CLAIMS

1. A method for video processing, comprising:

determining, for a conversion between a current video block of a video and a bitstream of the video, a spatial neighboring block of the current video block, wherein the current video block is an intra block, and wherein the spatial neighboring block is applied with a first prediction mode in which prediction samples of the spatial neighboring block are derived by performing a boundary down-sampling operation on reference samples of the spatial neighboring block based on a size of the spatial neighboring block, followed by a matrix vector multiplication operation, and selectively followed by an up-sampling operation;

converting the first prediction mode to a ~~second prediction~~planar mode for the spatial neighboring block, wherein the ~~second~~ first prediction mode is different from the ~~first prediction~~planar mode;

constructing, based on the ~~second prediction~~planar mode, a mode candidate list for the current video block;

determining a third prediction mode for the current video block, wherein the third prediction mode is different from the first prediction mode; and

performing the conversion based on the third prediction mode,

wherein at least one bin of a second syntax element indicating whether the first prediction mode is applied for the spatial neighboring block is context-based coded, and

wherein in response to a width-height ratio of the spatial neighboring block being greater than 2, a context with a sequence number of 3 is used for a first bin of the second syntax element.

2. The method of claim 1, wherein whether to apply the first prediction mode is specified by multiple syntax elements.

3. The method of claim 2, wherein a first syntax element is included in a sequence parameter set, and a second syntax element is a coding unit level syntax element.

4. The method of claim 3, wherein in response to the second syntax element being not included in the bitstream, the first prediction mode is not applied.

5. The method of claim 1, wherein no more than K contexts is used for the second syntax element.

6. The method of claim 5, wherein K is equal to 4.

7. The method of claim 5, wherein in response to a width-height ratio of the spatial neighboring block being smaller than or equal to 2, a single context selected from contexts with indices of 0, 1 or 2 is used for a first bin of the second syntax element.

8. The method of claim 1, wherein the first prediction mode includes multiple types, and a type index for the spatial neighboring video block is derived excluding referring to type indices of previous video blocks.

9. The method of claim 8, wherein the type index for the spatial neighboring video block is explicitly included in the bitstream.

10. The method of claim 1, wherein a down-sampling factor derived in the boundary down-sampling operation based on the size of the spatial neighboring block is larger than or equal to 1, and wherein a one-dimensional vector array is further derived based on concatenating down-sampled reference samples derived from the boundary down-sampling operation and the one-dimensional vector array is used as input of the matrix vector multiplication operation.

11. The method of claim 1, wherein in the ~~second prediction~~planar mode, distance-based weighted calculations are applied on reference values in vertical direction and horizontal direction to derive prediction values.

~~12. The method of claim 1, wherein the second prediction mode includes a planar mode.~~

~~13~~12. The method of claim 1, wherein the conversion includes encoding the current video block into the bitstream.

~~14~~13. The method of claim 1, wherein the conversion includes decoding the current video block from the bitstream.

~~15~~14. 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 current video block of a video and a bitstream of the video, a spatial neighboring block of the current video block, wherein the current video block is an intra block, and wherein the spatial neighboring block is applied with a first prediction mode in which prediction samples of the spatial neighboring block are derived by performing a boundary down-sampling operation on reference samples of the spatial neighboring block based on a size of the spatial neighboring block, followed by a matrix vector multiplication operation, and selectively followed by an up-sampling operation;

convert the first prediction mode to a ~~second prediction~~planar mode for the spatial neighboring block, wherein the ~~second~~ first prediction mode is different from the ~~first prediction~~planar mode;

construct, based on the ~~second prediction~~planar mode, a mode candidate list for the current video block;

determine a third prediction mode for the current video block, wherein the third prediction mode is different from the first prediction mode; and

perform the conversion based on the third prediction mode,

wherein at least one bin of a second syntax element indicating whether the first prediction mode is applied for the spatial neighboring block is context-based coded, and

wherein in response to a width-height ratio of the spatial neighboring block being greater than 2, a context with a sequence number of 3 is used for a first bin of the second syntax element.

~~16~~15. The apparatus of claim ~~15~~14, wherein the first prediction mode includes multiple types, and a type index for the neighboring video block is derived excluding referring to type indices of previous video blocks.

~~17~~16. A non-transitory computer-readable storage medium storing instructions that cause a processor to:

determine, for a conversion between a current video block of a video and a bitstream of the video, a spatial neighboring block of the current video block, wherein the current video block is an intra block, and wherein the spatial neighboring block is applied with a first prediction mode in which prediction samples of the spatial neighboring block are derived by performing a boundary down-sampling operation on reference samples of the spatial neighboring block based on a size of the spatial neighboring block, followed by a matrix vector multiplication operation, and selectively followed by an up-sampling operation;

convert the first prediction mode to a ~~second prediction~~planar mode for the spatial neighboring block, wherein the ~~second~~ first prediction mode is different from the ~~first prediction~~planar mode;

construct, based on the ~~second prediction~~planar mode, a mode candidate list for the current video block;

determine a third prediction mode for the current video block, wherein the third prediction mode is different from the first prediction mode; and

perform the conversion based on the third prediction mode,

wherein at least one bin of a second syntax element indicating whether the first prediction mode is applied for the spatial neighboring block is context-based coded, and

wherein in response to a width-height ratio of the spatial neighboring block being greater than 2, a context with a sequence number of 3 is used for a first bin of the second syntax element.

~~18~~17. 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 a spatial neighboring block of a current video block, wherein the current video block is an intra block, and wherein the spatial neighboring block is applied with a first

prediction mode in which prediction samples of the spatial neighboring block are derived by performing a boundary down-sampling operation on reference samples of the spatial neighboring block based on a size of the spatial neighboring block, followed by a matrix vector multiplication operation, and selectively followed by an up-sampling operation;

converting the first prediction mode to a ~~second prediction~~planar mode for the spatial neighboring block, wherein the first~~second~~ prediction mode is different from the ~~first prediction~~planar mode;

constructing, based on the ~~second prediction~~planar mode, a mode candidate list for the current video block;

determining a third prediction mode for the current video block, wherein the third prediction mode is different from the first prediction mode; and

generating the bitstream from the current video block based on the third prediction mode,

wherein at least one bin of a second syntax element indicating whether the first prediction mode is applied for the spatial neighboring block is context-based coded, and

wherein in response to a width-height ratio of the spatial neighboring block being greater than 2, a context with a sequence number of 3 is used for a first bin of the second syntax element.

~~19~~18. The apparatus of claim ~~15~~14, wherein a down-sampling factor derived in the boundary down-sampling operation based on the size of the spatial neighboring block is larger than or equal to 1, and wherein a one-dimensional vector array is further derived based on concatenating down-sampled reference samples derived from the boundary down-sampling operation and the one-dimensional vector array is used as input of the matrix vector multiplication operation.

~~20~~19. The apparatus of claim ~~15~~14, wherein in the ~~second prediction~~planar mode, distance-based weighted calculations are applied on reference values in vertical direction and horizontal direction to derive prediction values.