

with the third mode 42, namely if **dependent_slice_flag**=1 and
 tiles_or_entropy_coding_sync_idc=3, decode the current slice from the datastream using
 context adaptive entropy decoding with restricting the derivation of the contexts so as to
 not cross the slice boundaries, a continuous update of symbol probabilities of the contexts
 5 and an initialization of the symbol probabilities independent on any previously decoded
 slice, and predictive decoding across the slice boundaries, wherein the one of the first and
 third modes is selected depending on a syntax element, namely **cabac_independent_flag**.
 The decoder may further be configured to, namely if
 tiles_or_entropy_coding_sync_idc=0,1,and 3 ("3" when **cabac_independent_flag**=0), save
 10 symbol probabilities as obtained in context adaptive entropy decoding the previously
 decoded slice up to an end of the previously decoded slice, and, in initializing the symbol
 probabilities for the context adaptive entropy decoding of the current slice in accordance
 with the first mode, initialize the symbol probabilities for the context adaptive entropy
 decoding of the current slice depending on symbol probabilities saved. The decoder may
 15 be configured to, namely if tiles_or_entropy_coding_sync_idc=1, in the first and second
 mode, restrict the predictive decoding within tiles into which the picture is sub-divided.

Naturally, an encoder is able to set the above presented syntax accordingly in order to
 enable the decoder to gain the above outlined advantages. The encoder may a parallel
 20 processing, such as a multi-core, encoder, but does not need to be. For encoding picture 10
 into datastream 12 in units of slices 14, the encoder would be configured to encode the
 slices 14 into the datastream 12 in accordance with slice order 16. The encoder would
 determine syntax element portion 18 for, and code same into, a current slice of the slices so
 that the syntax element portion signals the current slice to be coded in accordance with one
 25 of the at least two modes 20, 22, and if the current slice is to be coded in accordance with a
 first 20 of the at least two modes, encode the current slice into the datastream 12 using
 context adaptive entropy encoding 24 including a derivation of contexts across slice
 boundaries, a continuous update of symbol probabilities of the contexts and an
 initialization 38, 40 of the symbol probabilities depending on saved states of symbol
 30 probabilities of a previously encoded slice, and predictive encoding across the slice
 boundaries, and if the current slice is to be coded in accordance with a second 22 of the at
 least two modes, encode the current slice into the datastream 12 using context adaptive
 entropy encoding with restricting the derivation of the contexts so as to not cross the slice
 boundaries, a continuous update of symbol probabilities of the contexts and an
 35 initialization of the symbol probabilities independent on any previously encoded slice, and
 predictive encoding with restricting the predictive encoding so as to not cross the slice
 boundaries. While the picture 10 may be partitioned in coding blocks 32 arranged in rows
 and columns and having a raster scan order 36 defined among each other, the encoder may

Claims

1. Decoder for reconstructing a picture (10) from a datastream (12) into which the picture is coded in units of slices (14) into which the picture (10) is partitioned, wherein the decoder is configured to decode the slices (14) from the datastream (12) in accordance with a slice order (16) and the decoder is responsive to a syntax element portion (18) within a current slice of the slices, so as to decode the current slice in accordance with one of at least two modes (20, 22), and

in accordance with a first (20) of the at least two modes), decode the current slice from the datastream (12) using context adaptive entropy decoding (24) including a derivation of contexts across slice boundaries, a continuous update of symbol probabilities of the contexts and an initialization (38, 40) of the symbol probabilities depending on saved states of symbol probabilities of a previously decoded slice, ~~and predictive decoding across the slice boundaries~~, and

in accordance with a second (22) of the at least two modes, decode the current slice from the datastream (12) using context adaptive entropy decoding with restricting the derivation of the contexts so as to not cross the slice boundaries, a continuous update of symbol probabilities of the contexts and an initialization of the symbol probabilities independent on any previously decoded slice, ~~and predictive decoding with restricting the predictive decoding so as to not cross the slice boundaries~~.
2. Decoder according to claim 1, where the picture (10) is partitioned in coding blocks (32) arranged in rows and columns and having a raster scan order (36) defined among each other, and the decoder is configured to associate each slice (14) with a continuous subset of the coding blocks (32) in the raster scan order (36) so that the subsets follow each other along the raster scan order (36) in accordance with the slice order.
3. Decoder according to claim 2, where the decoder is configured to save symbol probabilities as obtained in context adaptive entropy decoding the previously decoded slice up to a second coding block (32) in a row in accordance with the raster scan order (36), and, in initializing the symbol probabilities for the context adaptive entropy decoding of the current slice in accordance with the first mode, check as to whether a first coding block of the continuous subset of coding blocks (32) associated with the current slice is a first coding block (32) in a row in

accordance with the raster scan order, and, if so, initialize ~~(40)~~ the symbol probabilities for the context adaptive entropy decoding of the current slice depending on the saved symbol probabilities as obtained in context adaptive entropy decoding the previously decoded slice up to a second coding block in a row in accordance with the raster scan order ~~(36)~~, and, if not, initialize ~~(38)~~ the symbol probabilities for the context adaptive entropy decoding of the current slice depending on symbol probabilities as obtained in context adaptive entropy decoding the previously decoded slice up to the end of the previously decoded slice.

