CLAIMS

1. A method of decoding video data including a mode for intra prediction of blocks of video data from predictive blocks of video data within the same picture, the method comprising:
for a current block of video data that is a first video block in a largest coding unit, receiving, in an encoded video bitstream, one or more syntax elements that define a residual horizontal displacement component and a residual vertical displacement component of a residual two-dimensional vector;
determining a horizontal displacement component of a two-dimensional vector and a vertical displacement component of the two-dimensional vector based on the residual horizontal displacement component and the residual vertical displacement component of the residual two-dimensional vector and based on a default predictive two-dimensional vector;
determining a predictive block of video data for the current block of video data based on the horizontal displacement component and the vertical displacement component of the two-dimensional vector, wherein the predictive block of video data is one of a plurality of reconstructed blocks of video data within an intended region within the same picture as the current block of video data, and wherein the intended region comprises a limited set of the plurality of reconstructed blocks of video data, and the predictive block of video data is within the intended region, wherein the intended region is limited to the limited set of the plurality of reconstructed blocks of video data within the same picture that have not been in-loop filtered; and
reconstructing the current block of video data by adding the predictive block of video data to the residual block.

2. The method of claim 1, wherein the horizontal displacement component and the vertical displacement component of the two-dimensional vector are constrained to have integer pixel resolution.

3. The method of claim 2, wherein the current block of video data and the predictive block of video data comprise blocks of a luma component of the video data.

4. The method of claim 2, wherein the current block of video data and the predictive block of video data comprise blocks of a chroma component of the video data.

5. The method of claim 1, wherein at least one of a height or a width of the intended region are defined based on a size of the largest coding unit.

6. The method of claim 5, wherein the height of the intended region is defined based on a height of the largest coding unit.

7. The method of claim 1, wherein at least one of a height or a width of the intended region is defined based on an integer number of samples.

8. The method of claim 7, wherein the width of the intended region is defined based on the

integer number of samples.

9. The method of claim 8, wherein the integer number of samples is 64.

10. The method of claim 1, wherein at least one of a height or a width of the intended region is constrained such that the intended region is within at least one of the largest coding unit and a left neighboring largest coding unit of the largest coding unit.

11. The method of claim 1, wherein decoding the syntax elements comprises decoding syntax elements encoded with values truncated based on a size of the intended region.

12. The method of claim 1, wherein the default predictive two-dimensional vector comprises (−w, 0), wherein w comprises a width of a current coding unit comprising the current video block.

13. The method of claim 1, wherein previously-determined vectors of neighboring blocks not used to determine a predictive block of video data within the same picture as the current block of video data according to the mode for intra prediction of blocks of video data from predictive blocks of video data within the same picture are unavailable as predictive two-dimensional vectors for the current block of video data.

14. The method of claim 1, wherein the current block of video data comprises a prediction unit of a coding unit.

15. The method of claim 14, wherein a size of the coding unit is 2N×2N, and a size of the prediction unit is one of N×N, 2N×2N, 2N×N, or N×2N.

16. The method of claim 1, wherein the current block of video data comprises a current block of a luma component of the video data and the two-dimensional vector comprises a two-dimensional vector for the luma component, the method further comprising deriving a two-dimensional vector for a block of a chroma component of the video data that corresponds to the current block of the luma component based on the two-dimensional vector for the luma component and a color sampling format for the video data.

17. The method of claim 1, further comprising determining a size of the current block of video data, wherein receiving the one or more syntax elements, determining the predictive block, and reconstructing the current block of video data according to the mode for intra prediction of blocks of video data from predictive blocks of video data within the same picture comprises receiving the one or more syntax elements, determining the predictive block, and reconstructing the current block of video data according to the mode for intra prediction of blocks of video data from predictive blocks of video data within the same picture only when the size of the current block meets a size criteria.

18. The method of claim 17, wherein the size criteria comprises a minimum size.

19. The method of claim 1, further comprising decoding a flag that indicates whether the current block of video data is predicted using the mode for intra prediction of blocks of video data from predictive blocks of video data within the same picture,
wherein receiving the one or more syntax elements, determining the predictive block, and reconstructing the current block of video data according to the mode for intra prediction of blocks of video data from predictive blocks of video data within the same picture comprises receiving the one or more syntax elements, determining the predictive block, and reconstructing the current block of video data according to the mode for intra prediction of blocks of video data from predictive blocks of video data within the same picture in response to the flag indicating that the current block of video data is predicted using the mode for intra prediction of blocks of video data from predictive blocks of video data within the same picture,
wherein decoding the flag comprises arithmetic decoding the flag with a single, fixed context.

