

CLAIMS

1. A method comprising:
 - encoding a projection mode associated with an image region of a first
 - 5 depth image, said projection mode indicating if said image region stores either the minimum or the maximum depth value of at least one orthogonally projected 3D point of the point cloud along a same projection direction; and
 - encoding said depth minimum and maximum depth values as a function of said projection mode.
- 10 2. The method of claim 1, wherein encoding said depth minimum and maximum depth values as function of said projection mode comprises encoding the minimum depth values as first image data and encoding an information representative of the maximum depth values as second image
- 15 data when the projection mode equals a first value, and encoding the maximum depth values as first image data and encoding an information representative of the minimum depth values as second image data when the projection mode equals a second value.
- 20 3. The method of claim 2, wherein the information representative of either the minimum or maximum depth values is the absolute difference between the maximum and minimum depth values.
4. The method of one of claims 1-3, wherein the method further comprises
- 25 transmitting said encoded image region and signaling said projection mode.
5. The method of claim 4, wherein said projection mode is signaled at the point cloud level to indicate if said projection mode may change or not.
- 30 6. The method of claim 4 or 5, wherein said projection mode is signaled at the patch level if said projection mode is signaled at the point cloud level as changing.

7. A method comprising:

- obtaining a projection mode indicating if an image region of a first depth image stores either the minimum or the maximum depth value of at least one orthogonally projected 3D point of the point cloud along a same projection

5 direction; and

- decoding said depth minimum and maximum depth values as a function of said projection mode.

8. The method of claim 7, wherein decoding said depth minimum and maximum depth values as a function of said projection mode comprises decoding the minimum depth values as first image data and decoding an information representative of the maximum depth values as second image data when the projection mode equals a first value, and decoding the maximum depth values as first image data and decoding an information representative of the minimum depth values as second image data when the projection mode equals a second value.

9. The method of claim 8, wherein the information representative of either the minimum or maximum depth values is the absolute difference between the maximum and minimum depth values.

10. the method of one of claims 7-9, wherein said projection mode from a bitstream.

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

- encoding a projection mode associated with an image region of a first depth image, said projection mode indicating if said image region stores either the minimum or the maximum depth value of at least one orthogonally projected 3D point of the point cloud along a same projection direction; and

- encoding said depth minimum and maximum depth values as a function of said projection mode.

12. The device of claim 11, wherein encoding said depth minimum and maximum depth values as function of said projection mode comprises encoding the minimum depth values as first image data and encoding an information representative of the maximum depth values as second image data when the projection mode equals a first value, and encoding the maximum depth values as first image data and encoding an information representative of the minimum depth values as second image data when the projection mode equals a second value.
13. The device of claim 12, wherein the information representative of either the minimum or maximum depth values is the absolute difference between the maximum and minimum depth values.
14. The device of one of claims 11-13, wherein said at least one processor is further configured to transmitting said encoded image region and signaling said projection mode.
15. The device of claim 14, wherein said projection mode is signaled at the point cloud level to indicate if said projection mode may change or not.
16. The device of claim 14 or 15, wherein said projection mode is signaled at the patch level if said projection mode is signaled at the point cloud level as changing.
17. A device comprising at least one processor configured to:
- obtaining a projection mode indicating if an image region of a first depth image stores either the minimum or the maximum depth value of at least one orthogonally projected 3D point of the point cloud along a same projection direction; and
 - decoding said depth minimum and maximum depth values as a function of said projection mode.

18. The device of claim 17, wherein decoding said depth minimum and maximum depth values as a function of said projection mode comprises decoding the minimum depth values as first image data and decoding an information representative of the maximum depth values as second image data when the projection mode equals a first value, and decoding the maximum depth values as first image data and decoding an information representative of the minimum depth values as second image data when the projection mode equals a second value.
19. The device of claim 18, wherein the information representative of either the minimum or maximum depth values is the absolute difference between the maximum and minimum depth values.
20. the device of one of claims 17-19, wherein said projection mode from a bitstream.
21. 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 claim 1 or 7.
22. A non-transitory computer-readable medium including instructions for causing one or more processors to perform the steps of the method of claim 1 or 7.
23. A signal comprising data representative of a projection mode associated with an image region of a depth image, said projection mode indicating if said image region stores either the minimum or the maximum depth value of at least one orthogonally projected 3D point of the point cloud along a same projection direction.