

【CLAIMS】**【Claim 1】**

An apparatus of decoding video data, comprising:

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

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

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

 a reference pixel filtering unit 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;

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

 a residual block generating unit configured to generate a residual luma residual block and a chroma residual block.

20 **【Claim 2】**

 The apparatus of claim 1, wherein if the chroma intra prediction mode is a DM mode, the chroma intra prediction mode is set equal to the luma intra prediction mode.

25 **【Claim 3】**

 The apparatus of claim 1, wherein the luma intra prediction mode is derived using 3 MPM candidates, a mode group indicator and a prediction mode index.

【Claim 4】

The apparatus of claim 3, wherein if only one of a left intra prediction mode and an above intra prediction mode is available, the available intra prediction mode and two additional intra prediction modes determined by the available intra prediction mode are set as the 3 MPM candidates.

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【Claim 5】

The apparatus of claim 4, wherein if the available intra prediction mode is a non-directional mode, the other non-directional mode and vertical mode are set as the additional intra prediction modes.

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【Claim 6】

The apparatus of claim 1, wherein if the size of the prediction unit is larger than the transform unit, the chroma intra prediction mode is used for generating chroma prediction blocks of other blocks within the chroma prediction unit.

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CLAIMS

1. An apparatus of decoding video data, comprising:
 - a prediction mode decoding unit configured to derive a luma intra prediction mode and a chroma intra prediction mode;
 - a prediction size determining unit configured to determine a size of a luma transform unit and a size of a chroma transform unit;
 - a reference pixel generating unit configured to generate a reference pixel if at least one reference pixel is unavailable;
 - a reference pixel filtering unit 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;
 - a prediction block generating unit configured to generate prediction blocks of the current luma block and a current current chroma block using the adaptively filtered reference pixels; and
 - a residual block generating unit configured to generate a luma residual block and a chroma residual block,wherein the luma intra prediction mode is derived using an MPM group including three intra prediction modes, a mode group indicator and a luma prediction mode index; and
wherein the luma prediction mode index indicates one of the three intra prediction mode in the MPM group as the luma intra prediction mode when the mode group indicator indicates the MPM group.
2. The apparatus of claim 1, wherein if the chroma intra prediction mode is a DM mode, the chroma intra prediction mode is set equal to the luma intra prediction mode.
3. The apparatus of claim 1, wherein when only one of a left intra prediction mode and an above intra prediction mode of a current luma prediction unit is available, the MPM group includes the available intra prediction mode and two additional intra prediction modes determined by the available intra prediction mode.

4. The apparatus of claim 3, wherein when the available intra prediction mode is a non-directional mode, the other non-directional mode and a vertical mode are set as the two additional intra prediction modes.
5. The apparatus of claim 3, wherein the available intra prediction mode is a directional mode, a DC mode and a planar mode are set as the two additional intra prediction modes.
6. The apparatus of claim 1, wherein if a current chroma prediction unit is larger than the chroma transform unit, the chroma intra prediction mode is used for generating chroma prediction blocks of other blocks within the chroma prediction unit.
7. 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.
8. The apparatus of claim 7, wherein 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.
9. The apparatus of claim 8, wherein if the luma prediction mode index is larger than or equal to the intra prediction mode of the MPM group, the luma prediction mode index is increased by one.