4. Decoder according to any of claims 1 to 3, wherein the decoder is configured to be responsive to the syntax element portion ~~(18)~~ within the current slice of the slices ~~(14)~~, so as to decode the current slice in accordance with one of at least three modes, namely in the one of the first ~~(20)~~ and a third mode ~~(42)~~ or a second mode ~~(22)~~, wherein the decoder is configured to

in accordance with the first mode ~~(20)~~, decode the current slice using predictive decoding across the slice boundaries,

in accordance with the second mode ~~(22)~~, decode the current slice using predictive decoding with restricting the predictive decoding so as to not cross the slice boundaries, and

in accordance with the third mode ~~(42)~~, decode the current slice from the datastream using context adaptive entropy decoding with restricting the derivation of the contexts so as to not cross the slice boundaries, a continuous update of symbol probabilities of the contexts and an initialization of the symbol probabilities independent on any previously decoded slice, and predictive decoding across the slice boundaries,

wherein the one of the first and third modes is selected depending on a syntax element.

5. Decoder according to any of claims 1 to 3, wherein the decoder is configured to be responsive to a generic syntax element in the datastream so as to operate in one of at least two generic operating modes, with, according to a first generic operating mode, performing the responsiveness to the syntax element portion for each slice, and, according to a second generic operating mode, inevitably using a different one of the at least two modes other than the first mode.

6. Decoder according to claim 2, where the decoder is configured to according to the first and second modes, inevitably und uninterruptedly continue continuously updating the symbol probabilities from a beginning to an end of the current slice.
7. Decoder according to claim 2, where the decoder is configured to save symbol probabilities as obtained in context adaptive entropy decoding the previously decoded slice up to an end of the previously decoded slice, and, in initializing the symbol probabilities for the context adaptive entropy decoding of the current slice in accordance with the first mode, initialize the symbol probabilities for the context adaptive entropy decoding of the current slice depending on symbol probabilities saved.
8. Decoder according to ~~any of claims 1 to 7~~4, where the decoder is configured to, in the first and second mode, restrict the predictive decoding within tiles into which the picture is sub-divided.
9. Decoder according to any of claims 1 to 8, where the decoder is configured to, in the first and second mode, read information from current slice revealing a subdivision of the current slice into parallel subsections, cease the context adaptive entropy decoding at the end of the first parallel subsection and resume the context adaptive entropy decoding anew at a beginning of any subsequent parallel subsection including, in the first mode, an initialization of the symbol probabilities depending on saved states of symbol probabilities of the preceding parallel subsection and, in the second mode, an initialization of the symbol probabilities independent from any previously decoded slice and any previously decoded parallel subsection.
10. Decoder according to any of claims 1 to 9, where the decoder is configured to, in accordance with the first ~~(20)~~ of the at least two modes, copy for the current slice a portion of a slice header syntax from a preceding slice decoded in the second mode.
11. Decoder according to any of the preceding claims, wherein the decoder is configured to reconstruct the picture ~~(10)~~ from the datastream ~~(12)~~ using WPP processing, wherein each slice ~~(14)~~ comprises a start syntax portion ~~(400)~~ indicating a position of a decoding begin of the respective slice within the picture ~~(10)~~ and wherein the decoder is configured to

identify entry points of WPP substreams into which the slices are grouped, by identifying, using the slices' start syntax portions, slices starting at a left hand side of the picture, and

5 parallel decoding the WPP substreams in a staggered manner with sequentially commencing the decoding of the WPP substreams in accordance with the slice order.

10 12. Encoder for encoding a picture (10) into a datastream (12) in units of slices (14) into which the picture (10) is partitioned, wherein the encoder is configured to encode the slices (14) into the datastream (12) in accordance with a slice order (16) and the encoder is configured to

15 determine a syntax element portion (18) for, and code same into, a current slice of the slices so that the syntax element portion signals the current slice to be coded in accordance with one of at least two modes (20, 22), and

20 if the current slice is to be coded in accordance with a first (20) of the at least two modes, encode the current slice into the datastream (12) using context adaptive entropy encoding (24) including a derivation of contexts across slice boundaries, a continuous update of symbol probabilities of the contexts and an initialization (38, 40) of the symbol probabilities depending on saved states of symbol probabilities of a previously encoded slice, ~~and predictive encoding across the slice boundaries,~~ and