20. The method of claim 1, further comprising applying an intra-prediction mode deblocking filter to the current block of video data.

21. A method of encoding video data including a mode for intra prediction of blocks of video data from predictive blocks of video data within the same picture, the method comprising:
for a current block of video data that is a first video block in a largest coding unit, defining an intended region within the same picture as the current block of video data, the intended region comprising a set of previously encoded blocks of video data within the same picture as the current block of video data, wherein the set of previously encoded blocks comprises a plurality of reconstructed blocks of video data within the same picture that have not been in-loop filtered;
selecting a predictive block of video data for the current block of video data from the set of previously encoded blocks of video data within the intended region within the same picture as the current block of video data;
determining a two-dimensional vector, wherein the two-dimensional vector has a horizontal displacement component and a vertical displacement component, wherein the horizontal displacement component represents a horizontal displacement between the predictive block of video data and the current block of video data and the vertical displacement component represents a vertical displacement between the predictive block of video data and the current block of video data;
determining a residual horizontal displacement component and a residual vertical displacement component based on a difference between the two-dimensional vector and a default predictive two-dimensional vector;
determining a residual block by determining a difference between the current block of video data and the predictive block of video data; and
encoding, in an encoded video bitstream, one or more syntax elements that define the residual horizontal displacement component and the residual vertical displacement component of the two-dimensional vector and the residual block.

22. The method of claim 21, wherein selecting the predictive block of video data comprises constraining the horizontal displacement component and the vertical displacement component of

the two-dimensional vector to have integer pixel resolution.

23. The method of claim 22, wherein the current block of video data and the predictive block of video data comprise blocks of a luma component of the video data.

24. The method of claim 22, wherein the current block of video data and the predictive block of video data comprise blocks of a chroma component of the video data.

25. The method of claim 21, wherein the current block of video data is located within a largest coding unit, and defining the intended region comprises defining the intended region based on a size of the largest coding unit.

26. The method of claim 25, wherein defining the intended region based on the size of the largest coding unit comprises defining a height of the intended region based on a height of the largest coding unit.

27. The method of claim 21, wherein defining the intended region comprises defining at least one of a height or a width of the intended region based on an integer number of samples.

28. The method of claim 27, wherein defining the size of the intended region to an integer number of samples comprises defining a width of the intended region based on integer number of samples.

29. The method of claim 28, wherein the integer number of samples is 64.

30. The method of claim 21, wherein the current block of video data is located within a largest coding unit, wherein defining the intended region comprises defining the intended region to be within at least one of the largest coding unit and a left neighboring largest coding unit of the largest coding unit.

31. The method of claim 21, wherein encoding the syntax elements comprises encoding syntax elements with values truncated based on a size of the intended region.

32. The method of claim 21, wherein the default predictive two-dimensional vector comprises (−w, 0), wherein w comprises a width of a current coding unit comprising the current video block.

33. The method of claim 21, wherein previously-determined vectors of neighboring blocks not used to determine a predictive block of video data within the same picture as the current block of video data according to the mode for intra prediction of blocks of video data from predictive blocks of video data within the same picture are unavailable as predictive two-dimensional vectors for the current block of video data.

34. The method of claim 21, wherein the current block of video data comprises a prediction unit

of a coding unit.

35. The method of claim 34, wherein a size of the coding unit is 2N×2N, and a size of the prediction unit is one of N×N, 2N×2N, 2N×N, or N×2N.

36. The method of claim 21, wherein the current block of video data comprises a current block of a luma component of the video data and the two-dimensional vector comprises a two-dimensional vector for the luma component, the method further comprising deriving a two-dimensional vector for a block of a chroma component of the video data that corresponds to the current block of the luma component based on the two-dimensional vector for the luma component and a color sampling format for the video data.

