

CLAIMS

1. A method for video processing, comprising:
determining, for a conversion between a chroma block of a video and a bitstream of the video, whether to apply a first chroma prediction mode on the chroma block;
generating prediction samples for the chroma block based on the determining; and
performing the conversion between the chroma block and the bitstream;
wherein in responding to determining to apply the first chroma prediction mode on the chroma block, the prediction samples are generated by performing a boundary down-sampling operation based on a size of the chroma block, followed by a matrix vector multiplication operation, and selectively followed by an up-sampling operation.
2. The method of claim 1, wherein in responding to determining not to apply the first chroma prediction mode on the chroma block, the prediction samples are generated by performing a luma intra prediction mode conversion operation, followed by a chroma intra prediction mode derivation operation, and followed by a general intra samples derivation operation.
3. The method of claim 1 or 2, wherein determining to apply the first chroma prediction mode on the chroma block is based on a first luma prediction mode of a first corresponding luma block being same as the first chroma prediction mode.
4. The method of claim 3, wherein determining to apply the first chroma prediction mode on the chroma block is further based on a value of a syntax element `intra_chroma_pred_mode`, and wherein the syntax element `intra_chroma_pred_mode` is used to specify a mapping relation between a chroma component intra mode and a luma component intra mode.
5. The method of claim 4, wherein the syntax element `intra_chroma_pred_mode` specifies that a DM mode is applied on the chroma block, and wherein in the DM mode, the chroma component intra mode is identical to the luma component intra mode.
6. The method of any of claims 3 to 5, wherein the first corresponding luma block is a luma block covering a luma sample corresponding to a top-left sample of the chroma block.

7. The method of any of claims 2 to 6, wherein in the luma intra prediction mode conversion operation, a converted luma prediction mode is derived based on a second luma prediction mode of a second corresponding luma block.
8. The method of claim 7, wherein the second corresponding luma block is a luma block covering a luma sample corresponding to a center sample of the chroma block.
9. The method of claim 7 or 8, wherein in responding to the second luma prediction mode being same as the first chroma prediction mode, the converted luma prediction mode is derived as a normal intra mode.
10. The method of claim 9, wherein in the normal intra mode, distance-based weighted calculations are applied on reference values in vertical direction and horizontal direction to generate prediction values.
11. The method of any of claims 2 to 10, wherein in the chroma intra prediction mode derivation operation, a second chroma prediction mode is derived for the chroma block based on the converted luma prediction mode, and wherein the second chroma prediction mode is different from the first chroma prediction mode.
12. The method of any of claims 3 to 6, wherein in response to a size of the chroma block being same as a size of the first corresponding luma block, same matrix coefficients are used in the first chroma prediction mode and the first luma prediction mode.
13. The method of any of claims 1 to 12, wherein the conversion includes encoding the chroma block into the bitstream.
14. The method of any of claims 1 to 12, wherein the conversion includes decoding the chroma block from the bitstream.
15. An apparatus for processing video data comprising a processor and a non-transitory memory with instructions thereon, wherein the instructions upon execution by the processor, cause the processor to:
 - determine, for a conversion between a chroma block of a video and a bitstream of the video, whether to apply a first chroma prediction mode on the chroma block;

generate prediction samples for the chroma block based on the determining; and
perform the conversion between the chroma block and the bitstream;
wherein in responding to determining to apply the first chroma prediction mode on the chroma block, the prediction samples are generated by performing a boundary down-sampling operation based on a size of the chroma block, followed by a matrix vector multiplication operation, and selectively followed by an up-sampling operation.

16. The apparatus of claim 15, wherein determining to apply the first chroma prediction mode on the chroma block is based on a first luma prediction mode of a first corresponding luma block being same as the first chroma prediction mode.

17. The apparatus of claim 15 or 16, wherein determining to apply the first chroma prediction mode on the chroma block is further based on a value of a syntax element `intra_chroma_pred_mode`, and wherein the syntax element `intra_chroma_pred_mode` is used to specify a mapping relation between a chroma component intra mode and a luma component intra mode.

18. The apparatus of claim 17, wherein the syntax element `intra_chroma_pred_mode` specifies that a DM mode is applied on the chroma block, and wherein in the DM mode, the chroma component intra mode is identical to the luma component intra mode.

19. A non-transitory computer-readable storage medium storing instructions that cause a processor to:

determine, for a conversion between a chroma block of a video and a bitstream of the video, whether to apply a first chroma prediction mode on the chroma block;
generate prediction samples for the chroma block based on the determining; and
perform the conversion between the chroma block and the bitstream;
wherein in responding to determining to apply the first chroma prediction mode on the chroma block, the prediction samples are generated by performing a boundary down-sampling operation based on a size of the chroma block, followed by a matrix vector multiplication operation, and selectively followed by an up-sampling operation.

20. A non-transitory computer-readable recording medium storing a bitstream of a video which is generated by a method performed by a video processing apparatus, wherein the method comprises:

determining whether to apply a first chroma prediction mode on a chroma block of the video;

generating prediction samples for the chroma block based on the determining; and
generating the bitstream based on the prediction samples;

wherein in responding to determining to apply the first chroma prediction mode on the chroma block, the prediction samples are generated by performing a boundary down-sampling operation based on a size of the chroma block, followed by a matrix vector multiplication operation, and selectively followed by an up-sampling operation.