25 if the current slice is to be coded in accordance with a second (22) of the at least two modes, encode the current slice into the datastream (12) using context adaptive entropy encoding with restricting the derivation of the contexts so as to not cross the slice boundaries, a continuous update of symbol probabilities of the contexts and an initialization of the symbol probabilities independent on any previously encoded slice, ~~and predictive encoding with restricting the predictive encoding so as to not cross the slice boundaries.~~

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35 13. Encoder according to claim 12, where the picture (10) is partitioned in coding blocks (32) arranged in rows and columns and having a raster scan order (36) defined among each other, and the encoder is configured to associate each slice (14) with a continuous subset of the coding blocks (32) in the raster scan order (36) so

that the subsets follow each other along the raster scan order ~~(36)~~ in accordance with the slice order.

14. Encoder according to claim 13, where the encoder is configured to save symbol probabilities as obtained in context adaptive entropy encoding the previously encoded slice up to a second coding block ~~(32)~~ in a row in accordance with the raster scan order ~~(36)~~, and, in initializing the symbol probabilities for the context adaptive entropy encoding of the current slice in accordance with the first mode, check as to whether a first coding block of the continuous subset of coding blocks ~~(32)~~ associated with the current slice is a first coding block ~~(32)~~ in a row in accordance with the raster scan order, and, if so, initialize ~~(40)~~ the symbol probabilities for the context adaptive entropy encoding of the current slice depending on the saved symbol probabilities as obtained in context adaptive entropy encoding the previously encoded slice up to a second coding block in a row in accordance with the raster scan order ~~(36)~~, and, if not, initialize ~~(38)~~ the symbol probabilities for the context adaptive entropy encoding of the current slice depending on symbol probabilities as obtained in context adaptive entropy encoding the previously decoded slice up to the end of the previously encoded slice.

15. Encoder according to any of claims 12 to 14, wherein the encoder is configured code the syntax element portion ~~(18)~~ into the current slice of the slices ~~(14)~~ so that the current slice is signaled to be coded therein in accordance with one of at least three modes, namely in the one of the first ~~(20)~~ and a third mode ~~(42)~~ or a second mode ~~(22)~~, wherein the encoder is configured to

in accordance with the first mode ~~(20)~~, encode the current slice using predictive encoding across the slice boundaries,

in accordance with the second mode ~~(22)~~, encode the current slice using predictive encoding with restricting the predictive encoding so as to not cross the slice boundaries, and

in accordance with the third mode ~~(42)~~, encode the current slice into the datastream using context adaptive entropy encoding with restricting the derivation of the contexts so as to not cross the slice boundaries, a continuous update of symbol probabilities of the contexts and an initialization of the symbol probabilities independent on any previously encoded slice, and predictive coding across the slice boundaries,

wherein the encoder distinguishes between the one of the first and third modes using a syntax element.

- 5 16. Encoder according to any of claims 12 to 15, wherein the encoder is configured to determine a generic syntax element and write same into the datastream with operating in one of at least two generic operating modes depending on the generic syntax element, namely, with, according to a first generic operating mode, performing coding the syntax element portion for each slice, and, according to a
10 second generic operating mode, inevitably using a different one of the at least two modes other than the first mode.
17. Encoder according to claim 13, where the encoder is configured to according to the first and second modes, inevitably und uninterruptedly continue continuously
15 updating the symbol probabilities from a beginning to an end of the current slice.
18. Encoder according to claim 13, where the encoder is configured to save symbol probabilities as obtained in context adaptive entropy encoding the previously encoded slice up to an end of the previously encoded slice, and, in initializing the
20 symbol probabilities for the context adaptive entropy encoding of the current slice in accordance with the first mode, initialize the symbol probabilities for the context adaptive entropy encoding of the current slice depending on symbol probabilities saved.
- 25 19. Encoder according to ~~any of claims 12 to 18~~¹⁵, where the encoder is configured to, in the first and second mode, restrict the predictive encoding within tiles into which the picture is sub-divided.
- 30 20. Decoder for reconstructing a picture ~~(10)~~ from a datastream ~~(12)~~ into which the picture is coded in units of slices ~~(14)~~ into which the picture ~~(10)~~ is partitioned, using WPP processing, wherein the decoder is configured to decode the slices ~~(14)~~ from the datastream ~~(12)~~ in accordance with a slice order ~~(16)~~, wherein each slice ~~(14)~~ comprises a start syntax portion ~~(400)~~ indicating a position of a decoding begin of the respective slice within the picture ~~(10)~~ and the decoder is configured to
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identifying entry points of WPP substreams into which the slices are grouped, by identifying, using the slices' start syntax portions ~~(400)~~, slices starting at a left hand side of the picture,

parallel decoding the WPP substreams in a staggered manner with sequentially commencing the decoding of the WPP substreams in accordance with the slice order.