37. The method of claim 21, further comprising determining a size of the current block of video data, wherein selecting the predictive block, determining the two-dimensional vector, determining the residual block, and encoding the one or more syntax elements according to the mode for intra prediction of blocks of video data from predictive blocks of video data within the same picture comprises selecting the predictive block, determining the two-dimensional vector, determining the residual block, and encoding the one or more syntax elements according to the mode for intra prediction of blocks of video data from predictive blocks of video data within the same picture only when the size of the current block meets a size criteria.

38. The method of claim 37, wherein the size criteria comprises a minimum size.

39. The method of claim 21, further comprising encoding a flag that indicates whether the current block of video data is predicted using the mode for intra prediction of blocks of video data from predictive blocks of video data within the same picture, wherein encoding the flag comprises arithmetic encoding the flag with a single, fixed context.

40. The method of claim 21, further comprising applying an intra-prediction mode deblocking filter to the current block of video data.

41. A device comprising a video decoder configured to decode video data using a mode for intra prediction of blocks of video data from predictive blocks of video data within the same picture, wherein the video decoder comprises:
a memory configured to store video data; and
one or more processors configured to:
for a current block of the video data that is a first video block in a largest coding unit, receiving, in an encoded video bitstream, one or more syntax elements that define a residual horizontal displacement component and a residual vertical displacement component of a residual two-dimensional vector;
determining a horizontal displacement component of a two-dimensional vector and a vertical displacement component of the two-dimensional vector based on the residual horizontal displacement component and the residual vertical displacement component of the residual two-dimensional vector and based on a default predictive two-dimensional vector;

determine a predictive block of video data for the current block of video data based on the decoded syntax elements that define the horizontal displacement component and the vertical displacement component of the two-dimensional vector, wherein the predictive block of video data is one of a plurality of reconstructed blocks of video data within an intended region within the same picture as the current block of video data, wherein the intended region comprises a limited set of the plurality of reconstructed blocks of video data, and the predictive block of video data is within the intended region, wherein the intended region is limited to the limited set of the plurality of reconstructed blocks of video data within the same picture that have not been in-loop filtered; and

reconstruct the current block of video data by adding the predictive block of video data to the residual block.

42. The device of claim 41, wherein the horizontal displacement component and the vertical displacement component of the two-dimensional vector are constrained to have integer pixel resolution.

43. The device of claim 42, wherein the current block of video data and the predictive block of video data comprise blocks of a luma component of the video data.

44. The device of claim 42, wherein the current block of video data and the predictive block of video data comprise blocks of a chroma component of the video data.

45. The device of claim 41, wherein the current block of video data is located within a largest coding unit, and at least one of a height or a width of the intended region are defined based on a size of the largest coding unit.

46. The device of claim 45, wherein the height of the intended region is defined based on a height of the largest coding unit.

47. The device of claim 41, wherein at least one of a height or a width of the intended region is defined based on an integer number of samples.

48. The device of claim 47, wherein the width of the intended region is defined based on the integer number of samples.

49. The device of claim 48, wherein the integer number of samples is 64.

50. The device of claim 41, wherein the current block of video data is located within a largest coding unit, and at least one of a height or a width of the intended region is constrained such that the intended region is within at least one of the largest coding unit and a left neighboring largest coding unit of the largest coding unit.

51. The device of claim 41, wherein the one or more processors are configured to decode the syntax elements when the syntax elements are encoded with values truncated based on a size of

the intended region.

52. The device of claim 41, wherein the default predictive two-dimensional vector comprises (−w, 0), wherein w comprises a width of a current coding unit comprising the current video block.

53. The device of claim 41, wherein previously-determined vectors of neighboring blocks not used to determine a predictive block of video data within the same picture as the current block of video data according to the mode for intra prediction of blocks of video data from predictive blocks of video data within the same picture are unavailable as predictive two-dimensional vectors for the current block of video data.

54. The device of claim 41, wherein the current block of video data comprises a prediction unit of a coding unit.

55. The device of claim 54, wherein a size of the coding unit is 2N×2N, and a size of the prediction unit is one of N×N, 2N×2N, 2N×N, or N×2N.

56. The device of claim 41, wherein the current block of video data comprises a current block of a luma component of the video data and the two-dimensional vector comprises a two-dimensional vector for the luma component, and the one or more processors are configured to derive a two-dimensional vector for a block of a chroma component of the video data that corresponds to the current block of the luma component based on the two-dimensional vector for the luma component and a color sampling format for the video data.

