【CLAIMS】

1. An apparatus of decoding video data, comprising:

a prediction mode decoding module configured to derive a luma intra prediction mode and a chroma intra prediction mode;

a prediction size determining module configured to determine a size of a luma transform unit and a size of a chroma transform unit using transform size information;

a reference pixel generating module configured to generate referential pixels if at least one reference pixel is unavailable;

a reference pixel filtering module configured to adaptively filter the reference pixels of a current luma block based on the luma intra prediction mode and the size of the luma transform unit, and not to filter the reference pixels of a current chroma block;

a prediction block generating module configured to generate prediction blocks of the current luma block and the current chroma block;

a residual block generating module configured to generate a luma residual block and a chroma residual block; and

an adder configured to add the generated residual block and the generated prediction block to generate a reconstructed block,

wherein the luma intra prediction mode is derived using a most probable mode (MPM) group including three intra prediction modes, a mode group indicator and a luma prediction mode index,

when only one of a left intra prediction mode and an above intra prediction mode of a current luma prediction unit is available and if the available intra prediction mode is a non-directional mode, the three intra prediction modes in MPM group are planar mode, DC mode and vertical mode, and

when only one of a left intra prediction mode and an above intra prediction mode of a current luma prediction unit is available and if the available intra prediction mode is a directional mode, the three intra prediction modes in MPM group are planar mode, DC mode and the available intra prediction mode.

2. The apparatus of claim 1, wherein if a current chroma transform unit is smaller than the chroma prediction unit, the chroma intra prediction mode is used for generating all chroma prediction blocks of all sub-blocks within the chroma prediction unit.

3. The apparatus of claim 1, wherein when the mode group indicator does not indicate the MPM group, the luma intra prediction mode is determined by comparing the luma prediction mode index with three intra prediction modes of the MPM group in sequence such as the lowest mode number of the three intra prediction modes is compared at first, and the highest mode number of the three intra prediction modes is compared lastly.

4. The apparatus of claim 3, wherein if the luma prediction mode index is larger than or equal to a compared intra prediction mode of the MPM group, the luma prediction mode index is increased by one.

5. A method of encoding video data, comprising:

determining a luma intra prediction mode and a chroma intra prediction mode;

determining a size of a luma transform unit and a size of a chroma transform unit;

generating referential pixels if at least one reference pixel is unavailable;

adaptively filtering the reference pixels of a current luma block based on the luma intra prediction mode and the size of the luma transform unit, and not filtering the reference pixels of a current chroma block;

generating prediction blocks of the current luma block and the current chroma block;

generating a luma residual block and a chroma residual block using the generated prediction block,

wherein the luma intra prediction mode is specified using a most probable mode (MPM) group including three intra prediction modes, a mode group indicator and a luma prediction mode index,

when only one of a left intra prediction mode and an above intra prediction mode of a current luma prediction unit is available and if the available intra prediction mode is a non-directional mode, the three intra prediction modes in MPM group are planar mode, DC mode and vertical mode, and

when only one of a left intra prediction mode and an above intra prediction mode of a current luma prediction unit is available and if the available intra prediction mode is a directional mode, the three intra prediction modes in MPM group are planar mode, DC mode and the available intra prediction mode.

6. A bitstream including encoded video data generated by the video data encoding method of claim 5.

7. A non-transitory computer-readable storage medium storing encoded video information, comprising:

a bit stream stored in the medium, the bit stream comprising entropy-encoded information on a luma intra prediction mode and a chroma intra prediction mode,

wherein the luma intra prediction mode is specified using a most probable mode (MPM) group including three intra prediction modes, a mode group indicator and a luma prediction mode index,

when only one of a left intra prediction mode and an above intra prediction mode of a current luma prediction unit is available and if the available intra prediction mode is a non-directional mode, the three intra prediction modes in MPM group are planar mode, DC mode and vertical mode, and

when only one of a left intra prediction mode and an above intra prediction mode of a current luma prediction unit is available and if the available intra prediction mode is a directional mode, the three intra prediction modes in MPM group are planar mode, DC mode and the available intra prediction mode.