indices of two consecutive ordered points.

14. A computer program product including instructions which, when the program is executed by one or more processors, causes the one or more processors to carry out a method of decoding a point cloud from a bitstream of encoded point cloud data representing a physical object, the method comprising:

decoding, from the bitstream, at least one order index difference representing a difference between order indices of two consecutive ordered points of the point cloud; and

obtaining, for each point of the point cloud, a sensor index associated with a sensor that captured the point and an azimuthal angle representing a capture angle of said sensor from an order index obtained from a decoded order index difference.

15. A non-transitory storage medium carrying instructions of program code for executing a method of decoding a point cloud from a bitstream of encoded point cloud data representing a physical object, the method comprising:

decoding, from the bitstream, at least one order index difference representing a difference between order indices of two consecutive ordered points of the point cloud; and

obtaining, for each point of the point cloud, a sensor index associated with a sensor that captured the point and an azimuthal angle representing a capture angle of said sensor from an order index obtained from a decoded order index difference.

16. An electronic device, comprising:

a processor; and

a memory for storing instructions executable by the processor;

wherein the processor is configured to encode a point cloud into a bitstream of encoded point cloud data representing a physical object, wherein the processor is configured to:

obtain, for each point of the point cloud, a sensor index associated with a sensor that captured the point, an azimuthal angle representing a capture angle of said sensor;

order points of the point cloud based on the azimuthal angles and the sensor indices; and

encode, into the bitstream, at least one order index difference representing a difference between order indices of two consecutive ordered points.

17. The electronic device of claim 16, wherein the processor is further configured to encode, into the bitstream, radius values.

18. The electronic device of claim 17, wherein the processor is further configured to encode, in the bitstream, residuals of three-dimensional cartesian coordinates of ordered points based on their three-dimensional cartesian coordinates, on decoded azimuthal angles obtained from azimuthal angles, on decoded radius values obtained from radius values, and on sensor indices.

19. An electronic device, comprising:

a processor; and

a memory for storing instructions executable by the processor;

wherein the processor is configured to decode a point cloud from a bitstream of encoded point cloud data representing a physical object, wherein the processor is configured to:

decode, from the bitstream, at least one order index difference representing a difference between order indices of two consecutive ordered points of the point cloud; and

obtain, for each point of the point cloud, a sensor index associated with a sensor that captured the point and an azimuthal angle representing a capture angle of said sensor from an order index obtained from a decoded order index difference.

20. The electronic device of claim 19, wherein the processor is further configured to:

decode radius values from the bitstream and obtaining decoded radius values from the radius values.