CLAIMS

1. An apparatus for decoding a video bit stream comprising encoded video data,

whereby a picture of a sequence of pictures consists of maximum size coding units, said maximum size coding units being data units having predetermined maximum coding unit size;

whereby each maximum size coding unit consists of coding units of smaller size, said coding units being arranged in a hierarchical manner in a tree structure and according to depth, said depth being a number of times said maximum size coding units is split, down to a minimum size coding unit;

whereby a prediction mode of a prediction unit is one of an intra mode, an inter mode, and a skip mode, a prediction unit being a basis unit for prediction and being either a coding unit that is no longer split or a partition thereof;

whereby split information for each maximum size coding unit indicates whether said maximum size coding unit is split into coding units of smaller size at a related depth;

whereby skip mode information indicates whether a prediction mode of a prediction unit is a skip mode;

the apparatus comprising:

a data extractor (1520) configured to extract, from said video bit stream, split information of a maximum size coding unit; and

a decoder (1530) configured to determine whether the split information of said maximum size coding unit indicates that said maximum size coding unit is not split or is split,

wherein:

- when the split information of a current maximum size coding unit indicates that said current maximum size coding unit is not split, the data extractor parses the skip mode information of the current maximum size coding unit,
    - when the skip mode information of the current maximum size coding unit indicates that the prediction mode of said current maximum size coding unit is skip mode, the decoder decodes said current maximum size coding unit by borrowing motion information of a prediction unit adjacent to said current maximum size coding unit, or infers motion information of said current maximum size coding unit from motion information of the adjacent prediction unit, and
    - when the skip mode information of the current maximum size coding unit indicates that the prediction mode of said current maximum size coding unit is not skip mode, the decoder determines one or more prediction units from the maximum size coding unit and decodes said one or more prediction units,
- when the split information of the current maximum size coding unit indicates that said current maximum size coding unit is split,
    - the decoder determines the coding units of a current depth by dividing a height and width of the current maximum size coding unit, and the data extractor extracts, from the video bit stream, split information of a coding unit of the current depth, among the coding units of a current depth, the

split information of a coding unit of the current depth indicating whether the coding unit of the current depth is split into coding units of a lower depth, and

- when the split information of a coding unit of the current depth indicates that said coding unit is not split, the decoder decodes the coding unit of the current depth by determining at least one prediction unit obtained from the coding unit of the current depth, performing prediction on the coding unit of the current depth based on the at least one prediction unit, determining at least one transformation unit obtained from the coding unit of the current depth and performing inverse transformation on the coding unit of the current depth based on the at least one transformation unit.

2. A method for encoding a video bit stream comprising encoded video data,

whereby a picture of a sequence of pictures consists of maximum size coding units, said maximum size coding units being data units having predetermined maximum coding unit size;

whereby each maximum size coding unit consists of coding units of smaller size, said coding units being arranged in a hierarchical manner in a tree structure and according to depth, said depth being a number of times said maximum size coding units is split, down to a minimum size coding unit;

whereby a prediction mode of a prediction unit is one of an intra mode, an inter mode, and a skip mode, a prediction unit being a basis unit for prediction and being either a coding unit that is no longer split or a partition thereof;

whereby split information for each maximum size coding unit indicates whether said maximum size coding unit is split into coding units of smaller size at a related depth;

whereby skip mode information indicates whether a prediction mode of a prediction unit is a skip mode;

the method comprising:

- determining whether to encode the split information of a current maximum size coding unit to indicate that said maximum size coding unit is not split or is split;
- when the split information of said current maximum size coding unit is encoded to indicate that said current maximum size coding unit is not split, encoding the skip mode information of the current maximum size coding unit, and
  - when encoding said current maximum size coding unit by borrowing motion information of a prediction unit adjacent to said current maximum size coding unit, or inferring motion information of said current maximum size coding unit from motion information of the adjacent prediction unit, encoding the skip mode information of the current maximum size coding unit to indicate that the prediction mode of said current maximum size coding unit is skip mode; and
  - when one or more prediction units from the current maximum size coding unit are determined and said one or more prediction units are encoded, encoding the skip mode information of the current maximum size coding unit to indicate that the prediction mode of said current maximum size coding unit is not skip mode, and
- when the split information of the current maximum size coding unit is encoded

to indicate that said current maximum size coding unit is split,

- determining the coding units of a current depth by dividing a height and width of the current maximum size coding unit;
- encoding split information of a coding unit of the current depth, among the coding units of a current depth, the split information of a coding unit of the current depth indicating whether the coding unit of the current depth is split into coding units of a lower depth; and
- when the split information of a coding unit of the current depth indicates that said coding unit is not split, encoding the coding unit of the current depth by determining at least one prediction unit obtained from the coding unit of the current depth, performing prediction on the coding unit of the current depth based on the at least one prediction unit, determining at least one transformation unit obtained from the coding unit of the current depth and performing transformation on the coding unit of the current depth based on the at least one transformation unit.

