

WHAT IS CLAIMED IS:

What is claimed is:

1. ~~A decoder, the decoder comprising circuitry configured to:
receive a bitstream;
partition a current block via a geometric partitioning mode into a first region, a second
region, and a third region;
determine a motion vector associated with a region of the first region, the second region,
and the third region, wherein determining further includes constructing a
candidate list; and
decode the current block using the determined motion vector.~~
2. ~~The decoder of claim 1, wherein constructing the candidate list includes evaluating a
below left candidate, a left candidate, an above left candidate, an above candidate, and
an above right candidate.~~
3. ~~The decoder of claim 2, wherein:
the determined motion vector is for the first region;
the geometric partitioning mode includes a line segment between a first luma location
and a second luma location;
the below left candidate is located at a third luma location immediately to the left and
immediately below the second luma location;
the left candidate is located at a fourth luma location immediately to the left of the
second luma location;
the above left candidate is located at a fifth luma location immediately above and
immediately to the left of an upper left most luma location of the first region;
the above candidate is located at a sixth luma location immediately above the first
luma location; and
the above right candidate is located at a seventh luma location immediately above and
to the right of the first luma location.~~
4. ~~The decoder of claim 2, wherein:
the determined motion vector is for the second region;
the geometric partitioning mode includes a line segment between a first luma location
and a second luma location;~~

~~the below-left candidate is located at a third luma location immediately to the left and immediately below a lower-left most luma location of the third region;~~

~~the left candidate is located at a fourth luma location immediately to the left of the lower-left most luma location of the third region;~~

5 ~~the above-left candidate is located at a fifth luma location immediately above the first location;~~

~~the above candidate is located at a sixth luma location immediately above an upper-right most luma location of the second region; and~~

10 ~~the above-right candidate is located at a seventh luma location immediately above and to the right of the upper-right most luma location of the second region.~~

5. ~~—The decoder of claim 2, wherein:~~

~~the determined motion vector is for the third region;~~

~~the geometric partitioning mode includes a line segment between a first luma location and a second luma location;~~

15 ~~the below-left candidate is located at a third luma location immediately to the left and immediately below a lower-left most luma location of the third region;~~

~~the left candidate is located at a fourth luma location immediately to the left of the lower-left most luma location of the third region;~~

20 ~~the above-left candidate is located at a fifth luma location co-located with the first region;~~

~~the above candidate is located at a sixth luma location immediately to the left of the second location; and~~

~~the above-right candidate is located at a seventh luma location that is collocated with the second region.~~

25 6. ~~—The decoder of 2, wherein the determined motion vector is for the second region, the decoder further configured to mark a candidate as unavailable in response to determining that the candidate is co-located with the third region.~~

7. ~~—The decoder of claim 2, wherein:~~

~~the determined motion vector is for the second region; and~~

~~the decoder is further configured to automatically mark the upper-left candidate as unavailable in response to determining that the geometric partitioning mode is enabled.~~

8. ~~The decoder of claim 2, wherein:~~

~~the determined motion vector is for the third region; and
the decoder is further configured to automatically mark the upper-right candidate as unavailable in response to determining that the geometric partitioning mode is enabled.~~

9. ~~The decoder of claim 2, wherein:~~

~~the determined motion vector is for the third region; and
the decoder is further configured to automatically mark the upper-left candidate as unavailable in response to determining that the geometric partitioning mode is enabled.~~

10. ~~The decoder of claim 1, further configured to determine that a merge mode is enabled for the first region~~

11. ~~The decoder of claim 1, further configured to determine that an advanced motion vector prediction mode is enabled for the first region.~~

12. ~~The decoder of claim 1, further configured to reconstruct pixel data of the current block.~~

13. ~~The decoder of claim 12, wherein the first region and the second region are non-rectangular.~~

14. ~~The decoder of claim 1, wherein the geometric partitioning mode is signaled in the bitstream.~~

15. ~~The decoder of claim 1, wherein partitioning the current block via the geometric partitioning mode into the first region, the second region, and the third region includes partitioning the current block with a line segment characterized by a first luma location and a second luma location.~~

16. ~~The decoder of claim 1, further configured to:
determine whether the geometric partitioning mode is enabled;
determine a first line segment for the current block; and
determine a second line segment for the current block;~~

wherein:

~~the decoding of the current block includes reconstructing pixel data using the first line segment and the second line segment; and~~

~~the first line segment and the second line segment partition the current block into the first region, the second region, and the third region.~~

17. ~~The decoder of claim 1, wherein the geometric partitioning mode is available for block sizes greater or equal to 64x64 or 128x128 luma samples.~~

18. ~~The decoder of claim 1, further comprising:~~

~~an entropy decoder processor configured to receive the bitstream and decode the bitstream into quantized coefficients;~~

~~an inverse quantization and inverse transformation processor configured to process the quantized coefficients including performing an inverse discrete cosine transform;~~

~~a deblocking filter;~~

~~a frame buffer; and~~

~~an intra prediction processor.~~

19. ~~The decoder of claim 1, wherein the bitstream includes a parameter indicating whether the geometric partitioning mode is enabled for the current block.~~

20. ~~The decoder of claim 1, wherein the current block forms part of a quadtree plus binary decision tree.~~

21. ~~The decoder of claim 20, wherein the current block is a non-leaf node of the quadtree plus binary decision tree.~~

22. ~~The decoder of claim 1, wherein the current block is a coding tree unit or a coding unit.~~

23. ~~The decoder of claim 1, wherein the first region is a coding unit or a prediction unit.~~

24. ~~A method comprising:~~

~~receiving, by a decoder, a bitstream;~~

~~partitioning, by the decoder, a current block via a geometric partitioning mode into a first region, a second region, and a third region;~~

determining, by the decoder, a motion vector associated with a region of the first region, the second region, and the third region, the determining including constructing a candidate list; and decoding, by the decoder, the current block using the determined motion vector.

25. The method of claim 24, wherein constructing the candidate list includes evaluating a below left candidate, a left candidate, an above left candidate, an above candidate, and an above right candidate.

26. The method of claim 25, wherein:

the determined motion vector is for the first region;

the geometric partitioning mode includes a line segment between a first luma location and a second luma location;

the below left candidate is located at a third luma location immediately to the left and immediately below the second luma location;

the left candidate is located at a fourth luma location immediately to the left of the second luma location;

the above left candidate is located at a fifth luma location immediately above and immediately to the left of an upper left most luma location of the first region;

the above candidate is located at a sixth luma location immediately above the first luma location; and

the above right candidate is located at a seventh luma location immediately above and to the right of the first luma location.

27. The method of claim 25, wherein:

the determined motion vector is for the second region;

the geometric partitioning mode includes a line segment between a first luma location and a second luma location;

the below left candidate is located at a third luma location immediately to the left and immediately below a lower left most luma location of the third region;

the left candidate is located at a fourth luma location immediately to the left of the lower left most luma location of the third region;

the above left candidate is located at a fifth luma location immediately above the first location;

~~the above candidate is located at a sixth luma location immediately above an upper-right most luma location of the second region; and
the above right candidate is located at a seventh luma location immediately above and to the right of the upper right most luma location of the second region.~~

5 28. ~~The method of claim 25, wherein:~~

~~the determined motion vector is for the third region;~~

~~the geometric partitioning mode includes a line segment between a first luma location and a second luma location;~~

10 ~~the below left candidate is located at a third luma location immediately to the left and immediately below a lower left most luma location of the third region;~~

~~the left candidate is located at a fourth luma location immediately to the left of the lower left most luma location of the third region;~~

~~the above left candidate is located at a fifth luma location co-located with the first region;~~

15 ~~the above candidate is located at a sixth luma location immediately to the left of the second location; and~~

~~the above right candidate is located at a seventh luma location that is collocated with the second region.~~

29. ~~The method of 25, wherein the determined motion vector is for the second region,~~

20 ~~and further comprising marking a candidate as unavailable in response to determining that the candidate is co-located with the third region.~~

30. ~~The method of claim 25, wherein the determined motion vector is for the second~~

25 ~~region and further comprising automatically marking the upper left candidate as unavailable in response to determining that the geometric partitioning mode is enabled.~~

31. ~~The method of claim 25, wherein the determined motion vector is for the third region, and further comprising automatically marking the upper right candidate as unavailable in response to determining that the geometric partitioning mode is enabled.~~

