CLAIMS

1. A video encoding method according to spatial subdivisions, the method comprising:

splitting a picture into two or more tiles and at least one slice segment;

encoding each of the tiles, independently from the other tiles; and

encoding maximum coding units including in a current tile from among maximum coding units included in a current slice segment, with respect to each of the slice segments included in the current tile.

2. The method of claim 1, wherein the performing of the encoding in each of the slice segment comprises encoding a plurality of maximum coding units included in the current slice segment, with respect to each of the at least one slice segment included in the current tile, wherein the at least one slice segment does not span over a boundary of the current tile.

3. The method of claim 1, wherein (i) the maximum coding units included in one slice segment may be included in the same tile, (ii) the maximum coding units included in one tile may be included in the same slice segment, and (iii) the maximum coding units included in one slice segment may be included in the same tile, and at the same time, the maximum coding units included in one tile may be included in one same slice segment.

4. The method of claim 1, wherein when the slice segment is an independent slice segment that may not use slice header information of a previous slice segment or a dependent segment, and one slice includes one independent slice segment and at least one dependent slice, (i) the maximum coding units included in one slice may be included in the same tile, (ii) the maximum coding units included in one tile may be included in the same slice, and (iii) the maximum coding units included in one slice may be included in the same tile, and at the same time, the maximum coding units included in one tile may be included in one same slice.

5. A video encoding method according to spatial subdivisions, the method comprising:

encoding a picture with respect to at least one slice segment;

generating a slice segment header including information representing whether a current slice segment is an initial slice segment in a current picture;

if the current slice segment is not the initial slice segment, adding information representing whether the current slice segment is a dependent slice segment using slice header information of a previous slice segment to the slice segment header; and

transmitting the slice segment header and symbols of the slice segment of each of the slice segments.

6. The method of claim 5, wherein the adding of the information representing whether the slice segment is the dependent slice segment to the slice segment header comprises:

if the current slice segment is not a dependent slice segment, adding default information about the current slice segment to the slice segment header; and

if the current slice segment is a dependent slice segment, skipping adding some of default information about the current slice segment into the slice segment header.

7. A video decoding method according to spatial subdivisions, the method comprising:

receiving a bit stream obtained by splitting a picture into two or more tiles and at least one slice segment and being encoded;

decoding each of the tiles, independently from the other tiles; and

decoding maximum coding units included in a current tile from among maximum coding units included in a current slice segment, with respect to each of the slice segments included in the current tile.

8. The method of claim 7, wherein the decoding of each of the slice segments comprises decoding a plurality of maximum coding units included in the current slice

segment, with respect to each of the at least one slice segment included in the current tile, and the at least one slice segment does not span over a boundary of the current tile.

9. The method of claim 7, wherein (i) the maximum coding units included in one slice segment may be included in the same tile, (ii) the maximum coding units included in one tile may be included in the same slice segment, and (iii) the maximum coding units included in one slice segment may be included in the same tile, and at the same time, the maximum coding units included in one tile may be included in one same slice segment.

10. The method of claim 7, wherein when the slice segment is an independent slice segment that may not use slice header information of a previous slice segment or a dependent segment, and one slice includes one independent slice segment and at least one dependent slice, (i) the maximum coding units included in one slice may be included in the same tile, (ii) the maximum coding units included in one tile may be included in the same slice, and (iii) the maximum coding units included in one slice may be included in the same tile, and at the same time, the maximum coding units included in one tile may be included in one same slice.

11. A video decoding method according to spatial subdivisions, the method comprising:

receiving a bit stream including a slice segment header and symbols from each slice segment;

parsing information representing whether a current slice segment is an initial slice segment in a current picture, from a current slice segment header;

if the current slice segment is not the initial slice segment, parsing information representing whether the current slice segment is a dependent slice segment using slice header information of a previous slice segment, from the current slice segment header; and

decoding the current slice segment by using the information parsed from the current slice segment header and the symbols of the current slice segment.

12. The method of claim 11, wherein the parsing of the information representing whether the current slice segment is a dependent slice segment comprises:

if the current slice segment is not a dependent slice segment, parsing default information about the current slice segment from the current slice segment header; and

if the current slice segment is a dependent slice segment according to the parsed information, determining default information about the current slice segment by using the information parsed from the previous slice segment header.

13. A video encoding apparatus according to spatial subdivisions, the apparatus comprising:

a sub-region divider for dividing a picture into two or more tiles and at least one slice segment; and

a sub-region encoder for encoding each of the tiles independently from the other tiles, and encoding maximum coding units included in a current tile from among maximum coding units included in a current slice segment, with respect to each of the slice segments included in the current tile.

14. A video decoding apparatus according to spatial subdivisions, the apparatus comprising:

a sub-region receiver for receiving a bit stream obtained by dividing a picture into two or more tiles and at least one slice segment and being encoded; and

a sub-region decoder for decoding each of the tiles independently from the other tiles, and decoding maximum coding units included in a current tile from among maximum coding units included in a current slice segment, with respect to each of the slice segments included in the current tile.

15. A computer-readable recording medium having recorded thereon a program for executing the method according to any of claims 1, 5, 7, and 11.

Claims

1. An apparatus for decoding a video, the apparatus comprising :

a receiver configured to receive a bitstream;

an extractor configured to obtain, from the bitstream, information about a location of a row boundary of a tile; and

a decoder configured to determine tiles, including a current tile, based on the information about the location of the row boundary of the tile, and

obtain, based on a split information of a coding unit, at least one coding unit from a maximum coding unit included in both the current tile and a current slice segment,

wherein all maximum coding units in the current slice segment are included in the current tile, and

when the split information indicate a split at a current depth, a coding unit of the current depth is split into coding units of a lower depth.

2. The apparatus of claim 1, wherein the maximum coding unit is hierarchically split into at least one coding unit of a depth according to the split information, the depth including at least one of a current depth and lower depth, and

when the split information indicates a split at the current depth, the coding unit of current depth is split into four square coding units of a lower depth independently from neighboring coding units, and

when the split information indicates a non-split in the current depth, at least one prediction unit is obtained from the coding unit of the current depth and at least on transformation unit is obtained from the coding unit of the current depth.

3. The apparatus of claim 1, wherein the slice segment includes at least one maximum coding unit according to a raster scan order, the slice segment is contained in a single NAL(Network Adaptation Layer) unit, and the slice segment does not exceed a boundary of the current tile.

4. The apparatus of claim 1, wherein first information is obtained from the bitstream, the first information indicating whether the current slice segment is an initial slice segment in the picture;

when the first information indicates that the current slice segment is not the initial slice segment, second information is obtained from the bitstream, the second information indicating whether the current slice segment is a dependent slice segment;

when the second information indicates that the current slice segment is the dependent slice segment, header information of the current slice segment is obtained based on header information of other slice segment.

when the second information indicates that the current slice segment is an independent slice segment, the header information of the current slice segment is obtained from the bitstream.