3. An apparatus for encoding a video bit stream comprising encoded video data,

whereby a picture of a sequence of pictures consists of maximum size coding units, said maximum size coding units being data units having predetermined maximum coding unit size;

whereby each maximum size coding unit consists of coding units of smaller size, said coding units being arranged in a hierarchical manner in a tree structure and according to depth, said depth being a number of times said maximum size coding units is split, down to a minimum size coding unit;

whereby a prediction mode of a prediction unit is one of an intra mode, an inter mode, and a skip mode, a prediction unit being a basis unit for prediction and being either a coding unit that is no longer split or a partition thereof;

whereby split information for each maximum size coding unit indicates whether said maximum size coding unit is split into coding units of smaller size at a related depth;

whereby skip mode information indicates whether a prediction mode of a prediction unit is a skip mode;

the apparatus comprising:

a maximum size coding unit splitter (1410) configured to determine whether to said maximum size coding unit is not split or is split;

an encoding mode determiner (1420) configured to determine whether the prediction mode of said maximum size coding unit is an intra mode, an inter mode, or a skip mode; and

an output unit (1430) configured to encode the split information of said maximum size coding unit to indicate that said maximum size coding unit is not split or is split, and encode the skip mode information of the current maximum size coding unit according to the determined prediction mode of said maximum size coding unit when the split information of said maximum size coding unit is encoded to indicate that said maximum size coding unit is not split,

wherein:

- when encoding a current maximum size coding unit by borrowing motion

information of a prediction unit adjacent to said current maximum size coding unit, or inferring motion information of said current maximum size coding unit from motion information of the adjacent prediction unit, the encoding mode determiner determines that the prediction mode of said current maximum size coding unit is a skip mode and the output unit encodes the skip mode information of said current maximum size coding unit to indicate that to the prediction mode of said current maximum size coding unit is the skip mode; and

- when one or more prediction units from the current maximum size coding unit are determined and said one or more prediction units are encoded, the output unit encodes the skip mode information of the current maximum size coding unit to indicate that the prediction mode of said maximum size coding unit is not skip mode, and

- when the split information of the current maximum size coding unit is encoded to indicate that said current maximum size coding unit is split, the encoding mode determiner determines the coding units of a current depth by dividing a height and width of the current maximum size coding unit and the output unit encodes split information of a coding unit of the current depth, among the coding units of a current depth, the split information of a coding unit of the current depth indicating whether the coding unit of the current depth is split into coding units of a lower depth, and, when the split information of a coding unit of the current depth is encoded to indicate that said coding unit is not split, the output unit encodes the coding unit of the current depth by determining at least one prediction unit obtained from the coding unit of the current depth, performing prediction on the coding unit of the current depth based on the at least one prediction unit, determining at least one transformation unit obtained from the coding unit of the current depth and performing transformation on the coding unit of the current depth based on the at least one transformation unit.

4. A computer-readable storage medium storing a bitstream generated by executing operations for video encoding using at least one processor, the bitstream comprising encoded video data,

whereby a picture of a sequence of pictures consists of maximum size coding units, said maximum size coding units being data units having predetermined maximum coding unit size;

whereby each maximum size coding unit consists of coding units of smaller size, said coding units being arranged in a hierarchical manner in a tree structure and according to depth, said depth being a number of times said maximum size coding units is split, down to a minimum size coding unit;

whereby a prediction mode of a prediction unit is one of an intra mode, an inter mode, and a skip mode, a prediction unit being a basis unit for prediction and being either a coding unit that is no longer split or a partition thereof;

the bitstream further comprising:

split information indicating for each maximum size coding unit whether said

maximum size coding unit is split into coding units of smaller size at a related depth; and

skip mode information indicating whether a prediction mode of a prediction unit is a skip mode,

wherein the operations comprise:

- determining whether to encode the split information of a current maximum size coding unit to indicate that said maximum size coding unit is not split or is split;
- when the split information of said current maximum size coding unit is encoded to indicate that said current maximum size coding unit is not split, encoding the skip mode information of the current maximum size coding unit, and
    - when encoding said current maximum size coding unit by borrowing motion information of a prediction unit adjacent to said current maximum size coding unit, or inferring motion information of said current maximum size coding unit from motion information of the adjacent prediction unit, encoding the skip mode information of the current maximum size coding unit to indicate that the prediction mode of said current maximum size coding unit is skip mode;
    - when one or more prediction units from the current maximum size coding unit are determined and said one or more prediction units are encoded, encoding the skip mode information of the current maximum size coding unit to indicate that the prediction mode of said current maximum size coding unit is not skip mode, and
- when the split information of the current maximum size coding unit is encoded to indicate that said current maximum size coding unit is split,
    - determining the coding units of a current depth by dividing a height and width of the current maximum size coding unit;
    - encoding split information of a coding unit of the current depth, among the coding units of a current depth, the split information of a coding unit of the current depth indicating whether the coding unit of the current depth is split into coding units of a lower depth; and

when the split information of a coding unit of the current depth is encoded to indicate that said coding unit is not split, encoding the coding unit of the current depth by determining at least one prediction unit obtained from the coding unit of the current depth, performing prediction on the coding unit of the current depth based on the at least one prediction unit, determining at least one transformation unit obtained from the coding unit of the current depth and performing transformation on the coding unit of the current depth based on the at least one transformation unit.