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21. Encoder for coding a picture (10) into a datastream (12) into which the picture is coded in units of slices (14) into which the picture (10) is partitioned, using WPP processing, wherein the encoder is configured to encode the slices (14) into the datastream (12) in accordance with a slice order (16), wherein the encoder is configured to provide each slice (14) with a start syntax portion (400) indicating a position of a coding begin of the respective slice within the picture (10) and the encoder is configured to

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group the slices into WPP substreams so that for each WPP substream, the first slice in slice order starts at a left hand side of the picture, and

parallel encode the WPP substreams in a staggered manner with sequentially commencing the encoding of the WPP substreams in accordance with the slice order.

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22. Method for reconstructing a picture (10) from a datastream (12) into which the picture is coded in units of slices (14) into which the picture (10) is partitioned, wherein the method comprises decoding the slices (14) from the datastream (12) in accordance with a slice order (16) and the method is responsive to a syntax element portion (18) within a current slice of the slices, so as to decode the current slice in accordance with one of at least two modes (20, 22), wherein

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in accordance with a first (20) of the at least two modes, the current slice is decoded from the datastream (12) using context adaptive entropy decoding (24) including a derivation of contexts across slice boundaries, a continuous update of symbol probabilities of the contexts and an initialization (38, 40) of the symbol probabilities depending on saved states of symbol probabilities of a previously decoded slice, and predictive decoding across the slice boundaries, and

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in accordance with a second (22) of the at least two modes, the current slice is decoded from the datastream (12) using context adaptive entropy decoding with restricting the derivation of the contexts so as to not cross the slice boundaries, a continuous update of symbol probabilities of the contexts and an initialization of

the symbol probabilities independent on any previously decoded slice, ~~and predictive decoding with restricting the predictive decoding so as to not cross the slice boundaries.~~

5 23. Method for encoding a picture (10) into a datastream (12) in units of slices (14) into which the picture (10) is partitioned, wherein the method comprises encoding the slices (14) into the datastream (12) in accordance with a slice order (16) and the method comprises

10 determining a syntax element portion (18) for, and code same into, a current slice of the slices so that the syntax element portion signals the current slice to be coded in accordance with one of at least two modes (20, 22), and

15 if the current slice is to be coded in accordance with a first (20) of the at least two modes, encoding the current slice into the datastream (12) using context adaptive entropy encoding (24) including a derivation of contexts across slice boundaries, a continuous update of symbol probabilities of the contexts and an initialization (38, 40) of the symbol probabilities depending on saved states of symbol probabilities of a previously encoded slice, ~~and predictive encoding across the slice boundaries,~~
20 and

if the current slice is to be coded in accordance with a second (22) of the at least two modes, encoding the current slice into the datastream (12) using context adaptive entropy encoding with restricting the derivation of the contexts so as to not cross the slice boundaries, a continuous update of symbol probabilities of the contexts and an initialization of the symbol probabilities independent on any previously encoded slice, ~~and predictive encoding with restricting the predictive encoding so as to not cross the slice boundaries.~~

30 24. Method for reconstructing a picture (10) from a datastream (12) into which the picture is coded in units of slices (14) into which the picture (10) is partitioned, using WPP processing, wherein the method comprises decoding the slices (14) from the datastream (12) in accordance with a slice order (16), wherein each slice (14) comprises a start syntax portion (400) indicating a position of a decoding begin
35 of the respective slice within the picture (10) and the method further comprises

identifying entry points of WPP substreams into which the slices are grouped, by identifying, using the slices' start syntax portions ~~(400)~~, slices starting at a left hand side of the picture,

5 parallel decoding the WPP substreams in a staggered manner with sequentially commencing the decoding of the WPP substreams in accordance with the slice order.

10 25. Method for coding a picture ~~(10)~~ into a datastream ~~(12)~~ into which the picture is coded in units of slices ~~(14)~~ into which the picture ~~(10)~~ is partitioned, using WPP processing, wherein the method comprises encoding the slices ~~(14)~~ into the datastream ~~(12)~~ in accordance with a slice order ~~(16)~~, and providing each slice ~~(14)~~ with a start syntax portion ~~(400)~~ indicating a position of a coding begin of the respective slice within the picture ~~(10)~~ and further

15 grouping the slices into WPP substreams so that for each WPP substream, the first slice in slice order starts at a left hand side of the picture, and

20 parallel encoding the WPP substreams in a staggered manner with sequentially commencing the encoding of the WPP substreams in accordance with the slice order.

26. Computer program having a program code for performing, when running on a computer, a method according to claim 22 or 25.

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