57. The device of claim 41, wherein the one or more processors are configured to:
determine a size of the current block of video data; and
decode the one or more syntax elements, determine the predictive block, and reconstruct the current block of video data according to the mode for intra prediction of blocks of video data from predictive blocks of video data within the same picture only when the size of the current block meets a size criteria.

58. The device of claim 57, wherein the size criteria comprises a minimum size.

59. The device of claim 41, wherein the encoded video bitstream includes a flag that indicates whether the current block of video data is predicted using the mode for intra prediction of blocks of video data from predictive blocks of video data within the same picture, and wherein the one or more processors are configured to:
arithmetic decode the flag with a single, fixed context; and
decode the one or more syntax elements, determine the predictive block, and reconstruct the current block of video data according to the mode for intra prediction of blocks of video data from predictive blocks of video data within the same picture in response to the flag indicating that the current block of video data is predicted using the mode for intra prediction of blocks of video data from predictive blocks of video data within the same picture.

60. The device of claim 41, wherein the one or more processors are configured to apply an intra-prediction mode deblocking filter to the current block of video data.

61. The device of claim 41, wherein the device comprises one of:
a microprocessor;
an integrated circuit (IC); and
a wireless communication device comprising the video decoder.

62. A device comprising a video encoder configured to encode video data using a mode for intra prediction of blocks of video data from predictive blocks of video data within the same picture, wherein the video encoder comprises:
a memory configured to store an encoded video bitstream; and
one or more processors configured to:
for a current block of video data that is a first video block in a largest coding unit, define an intended region within the same picture as the current block of video data, the intended region comprising a set of previously encoded blocks of video data within the same picture as the current block of video data, wherein the set of previously encoded blocks comprises a plurality of reconstructed blocks of video data within the same picture that have not been in-loop filtered;
select a predictive block of video data for the current block of video data from the set of previously encoded blocks of video data within the intended region within the same picture as the current block of video data;
determine a two-dimensional vector, wherein the two-dimensional vector has a horizontal displacement component and a vertical displacement component, wherein the horizontal displacement component represents a horizontal displacement between the predictive block of video data and the current block of video data and the vertical displacement component represents a vertical displacement between the predictive block of video data and the current block of video data;
determine a residual horizontal displacement component and a residual vertical displacement component based on a difference between the two-dimensional vector and a default predictive two-dimensional vector;
determine a residual block by determining a difference between the current block of video data and the predictive block of video data; and
encode, in the encoded video bitstream, one or more syntax elements that define the residual horizontal displacement component and the residual vertical displacement component of the two-dimensional vector and the residual block.

63. The device of claim 62, wherein the one or more processors are configured to constrain the horizontal displacement component and the vertical displacement component of the two-dimensional vector to have integer pixel resolution.

64. The device of claim 63, wherein the current block of video data and the predictive block of video data comprise blocks of a luma component of the video data.

65. The device of claim 63, wherein the current block of video data and the predictive block of video data comprise blocks of a chroma component of the video data.

66. The device of claim 62, wherein the current block of video data is located within a largest coding unit, and the one or more processors are configured to define the intended region based on a size of the largest coding unit.

67. The device of claim 66, wherein the one or more processors are configured to define a height of the intended region based on a height of the largest coding unit.

68. The device of claim 62, wherein the one or more processors are configured to define at least one of a height or a width of the intended region based on an integer number of samples.

69. The device of claim 68, wherein the one or more processors are configured to define a width of the intended region based on the integer number of samples.

70. The device of claim 69, wherein the integer number of samples is 64.

71. The device of claim 62, wherein the current block of video data is located within a largest coding unit, wherein the one or more processors are configured to define the intended region to be within at least one of the largest coding unit and a left neighboring largest coding unit of the largest coding unit.

72. The device of claim 62, wherein the one or more processors are configured to encode the syntax elements with values truncated based on a size of the intended region.

73. The device of claim 62, wherein the default predictive two-dimensional vector comprises (−w, 0), wherein w comprises a width of a current coding unit comprising the current video block.

74. The device of claim 62, wherein previously-determined vectors of neighboring blocks not used to determine a predictive block of video data within the same picture as the current block of video data according to the mode for intra prediction of blocks of video data from predictive blocks of video data within the same picture are unavailable as predictive two-dimensional vectors for the current block of video data.

