SUMMARY

[0007] Some embodiments proceed from the consideration that an indication of an order of a texture view component and a depth view component in an access unit can be provided and encoded to a bitstream, and coding of the texture view component and the depth view component may be adapted on the basis of the order of the texture view component and the depth view component.

[0008] Various aspects of examples of the invention are provided in the detailed description.

[0009] ~~According to a first aspect of the present invention, there is provided~~ Herein disclosed is a method comprising:

obtaining at least one view component of a first type and at least one view component of a second type of a view;

determining a view component order of the at least one view component of the first type and the at least one view component of the second type in an access unit;

encoding at least one indication of the view component order; and

adapting coding of one or both of the at least one view component of the first type and the at least one view component of the second type on the basis of the view component order.

[0009a] According to a first aspect, there is provided a method comprising:

obtaining at least one view component of a first type and at least one view component of a second type;

determining a view component order of the at least one view component of the first type and the at least one view component of the second type in an access unit;

encoding at least one indication of the view component order; and

adapting coding of one or both of the at least one view component of the first type and the at least one view component of the second type on the basis of the view component order, wherein said adapting comprises selecting at least one of the following for encoding:

a coding tool among a set of coding tools;

a coding mode among a set of coding modes;

one or more coding parameters.

[0010] ~~According to a second aspect of the present invention, there is provided~~ Herein disclosed is an apparatus comprising at least one processor and at least one memory including computer program code, the at least one memory and the computer program code configured to, with the at least one processor, cause the apparatus to:

obtain at least one view component of a first type and at least one view component of a second type of a view;

determine a view component order of the at least one view component of the first type and the at least one view component of the second type in an access unit;

encode at least one indication of the view component order; and

adapt coding of one or both of the at least one view component of the first type and the at least one view component of the second type on the basis of the view component order.

[0010a] According to a second aspect, there is provided an apparatus comprising at least one processor and at least one memory including computer program code, the at least one memory and the computer program code configured to, with the at least one processor, cause the apparatus to:

obtain at least one view component of a first type and at least one view component of a second type;

determine a view component order of the at least one view component of the first type and the at least one view component of the second type in an access unit;

encode at least one indication of the view component order; and

adapt coding of one or both of the at least one view component of the first type and the at least one view component of the second type on the basis of the view component order by selecting at least one of the following for encoding:

a coding tool among a set of coding tools;

a coding mode among a set of coding modes;

one or more coding parameters.

[0011] ~~According to a third aspect of the present invention, there is provided~~ Herein disclosed is a computer program product including one or more sequences of one or more instructions which, when executed by one or more processors, cause an apparatus to at least perform the following:

obtain at least one view component of a first type and at least one view component of a second type of a view;

determine a view component order of the at least one view component of the first type and the at least one view component of the second type in an access unit;

encode at least one indication of the view component order; and

adapt coding of one or both of the at least one view component of the first type and the at least one view component of the second type on the basis of the view component order.

[0011a] According to a third aspect, there is provided a computer program product including one or more sequences of one or more instructions which, when executed by one or more processors, cause an apparatus to at least perform the following:

obtain at least one view component of a first type and at least one view component of a second type;

determine a view component order of the at least one view component of the first type and the at least one view component of the second type in an access unit;

encode at least one indication of the view component order; and

adapt coding of one or both of the at least one view component of the first type and the at least one view component of the second type on the basis of the view component order by selecting at least one of the following for encoding:

a coding tool among a set of coding tools;

a coding mode among a set of coding modes;

one or more coding parameters.

[0012] ~~According to a fourth aspect of the present invention, there is provided~~Herein disclosed is an apparatus comprising:

means for obtaining at least one view component of a first type and at least one view component of a second type of a view;

means for determining a view component order of the at least one view component of the first type and the at least one view component of the second type in an access unit;

means for encoding at least one indication of the view component order; and

means for adapting coding of one or both of the at least one view component of the first type and the at least one view component of the second type on the basis of the view component order.

[0012a] According to a fourth aspect, there is provided an apparatus comprising:

means for obtaining at least one view component of a first type and at least one view component of a second type;

means for determining a view component order of the at least one view component of the first type and the at least one view component of the second type in an access unit;

means for encoding at least one indication of the view component order; and

means for adapting coding of one or both of the at least one view component of the first type and the at least one view component of the second type on the basis of the view component order, wherein said means for adapting comprises means for selecting at least one of the following for encoding:

a coding tool among a set of coding tools;

a coding mode among a set of coding modes;

one or more coding parameters.

[0013] ~~According to a fifth aspect of the present invention, there is provided~~ Herein disclosed is a method comprising:

receiving at least one encoded view component of a first type and at least one encoded view component of a second type of a view;

receiving at least one encoded indication of a view component order of the at least one view component of the first type and the at least one view component of the second type; and

decoding the at least one encoded indication of the view component order; and

adapting decoding of one or both of the at least one view component of the first type and the at least one view component of the second type on the basis of the view component order.

