

CLAIMS

1. A method comprising:

- 5 - decoding a first depth value from first image data, and an
 information representative of a second depth value from second
 image data,
- reconstructing a first 3D point of a point cloud using the first depth
 value,
- 10 - reconstructing a second 3D point of the point cloud using the
 information representative of the second depth value and a
 projection mode,
- the first 3D point and the second 3D point being orthogonally
 projected onto a same point of a projection plane,
- 15 - the projection mode indicating if a position of the first 3D point
 along a projection axis is either lower or higher than a position of
 the second 3D point along the projection axis.

2. A device comprising at least one processor configured to:

- 20 - decoding a first depth value from first image data, and an
 information representative of a second depth value from second
 image data,
- reconstructing a first 3D point of a point cloud using the first depth
 value,
- 25 - reconstructing a second 3D point of the point cloud using the
 information representative of the second depth value and a
 projection mode,
- the first 3D point and the second 3D point being orthogonally
 projected onto a same point of a projection plane,
- 30 - the projection mode indicating if a position of the first 3D point
 along a projection axis is either lower or higher than the 3D
 position of the second 3D point along the projection axis.

3. The method of claim 1 or the device of claim 2, wherein the information representative of the second depth value is an absolute difference between the first depth value and the second depth.

5 4. The method of one of claims 1 or 3 or the device of one of claims 2-3, wherein the projection mode is derived from a bitstream.

10 5. The method of one of claims 1 or 3-4 or the device of one of claims 2-4, wherein said first 3D point and said second 3D point correspond respectively to a nearest point and a farthest point of a connected component, from an origin of said projection axis when the projection mode equals a first value, and said first 3D point and said second 3D point correspond respectively to a farthest point and a nearest point of the connected component, from an origin of said projection axis when the projection mode equals a second value.

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6. A method comprising:

20 - encoding a projection mode indicating if a position along a projection axis of a first 3D point of a point cloud is either lower or higher than a position along the projection axis of a second 3D point of the point cloud, the first 3D point and the second 3D point being orthogonally projected onto a same point of a projection plane,
- encoding a depth value of said first 3D point as first image data and encoding an information representative of a depth value of said second 3D point as second image data.

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7. A device comprising at least one processor configured to:

30 - encoding a projection mode indicating if a position along a projection axis of a first 3D point of a point cloud is either lower or higher than a position along the projection axis of a second 3D point of the point cloud, the first 3D point and the second 3D point being orthogonally projected onto a same point of a projection plane,

- encoding a depth value of said first 3D point as first image data and encoding an information representative of a depth value of said second 3D point as second image data.

5 8. The method of claim 6 or the device of claim 7, wherein the information representative of the depth value of the second 3D point is an absolute difference between the depth value of the second 3D point and the depth value of the first 3D point.

10 9. The method of one of claims 6 or 8 or the device of one of claims 7-8, wherein the method further comprises or the at least one processor is further configured to:

transmitting said first image data, said second image data and signaling said projection mode.

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10. The method of one of claims 6 or 8-9 or the device of one of claims 7-9, wherein said first 3D point and said second 3D point correspond respectively to a nearest point and a farthest point of a connected component, from an origin of said projection axis when the projection mode equals a first value, and
20 said first 3D point and said second 3D point correspond respectively to a farthest point and a nearest point of the connected component, from an origin of said projection axis when the projection mode equals a second value.

11. The method or the device of claim 9, wherein said projection mode is
25 signaled at the point cloud level to indicate if said projection mode may change or not.

12. The method or the device of one of claims 9 or 11, wherein said projection mode is signaled at the patch level if said projection mode is signaled at the
30 point cloud level as changing.

13. 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 one of claims 1, 3-6, or 8-12.

5 14. A non-transitory computer-readable medium including instructions for causing one or more processors to perform the steps of the method of one of claims 1, 3-6, or 8-12.

10 15. A signal comprising data representative of a projection mode indicating if a position along a projection axis of a first 3D point of a point cloud is either lower or higher than a position along the projection axis of a second 3D point of the point cloud, the first 3D point and the second 3D point being orthogonally projected onto a same point of a projection plane, and first image data comprising a depth value of said first 3D point and second image data
15 comprising an information representative of a depth value of said second 3D point.