75. The device of claim 62, wherein the current block of video data comprises a prediction unit of a coding unit.

76. The device of claim 75, wherein a size of the coding unit is 2N×2N, and a size of the prediction unit is one of N×N, 2N×2N, 2N×N, or N×2N.

77. The device of claim 62, wherein the current block of video data comprises a current block of a luma component of the video data and the two-dimensional vector comprises a two-

dimensional vector for the luma component, and the one or more processors are configured to derive a two-dimensional vector for a block of a chroma component of the video data that corresponds to the current block of the luma component based on the two-dimensional vector for the luma component and a color sampling format for the video data.

78. The device of claim 62, wherein the one or more processors are configured to:
determine a size of the current block of video data; and
select the predictive block, determine the two-dimensional vector, determine the residual block, and encode the one or more syntax elements according to the mode for intra prediction of blocks of video data from predictive blocks of video data within the same picture only when the size of the current block meets a size criteria.

79. The device of claim 78, wherein the size criteria comprises a minimum size.

80. The device of claim 62, wherein the one or more processors are configured to arithmetic encode a flag that indicates whether the current block of video data is predicted using the mode for intra prediction of blocks of video data from predictive blocks of video data within the same picture with a single, fixed context.

81. The device of claim 62, wherein the one or more processors are configured to apply an intra-prediction mode deblocking filter to the current block of video data.

82. The device of claim 62, wherein the device comprises one of:
a microprocessor;
an integrated circuit (IC); and
a wireless communication device comprising the video encoder.

83. A device comprising a video coder configured to code video data using a mode for intra prediction of blocks of video data from predictive blocks of video data within the same picture, wherein the video coder comprises:
means for coding a video bitstream that includes one or more syntax elements that define a residual horizontal displacement component and a residual vertical displacement component of a two-dimensional vector and a residual block for a current block of video data that is a first video block in a largest coding unit; and
means for determining a predictive block of video data for the current block of video data;
means for determining a horizontal displacement component of a two-dimensional vector and a vertical displacement component of the two-dimensional vector based on the residual horizontal displacement component and the residual vertical displacement component of a residual two-dimensional vector and based on a default predictive two-dimensional vector, wherein the horizontal displacement component of the two-dimensional vector represents a horizontal displacement between the predictive block of video data and the current block of video data and the vertical displacement component of the two-dimensional vector represents a vertical displacement between the predictive block of video data and the current block of video data, wherein the predictive block of video data is one of a plurality of reconstructed blocks of video

data within an intended region within the same picture as the current block of video data, and wherein the intended region comprises a limited set of the plurality of reconstructed blocks of video data, and the predictive block of video data is within the intended region, wherein the intended region is limited to the limited set of the plurality of reconstructed blocks of video data within the same picture that have not been in-loop filtered, and
wherein the residual block represents a difference between the current block of video data and the predictive block of video data.

84. A non-transitory computer-readable storage medium having stored thereon instructions for coding video data including a mode for intra prediction of blocks of video data from predictive blocks of video data within the same picture that, when executed, cause one or more processors to:
code a video bitstream that includes one or more syntax elements that define a residual horizontal displacement component and a residual vertical displacement component of a two-dimensional vector and a residual block for a current block of video data that is a first video block in a largest coding unit; and
determine a predictive block of video data for the current block of video data;
determine a horizontal displacement component of a two-dimensional vector and a vertical displacement component of the two-dimensional vector based on the residual horizontal displacement component and the residual vertical displacement component of a residual two-dimensional vector and based on a default predictive two-dimensional vector, wherein the horizontal displacement component of the two-dimensional vector represents a horizontal displacement between the predictive block of video data and the current block of video data and the vertical displacement component of the two-dimensional vector represents a vertical displacement between the predictive block of video data and the current block of video data, wherein the predictive block of video data is one of a plurality of reconstructed blocks of video data within an intended region within the same picture as the current block of video data, wherein the intended region comprises a limited set of the plurality of reconstructed blocks of video data, and the predictive block of video data is within the intended region, wherein the intended region is limited to the limited set of the plurality of reconstructed blocks of video data within the same picture that have not been in-loop filtered, and
wherein the residual block represents a difference between the current block of video data and the predictive block of video data.