[0013a] According to a fifth aspect, there is provided a method comprising:

receiving at least one encoded view component of a first type and at least one encoded view component of a second type;

receiving at least one encoded indication of a view component order of the at least one view component of the first type and the at least one view component of the second type; and

decoding the at least one encoded indication of the view component order; and

adapting decoding of one or both of the at least one view component of the first type and the at least one view component of the second type on the basis of the view component order, wherein said adapting comprises selecting at least one of the following for decoding:

a decoding tool among a set of decoding tools;

a decoding mode among a set of decoding modes;

one or more decoding parameters.

[0014] ~~According to a sixth aspect of the present invention, there is provided~~ Herein disclosed is an apparatus comprising at least one processor and at least one memory including computer program code, the at least one memory and the computer program code configured to, with the at least one processor, cause the apparatus to:

receive at least one view component of a first type and at least one view component of a second type of a view;

receive at least one encoded indication of a view component order of the at least one view component of the first type and the at least one view component of the second type ;

decode the at least one encoded indication of the view component order; and

adapt decoding of one or both of the at least one view component of the first type and the at least one view component of the second type on the basis of the view component order.

[0014a] According to a sixth aspect, there is provided an apparatus comprising at least one processor and at least one memory including computer program code, the at least one memory and the computer program code configured to, with the at least one processor, cause the apparatus to:

receive at least one view component of a first type and at least one view component of a second type;

receive at least one encoded indication of a view component order of the at least one view component of the first type and the at least one view component of the second type ;

decode the at least one encoded indication of the view component order; and

adapt decoding of one or both of the at least one view component of the first type and the at least one view component of the second type on the basis of the view component order by selecting at least one of the following for decoding:

a decoding tool among a set of decoding tools;

a decoding mode among a set of decoding modes;

one or more decoding parameters.

[0015] ~~According to a seventh aspect of the present invention, there is provided~~ Herein disclosed is a computer program product including one or more sequences of one or more instructions which, when executed by one or more processors, cause an apparatus to at least perform the following:

receive at least one view component of a first type and at least one view component of a second type of a view;

receive at least one encoded indication of a view component order of the at least one view component of the first type and the at least one view component of the second type;

decode the at least one encoded indication of the view component order; and

adapt decoding of one or both of the at least one view component of the first type and the at least one view component of the second type on the basis of the view component order.

[0015a] According to a seventh aspect, there is provided a computer program product including one or more sequences of one or more instructions which, when executed by one or more processors, cause an apparatus to at least perform the following:

receive at least one view component of a first type and at least one view component of a second type;

receive at least one encoded indication of a view component order of the at least one view component of the first type and the at least one view component of the second type;

decode the at least one encoded indication of the view component order; and

adapt decoding of one or both of the at least one view component of the first type and the at least one view component of the second type on the basis of the view component order by selecting at least one of the following for decoding:

a decoding tool among a set of decoding tools;

a decoding mode among a set of decoding modes;

one or more decoding parameters.

[0016] ~~According to an eighth aspect of the present invention, there is provided~~ Herein disclosed is an apparatus comprising:

means for receiving at least one encoded view component of a first type and at least one encoded view component of a second type of a view;

means for receiving at least one encoded indication of a view component order of the at least one view component of the first type and the at least one view component of the second type; and

means for decoding the at least one encoded indication of the view component order; and

means for adapting decoding of one or both of the at least one view component of the first type and the at least one view component of the second type on the basis of the view component order.

[0016a] According to a eighth aspect there is provided an apparatus comprising:

means for receiving at least one encoded view component of a first type and at least one encoded view component of a second type;

means for receiving at least one encoded indication of a view component order of the at least one view component of the first type and the at least one view component of the second type; and

means for decoding the at least one encoded indication of the view component order; and

means for adapting decoding of one or both of the at least one view component of the first type and the at least one view component of the second type on the basis of the view component order, wherein said means for adapting comprises means for selecting at least one of the following for decoding:

a decoding tool among a set of decoding tools;

a decoding mode among a set of decoding modes;

one or more decoding parameters.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] For a more complete understanding of example embodiments of the present invention, reference is now made to the following descriptions taken in connection with the accompanying drawings in which:

[0018] Figure 1 shows schematically an electronic device employing some embodiments of the invention;

[0019] Figure 2 shows schematically a user equipment suitable for employing some embodiments of the invention;

[0020] Figure 3 further shows schematically electronic devices employing embodiments of the invention connected using wireless and wired network connections;

[0021] Figure 4a shows schematically an embodiment of the invention as incorporated within an encoder;

[0022] Figure 4b shows schematically an embodiment of an inter predictor according to some embodiments of the invention;

[0023] Figure 5 shows a simplified model of a DIBR-based 3DV system;

[0024] Figure 6 shows a simplified 2D model of a stereoscopic camera setup;

[0025] Figure 7 shows an example of definition and coding order of access units;

[0026] Figure 8 shows a high level flow chart of an embodiment of an encoder capable of encoding texture views and depth views;

[0027] Figure 9 shows a high level flow chart of an embodiment of a decoder capable of decoding texture views and depth views;

[0028] Figure 10 shows an example processing flow for depth map coding within an encoder;

[0029] Figure 11 shows an example of coding of two depth map views with in-loop implementation of an encoder;

[0030] Figure 12 shows an example of joint multiview video and depth coding of anchor pictures;

[0031] Figure 13 shows an example of joint multiview video and depth coding of non-anchor pictures;