32. ~~The method of claim 25, wherein the determined motion vector is for the third region, and further comprising automatically marking the upper left candidate as unavailable~~

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~~in response to determining that the geometric partitioning mode is enabled.~~

33. ~~The method of claim 24 further comprising determining that a merge mode is enabled for the first region~~

34. ~~The method of claim 24, further comprising determining that an advanced motion vector prediction mode is enabled for the first region.~~

35. ~~The method of claim 24, further comprising reconstructing pixel data of the current block~~

36. ~~The method of claim 24, wherein each of the first region and the second region are non-rectangular.~~

37. ~~The method of claim 24, wherein the geometric partitioning mode is signaled in the bitstream.~~

38. ~~The method of claim 24, wherein partitioning the current block via the geometric partitioning mode into the first region, the second region, and the third region includes partitioning the current block with a line segment characterized by a first luma location and a second luma location.~~

39. ~~The method of claim 24, further comprising:
determining whether the geometric partitioning mode is enabled;
determining a first line segment for the current block; and
determining a second line segment for the current block;~~

~~wherein:~~

~~the decoding of the current block includes reconstructing pixel data using the first line segment and the second line segment;~~

~~the first line segment and the second line segment partition the current block into the first region, the second region, and the third region.~~

40. ~~The method of claim 24, wherein the geometric partitioning mode is available for block sizes greater or equal to 64x64 or 128x128 luma samples.~~

41. ~~The method of claim 24, wherein the decoder further comprises:~~

~~an entropy decoder processor configured to receive the bitstream and decode the bitstream into quantized coefficients;~~

~~an inverse quantization and inverse transformation processor configured to process the quantized coefficients including performing an inverse discrete cosine transform;~~

5 ~~a deblocking filter;~~

~~a frame buffer; and~~

~~an intra prediction processor.~~

42. ~~The method of claim 24, wherein the bitstream includes a parameter indicating whether the geometric partitioning mode is enabled for the current block.~~

10 43. ~~The method of claim 24, wherein the current block forms part of a quadtree plus binary decision tree.~~

44. ~~The method of claim 43, wherein the current block is a non-leaf node of the quadtree plus binary decision tree.~~

15 45. ~~The method of claim 24, wherein the current block is a coding tree unit or a coding unit.~~

46. ~~The method of claim 24, wherein the first region is a coding unit or a prediction unit.~~

1. A decoder, the decoder comprising circuitry configured to:

20 receive a bitstream, wherein the bitstream includes a current picture, the current picture including a current block having at least a first partition boundary partitioning the block into first and second non-rectangular regions, and a second partition boundary, intersecting the at least first partition boundary, partitioning the second non-rectangular region to partition the current block into three portions;

25 determine a first predictor for use within the first non-rectangular region using a first motion vector selected from a first list of motion vector candidates;

determine a second predictor for use within the second non-rectangular region using a second motion vector selected from a second list of motion vector candidates;
and

decode the current block using the first predictor and the second predictor, wherein decoding further comprises smoothing the first predictor and the second predictor across the at least first partition boundary.

5 2. The decoder of claim 1 wherein the current block is a current coding tree unit.

3. The decoder of claim 1 wherein the first partition includes a first geometric partition.

4. The decoder of claim 1 wherein the second partition includes a second geometric partition.

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5. A decoder, the decoder comprising circuitry configured to:

receive a bitstream, wherein the bitstream includes a current picture, the current picture including a current block having a block size of $N \times N$ where N is equal to 64 or 128, and having at least a first geometric partition boundary partitioning the block into first and second non-rectangular regions, and a second geometric partition boundary, intersecting the at least first geometric partition boundary, partitioning the second non-rectangular region to partition the current block into three portions;

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determine a first predictor for use within the first non-rectangular region using a first motion vector selected from a first list of motion vector candidates;

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determine a second predictor for use within the second non-rectangular region using a second motion vector selected from a second list of motion vector candidates;
and

decode the current block using the first predictor and the second predictor, wherein decoding further comprises smoothing the first predictor and the second predictor across the at least first geometric partition boundary.

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6. The decoder of claim 5 wherein the current block is a current coding tree unit.

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