CLAIMS

What is claimed is:

1. A decoder, comprising:

one or more processors; and a non-transitory computer-readable storage medium coupled to the processors and storing programming for execution by the processors, wherein the programming, when executed by the processors, configures the decoder to:

determine a set of Most Probable Modes (MPMs) for a current block of a video encoded in a video bitstream, wherein when at least one condition is satisfied, the set of MPMs comprise: a Planar mode, a DC mode, a Vertical mode, a Horizontal mode, an intra prediction mode corresponding to a value of the Vertical mode with a first offset, and an intra prediction mode corresponding to the value of the Vertical mode with a second offset;

obtain an (MPM) flag for the current block from the video bitstream, the MPM flag indicating whether an intra prediction mode for the current block is in the set of MPMs for the current block;

obtain an MPM index for the current block from the video bitstream, when the MPM flag indicates that the intra prediction mode for the current block is in the set of MPMs for the current block; determine the intra prediction mode for the current block based on the MPM index and the set of MPMs for the current block; and

reconstruct the current block using reference samples determined based on the intra prediction mode for the current block.

2. The decoder of claim 1, wherein the at least one condition comprises one of a plurality of conditions, the plurality of conditions comprising:

an intra prediction mode of a left neighboring block of the current block is a Planar mode, and an intra prediction mode of an above neighboring block of the current block is a Planar mode;

the intra prediction mode of the left neighboring block of the current block is a Planar mode, and the intra prediction mode of the above neighboring block of the current block is a DC mode;

the left neighboring block of the current block is not available, and the intra prediction mode of the above neighboring block of the current block is a Planar mode;

the left neighboring block of the current block is not available, and the above neighboring block of the current block is not available; and

the intra prediction mode of the left neighboring block of the current block is a Planar mode, and the above neighboring block of the current block is not available.

3. The decoder of claim 1, wherein when the MPM flag for the current block indicates that the intra prediction mode for the current block is in the set of MPMs and the MPM index for the current block is 0, the intra prediction mode for the current block is the Planar mode.

4. The decoder of claim 1, wherein the first offset is -4.

5. The decoder of claim 1, wherein the second offset is +4.

6. The decoder of claim 1, wherein reconstructing the current block using reference samples determined based on the intra prediction mode for the current block comprises:

generating the reference samples by filtering samples in one or more neighboring blocks of the current block according to the intra prediction mode for the current block; and

reconstructing the current block using the reference samples.

7. A non-transitory computer-readable medium having stored thereon instructions that, when executed by one or more processors, cause the one or more processors to perform operations including:

determining a set of Most Probable Modes (MPMs) for a current block of a video encoded in a video bitstream, wherein when at least one condition is satisfied, the set of MPMs comprise: a Planar mode, a DC mode, a Vertical mode, a Horizontal mode, an intra prediction mode corresponding to a value of the Vertical mode with a first offset, and an intra prediction mode corresponding to the value of the Vertical mode with a second offset;

obtaining an (MPM) flag for the current block from the video bitstream, the MPM flag indicating whether an intra prediction mode for the current block is in the set of MPMs for the current block;

obtaining an MPM index for the current block from the video bitstream, when the MPM flag indicates that the intra prediction mode for the current block is in the set of MPMs for the current block; determine the intra prediction mode for the current block based on the MPM index and the set of MPMs for the current block; and

reconstructing the current block using reference samples determined based on the intra prediction mode for the current block.

8. The non-transitory computer-readable medium of claim 7, wherein the at least one condition comprises one of a plurality of conditions, the plurality of conditions comprising:

an intra prediction mode of a left neighboring block of the current block is a Planar mode, and an intra prediction mode of an above neighboring block of the current block is a Planar mode;

the intra prediction mode of the left neighboring block of the current block is a Planar mode, and the intra prediction mode of the above neighboring block of the current block is a DC mode;

the left neighboring block of the current block is not available, and the intra prediction mode of the above neighboring block of the current block is a Planar mode;

the left neighboring block of the current block is not available, and the above neighboring block of the current block is not available; and

the intra prediction mode of the left neighboring block of the current block is a Planar mode, and the above neighboring block of the current block is not available.

9. The non-transitory computer-readable medium of claim 7, wherein when the MPM flag for the current block indicates that the intra prediction mode for the current block is in the set of MPMs and the MPM index for the current block is 0, the intra prediction mode for the current block is the Planar mode.

