CLAIMS

1. A method of encoding a point cloud into a bitstream of encoded point cloud data representing a physical object, the method comprising an azimuthal coding mode providing a series of bits for encoding a coordinate of a point of the point cloud, wherein the method comprises:

- dividing (202) an interval, to which the point coordinate belongs to, into a left half interval and a right half interval;

- selecting (106) a context based on an apparent angle (AA_d) representing an interval angle seen from a sensor that captured the point; and

- context-adaptive binary entropy encoding (107) a bit (b_d) of the series of bits, into the bitstream, based on the selected context, said coded bit (b_d) indicating which of the two half intervals the point coordinate belongs to;

wherein the context is selected based on relative magnitudes of an elementary azimuthal angle ($\Delta\varphi$) and the apparent angle (AA_d).

2. A method of decoding a point cloud from a bitstream of encoded point cloud data representing a physical object, the method comprising an azimuthal coding mode providing a series of bits for decoding a coordinate of a point of the point cloud, wherein the method comprises:

- dividing (202) an interval, to which the point coordinate belongs to, into a left half interval and a right half interval;

- selecting (106) a context based on an apparent angle (AA_d) representing an interval angle seen from a sensor that captured the point; and

- context-adaptive binary entropy decoding (302) a bit (b_d), from the bitstream, based on the selected context, said decoded bit (b_d) indicating which of the two half intervals the point coordinate belongs to;

wherein the context is selected based on relative magnitudes of an elementary azimuthal angle ($\Delta\varphi$) and the apparent angle (AA_d).

3. The method of claim 1 or 2, wherein the apparent angle (AA_d) is estimated based on at least one of a first angle ($\varphi_{node,d}$) associated with the lower bound of the interval, a second angle ($\varphi_{top,d}$) associated with the upper bound of the interval and a third angle ($\varphi_{middle,d}$) associated with the middle point of the interval.

4. The method of claim 3, wherein the apparent angle (AA_d) is estimated based on the first ($\varphi_{node,d}$) and second ($\varphi_{top,d}$) angles.

5. The method of claim 3, wherein the apparent angle (AA_d) is estimated based on the first ($\varphi_{node,d}$) and third ($\varphi_{middle,d}$) angles.

6. The method of claim 3, wherein the apparent angle (AA_d) is estimated based on the second ($\varphi_{top,d}$) and third ($\varphi_{middle,d}$) angles.

7. The method of any one of claims 1 to 3, wherein the apparent angle (AA_d) is estimated based on an interval size (s_d) and a distance (r) between the point and the sensor that captured the point.

8. The method of claim 1 or 2, wherein the context is selected based on a ratio between the elementary azimuthal angle ($\Delta\varphi$) over the apparent angle (AA_d).

9. The method of claim 8, wherein contexts are grouped into at least two context subsets based on a range of particular values of the ratio, and selecting the context comprises selecting (421) a context subset based on the range of particular values and the ratio and selecting (422) a context from the contexts of the selected context subset.

10. The method of claim 9, wherein selecting (422) a context from the contexts of the selected context subset depends on a predicted azimuthal angle (φ_{pred}) associated with the point and a left angle ($\varphi_{left,d}$) associated with the left half interval and a right angle ($\varphi_{right,d}$) associated with the right half interval.

11. The method of claim 9 or 10, wherein the context is selected from a context table ($ctxTable_T$) having as first entry a context subset index (*ctxSetIdx*)

indicating a selected context subset, and as a second entry a context index (*cxtIdx*) indicating a selected context in the selected context subset.

12. 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 implement an azimuthal coding mode providing a series of bits for encoding a coordinate of a point of the point cloud, said azimuthal coding mode comprising:

- dividing an interval, to which the point coordinate belongs to, into a left half interval and a right half interval;

- selecting a context based on an apparent angle representing an interval angle seen from a sensor that captured the point; and

- context-adaptive binary entropy encoding a bit of the series of bits, into the bitstream, based on the selected context, said coded bit indicating which of the two half intervals the point coordinate belongs to;

wherein the context is selected based on relative magnitudes of an elementary azimuthal angle ($\Delta\varphi$) and the apparent angle (AA_d).

