CLAIMS

1. A video decoding method comprising:

extracting syntax elements of a picture encoded based on data units having a hierarchical structure by parsing an encoded bitstream;

determining a context model used to entropy decode a first syntax element of a current data unit to be entropy-decoded based on at least one second syntax element of the current data unit, wherein the at least one second syntax element is usable and different from the first syntax element of the current data unit; and

entropy decoding the first syntax element by using the determined context model.

2. The video decoding method of claim 1, wherein the determining of the context model comprises:

extracting, from the encoded bitstream, information that indicates a size of a maximum coding unit obtained by splitting the picture, a depth indicating a number of spatial splits of the maximum coding unit, a partition used for prediction encoding of coding units that are hierarchically structured according to the depth, and a structure of transformation units having a hierarchical structure; and

determining coding units according to a tree structure including coding units of a coded depth, a partition for prediction encoding for each of the coding units of the coded depth, and transformation units according to a tree structure by performing transformation based on transformation units having a hierarchical structure, from among deeper coding units hierarchically structured according to the depths indicating the number of spatial splits of the maximum coding unit, according to at least one maximum coding unit, based on the extracted information.

3. The video decoding method of claim 1, wherein the at least one second syntax element comprises information about a size of the current data unit, relative size information indicating a relative size of the current data unit including the first syntax element in relation to a data unit of a higher level having a size larger than the current data unit, color type information of a color picture to which the current data unit belongs, and prediction mode information of the current data unit.

4. The video decoding method of claim 3, wherein the relative size information comprises depth information indicating a split number from the maximum data unit to the current data unit including the first syntax element.

5. The video decoding method of claim 1, wherein the determining of the context model comprises, when n indicates a number of second syntax elements used to determine the context model, wherein n is an integer, and a_i indicates a number of state values of each of the n second syntax elements, wherein i is an integer from 1 to n, determining one context model used for entropy decoding of the first syntax element from among a plurality of context models based on $a_1*a_2*...*a_n$ that is a number of combinations of the state values of the second syntax elements.

6. The video decoding method of claim 5, wherein the determining of the context model comprises pre-setting the plurality of context models by grouping the number of combinations of the state values of the second syntax elements, and determining one context model according to the combination of the state values of the second syntax elements from among the plurality of context models.

7. The video decoding method of claim 1, wherein the determining of the context model comprises:

obtaining information about a first syntax element having a same type as the first syntax element of the current data unit, from a neighboring data unit adjacent to the current data unit; and

determining the context model used for entropy decoding of the first syntax element of the current data unit by using the information about the first syntax element obtained from the neighboring data unit and the second syntax element obtained from the current data unit.

8. The video decoding method of claim 1, wherein the first syntax element comprises a split flag indicating whether coding units are split to represent the hierarchical structure of the coding unit, a transformation unit split flag indicating whether transformation units are split to represent a hierarchical structure of the

transformation units, a skip mode flag of the coding units having the hierarchical structure, a flag indicating a location of a non-zero transformation coefficient in transformation units having a tree structure transformed based on the transformation units having the hierarchical structure, a flag indicating a location of a last non-zero transformation coefficient, and a flag indicating whether a non-zero transformation coefficient exists in the transformation units.

9. The video decoding method of claim 1, wherein the context model comprises information about binary signals corresponding to a most probable symbol (MPS) and a least probable symbol (LPS) from among 0 and 1 that are binary signals corresponding to the first syntax element, and a probability value of at least one of the MPS and the LPS.

10. A video decoding apparatus comprising:

an syntax element extractor for extracting syntax elements of a picture encoded based on data units having a hierarchical structure by parsing an encoded bitstream; and

an entropy decoder for determining a context model used to entropy decode a first syntax element of a current data unit to be entropy-decoded based on at least one second syntax element of the current data unit, wherein the at least one second syntax element is usable and different from the first syntax element of the current data unit, and entropy decoding the first syntax element by using the determined context model.

11. A video encoding method comprising:

encoding a video based on data units having a hierarchical structure;

determining a context model used for entropy encoding of a first syntax element of a current data unit to be entropy-encoded based on at least one second syntax element of the current data unit, wherein the at least one second syntax element is usable and different from the first syntax element of the current data unit; and

entropy encoding the first syntax element of the current data unit by using the determined context model.

12. The video encoding method of claim 11, wherein the at least one second syntax element comprises information about a size of the current data unit, relative size information indicating a relative size of the current data unit including the first syntax element in relation to a data unit of a higher level having a size larger than the current data unit, color type information of a color picture to which the current data unit belongs, and prediction mode information of the current data unit.

13. The video encoding method of claim 11, wherein the determining of the context model comprises, when n indicates a number of second syntax elements used to determine the context model, wherein n is an integer, and a_i indicates a number of state values of each of the n second syntax elements, wherein i is an integer from 1 to n, determining one context model used for entropy encoding of the first syntax element from among a plurality of context models based on $a_1*a_2*...*a_n$ that is a number of combinations of the state values of the second syntax elements.

14. The video encoding method of claim 11, wherein the determining of the context model comprises:

obtaining information about a first syntax element having a same type as the first syntax element of the current data unit, from a neighboring data unit adjacent to the current data unit; and

determining the context model used for entropy encoding of the first syntax element of the current data unit by using the information about the first syntax element obtained from the neighboring data unit and the second syntax element obtained from the current data unit.

15. A video encoding apparatus comprising:

a hierarchical encoder for encoding a video based on data units having a hierarchical structure; and

an entropy encoder for determining a context model used for entropy encoding of a first syntax element of a current data unit to be entropy-encoded based on at least one second syntax element of the current data unit, wherein the at least one second syntax element is usable and different from the first syntax element of the current data

unit, and entropy encoding the first syntax element of the current data unit by using the determined context model.

CLAIMS

1. A video decoding apparatus comprising:

a syntax element extractor which obtains, from a bitstream, a split transformation flag indicating whether a transformation unit included in a coding unit is split; and

an entropy decoder which determines a size of the transformation unit based on the split transformation flag, determines a context model based on the size of the transformation unit and color component of a picture including the transformation unit, obtains a transformation coefficient flag indicating whether a non-zero coefficient is included in a block of the transformation unit by entropy-decoding the bitstream based on the context model, and obtains a transformation coefficient included in the transformation unit based on the transformation coefficient flag,

wherein the color component is an index indicating one of color components among a luma component, a first chroma component, and a second chroma component.