10. The non-transitory computer-readable medium of claim 7, wherein the first offset is -4.

11. The non-transitory computer-readable medium of claim 7, wherein the second offset is +4.

12. The non-transitory computer-readable medium of claim 7, wherein reconstructing the current block using reference samples determined based on the intra prediction mode for the current block comprises:

generating the reference samples by filtering samples in one or more neighboring blocks of the current block according to the intra prediction mode for the current block; and

reconstructing the current block using the reference samples.

13. A method for decoding a current block of an encoded video, the method comprising:

determining a set of Most Probable Modes (MPMs) for the current block, wherein when at least one condition is satisfied, the set of MPMs comprise: a Planar mode, a DC mode, a Vertical mode, a Horizontal mode, an intra prediction mode corresponding to a value of the Vertical mode with a first offset, and an intra prediction mode corresponding to the value of the Vertical mode with a second offset;

obtaining an (MPM) flag for the current block from a video bitstream of the encoded video, the MPM flag indicating whether an intra prediction mode for the current block is in the set of MPMs for the current block;

obtaining an MPM index for the current block from the video bitstream, when the MPM flag indicates that the intra prediction mode for the current block is in the set of MPMs for the current block; determine the intra prediction mode for the current block based on the MPM index and the set of MPMs for the current block; and

reconstructing the current block using reference samples determined based on the intra prediction mode for the current block.

14. A method of claim 13, wherein the at least one condition comprises one of a plurality of conditions, the plurality of conditions comprising:

an intra prediction mode of a left neighboring block of the current block is a Planar mode, and an intra prediction mode of an above neighboring block of the current block is a Planar mode;

the intra prediction mode of the left neighboring block of the current block is a Planar mode, and the intra prediction mode of the above neighboring block of the current block is a DC mode;

the left neighboring block of the current block is not available, and the intra prediction mode of the above neighboring block of the current block is a Planar mode;

the left neighboring block of the current block is not available, and the above neighboring block of the current block is not available; and

the intra prediction mode of the left neighboring block of the current block is a Planar mode, and the above neighboring block of the current block is not available.

15. The method of claim 13, wherein when the MPM flag for the current block indicates

that the intra prediction mode for the current block is in the set of MPMs and the MPM index for the current block is 0, the intra prediction mode for the current block is the Planar mode.

16. The method of claim 13, wherein the first offset is -4.

17. The method of claim 13, wherein the second offset is +4.

18. The method of claim 13, wherein reconstructing the current block using reference samples determined based on the intra prediction mode for the current block comprises:

generating the reference samples by filtering samples in one or more neighboring blocks of the current block according to the intra prediction mode for the current block; and

reconstructing the current block using the reference samples.

19. An encoder, comprising:

one or more processors; and a non-transitory computer-readable storage medium coupled to the processors and storing programming for execution by the processors, wherein the programming, when executed by the processors, configures the encoder to:

determine a set of MPMs for a current block of a video, wherein when at least one condition is satisfied, the set of MPMs comprise: a Planar mode, a DC mode, a Vertical mode, a Horizontal mode, an intra prediction mode corresponding to the Vertical mode with a first offset, and an intra prediction mode corresponding to the Vertical mode with a second offset;

determine an intra prediction mode for the current block based on samples of the current block and samples of neighboring blocks of the current block;

determine a value of a Most Probable Modes (MPMs) flag and an MPM index for the current block to indicate whether the intra prediction mode for the current block is in the set of MPMs; and

encode the MPMs flag and the MPM index into a video bitstream of the video.

20. The encoder of claim 19, wherein the at least one condition comprises one of a plurality of conditions, the plurality of conditions comprising:

an intra prediction mode of a left neighboring block of the current block is a Planar mode, and an intra prediction mode of an above neighboring block of the current block is a Planar mode;

the intra prediction mode of the left neighboring block of the current block is a Planar mode, and the intra prediction mode of the above neighboring block of the current block is a DC mode;

the left neighboring block of the current block is not available, and the intra prediction mode of the above neighboring block of the current block is a Planar mode;

the left neighboring block of the current block is not available, and the above neighboring block of the current block is not available; and

the intra prediction mode of the left neighboring block of the current block is a Planar mode, and the above neighboring block of the current block is not available.