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.

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.

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 the relative magnitudes of an elementary azimuthal angle ($\Delta\varphi$) and the apparent angle (AA_d).

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

10. The method of claim 9, 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.

11. The method of claim 10, 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.

12. The method of claim 10 or 11, 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.

13. 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.

14. 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.

15. 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.

16. 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.

17. The non-transitory storage medium of claim 16, 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.

18. 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.

19. 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.

20. The non-transitory storage medium of claim 19, 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.