13. 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 implement an azimuthal coding mode providing a series of bits for decoding a coordinate of a point of the point cloud, said azimuthal coding mode comprising:

- dividing an interval, to which the point coordinate belongs to, into a left half interval and a right half interval;

- selecting a context based on an apparent angle representing an interval angle seen from a sensor that captured the point; and

- context-adaptive binary entropy decoding a bit, from the bitstream, based on the selected context, said decoded bit indicating which of the two half intervals the point coordinate belongs to;

wherein the context is selected based on relative magnitudes of an elementary azimuthal angle ($\Delta\varphi$) and the apparent angle (AA_d).

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 encoding a point cloud from a bitstream of encoded point cloud data representing a physical object, the method comprising an azimuthal coding mode providing a series of bits for encoding a coordinate of a point of the point cloud, wherein the method comprises:

- dividing an interval, to which the point coordinate belongs to, into a left half interval and a right half interval;

- selecting a context based on an apparent angle representing an interval angle seen from a sensor that captured the point; and

- context-adaptive binary entropy encoding a bit of the series of bits, into the bitstream, based on the selected context, said coded bit indicating which of the two half intervals the point coordinate belongs to;

wherein the context is selected based on relative magnitudes of an elementary azimuthal angle ($\Delta\varphi$) and the apparent angle (AA_d).

15. A non-transitory storage medium carrying instructions of program code for executing a method of encoding a point cloud from a bitstream of encoded point cloud data representing a physical object, the method comprising an azimuthal coding mode providing a series of bits for encoding a coordinate of a point of the point cloud, wherein the method comprises:

- dividing an interval, to which the point coordinate belongs to, into a left half interval and a right half interval;

- selecting a context based on an apparent angle representing an interval angle seen from a sensor that captured the point; and

- context-adaptive binary entropy encoding a bit of the series of bits, into the bitstream, based on the selected context, said coded bit indicating which of the two half intervals the point coordinate belongs to;

wherein the context is selected based on relative magnitudes of an elementary azimuthal angle ($\Delta\varphi$) and the apparent angle (AA_d).

16. The non-transitory storage medium of claim 15, wherein the apparent angle is estimated based on at least one of a first angle associated with the lower bound of the interval, a second angle associated with the upper bound of the interval and a third angle associated with the middle point of the interval.

17. 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 an azimuthal coding mode providing a series of bits for decoding a coordinate of a point of the point cloud, wherein the method comprises:

- dividing an interval, to which the point coordinate belongs to, into a left half interval and a right half interval;

- selecting a context based on an apparent angle representing an interval angle seen from a sensor that captured the point; and

- context-adaptive binary entropy decoding a bit, from the bitstream, based on the selected context, said decoded bit indicating which of the two half intervals the point coordinate belongs to;

wherein the context is selected based on relative magnitudes of an elementary azimuthal angle ($\Delta\varphi$) and the apparent angle (AA_d).

18. 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 an azimuthal coding mode providing a series of bits for decoding a coordinate of a point of the point cloud, wherein the method comprises:

- dividing an interval, to which the point coordinate belongs to, into a left half interval and a right half interval;

- selecting a context based on an apparent angle representing an interval angle seen from a sensor that captured the point; and

- context-adaptive binary entropy decoding a bit, from the bitstream, based on the selected context, said decoded bit indicating which of the two half intervals the point coordinate belongs to;

wherein the context is selected based on relative magnitudes of an elementary azimuthal angle ($\Delta\varphi$) and the apparent angle (AA_d).

19. The non-transitory storage medium of claim 18, wherein the apparent angle is estimated based on at least one of a first angle associated with the lower bound of the interval, a second angle associated with the upper bound of the interval and a third angle associated with the middle point of the interval.