

CLAIMS

What is claimed is:

1. A method for video processing, comprising:
determining, for a conversion between a current video block of a current picture of a video and a coded representation of the video, an applicability of an alternative interpolation filter, wherein the applicability of the alternative interpolation filter indicates whether to apply the alternative interpolation filter in the conversion; and
performing the conversion based on the determining;
wherein the applicability of the alternative interpolation filter is determined based on whether a reference picture resampling in which a reference picture of the current picture is resampled to perform the conversion is used.
2. The method of claim 1, wherein the alternative interpolation filter is not applied due to the use of the reference picture resampling.
3. The method of claim 2, wherein the reference picture has a different resolution from that of the current picture.
4. The method of claim 1, wherein a default interpolation filter is applied in case that the determining determines not to apply the alternative interpolation filter.
5. The method of claim 4, wherein the default interpolation filter corresponds to an 8-tap filter with filter coefficients $[-1 \quad 4 \quad -11 \quad 40 \quad 40 \quad -11 \quad 4 \quad -1]$.
6. The method of any of claims 1 to 5, wherein the alternative interpolation filter corresponds to a 6-tap filter with filter coefficients $[3 \quad 9 \quad 20 \quad 20 \quad 9 \quad 3]$.

7. The method of any of claims 1 to 6, wherein the alternative interpolation filter is a half-pel interpolation filter used in prediction of the current video block.
8. The method of any of claims 1 to 7, wherein the current video block is coded with at least one motion vector pointing to a half-pel position if the alternative interpolation filter is used.
9. The method of any of claims 1 to 8, wherein the current video block is coded with at least one motion vector pointing to a horizontal half-pel position or a vertical half-pel position or a horizontal and vertical half-pel position if the alternative interpolation filter is used.
10. A method for video processing, comprising:
 - determining a coding mode used for representing a current video block of a video as a merge mode with motion vector differences (MMVD) that includes a motion vector expression providing information about a distance between a motion candidate and a starting point; and
 - performing a conversion based on the current video block and a coded representation based on the determining,
 - wherein the conversion is performed using a prediction block for the current video block calculated using a half-pel interpolation filter that is selected according to a first rule that defines a first condition under which the half-pel interpolation filter is an alternative half-pel interpolation filter that is different from a default half-pel interpolation filter and a second rule that defines a second condition about whether the alternative half-pel interpolation filter is inherited.
11. The method of claim 10, wherein the second rule specifies to inherit the alternative half-pel interpolation filter in case that the distance has either an X-pel accuracy or a coarser accuracy than the X-pel accuracy.
12. The method of claim 11, wherein X is 1/2 and the coarser accuracy is 1, 2, or 4.

13. The method of claim 10, wherein the second rule specifies not to inherit the alternative half-pel interpolation filter in case that the distance has either an X-pel accuracy or a finer accuracy than the X-pel accuracy.
14. The method of claim 13, wherein X is 1/4 and the finer accuracy is 1/16.
15. A method for video processing, comprising:
determining a coding mode used in a current video region of a video;
making, based on the coding mode, a determination about a precision used for representing a motion vector or a motion vector difference value for the current video region; and
performing a conversion between the current video block and a coded representation of the video.
16. The method of claim 15, wherein the making of the determination includes determining whether to inherit the precision.
17. The method of claim 15, wherein in case that the precision is not inherited, the method further includes storing the precision.
18. The method of claim 15, wherein due to the determination that the precision is inherited, the conversion comprises coding the current video region into the coded representation without directly signaling the precision.
19. The method of claim 15, wherein due to the determination that the precision is not inherited, the conversion comprises coding the current video region into the coded representation by signaling the precision.
20. The method of claim 15, wherein the video region corresponds to a video block, coding unit, or a prediction unit.

21. The method of claim 15, wherein the video region corresponds to a coding unit.
22. The method of claim 15, wherein the video region corresponds to a prediction unit.
23. The method of claim 15, wherein the coding mode corresponds to an advanced motion vector prediction (AMVP) mode, an affine inter mode, a merge mode, and/or affine merge mode in which motion candidates are derived from spatial and temporal neighboring blocks.
24. The method of claim 15, wherein, for a candidate derived from a neighboring block, a precision used for representing a motion vector or a motion vector difference value used for the neighboring block is inherited.
25. The method of claim 15, wherein, for a pair-wise merge candidate associated with two spatial merge candidates that are with a same precision, the same precision is allocated to the pair-wise merge candidate, and otherwise, a fixed motion precision information is allocated to the pair-wise merge candidate.
26. The method of claim 15, wherein, for a temporal merge candidate, a fixed precision is allocated.
27. The method of claim 15, further comprising:
maintaining, prior to the coding of the current video region or generating of the decoded representation, at least one history-based motion vector prediction (HMVP) table, wherein the HMVP table includes one or more entries corresponding to motion information of one or more previously processed blocks, and
wherein the precision is stored in the HMVP table and inherited by a HMVP merge candidate.

28. The method of claim 15, wherein for the current video region coded in a merge mode with motion vector differences (MMVD) in which motion information is updated with motion vector difference, a precision of a base merge candidate is inherited.
29. The method of claim 15 or 16, wherein the precision that has been determined as inherited is used to predict a precision of a subsequent video region.
30. The method of claim 15, wherein a motion vector of a video block coded in a merge mode is rounded to the precision of the current video region.
31. A method for video processing, comprising:
determining a coding mode of a current video block of a video as a merge mode with motion vector differences (MMVD);
determining, for the current video block, a distance table that specifies a relationship between a distance index and a predefined offset, based on motion precision information of a base merge candidate associated with the current video block; and
performing a conversion between the current video block and a coded representation of the video using the distance table.
32. The method of claim 31, wherein a distance with $1/N$ -pel precision or coarser precision than $1/N$ -pel is used in case that the base merge candidate has $1/N$ -pel precision, whereby N is a positive integer.
33. The method of claim 31, wherein N is 2 and the distance is $1/2$ -pel, 1-pel, or 2-pel.
34. The method of claim 31, wherein a distance table including a fractional distance is modified based on the motion precision information of the base merge candidate.
35. The method of claim 34, wherein a flag is signaled to indicate whether the fractional distance is allowed for the MMVD mode.

36. The method of claim 34, wherein a distance in the distance table is multiplied by M/N , in case that the base merge candidate has $1/N$ -pel precision and a finest motion vector difference precision of the distance table has $1/M$ -pel accuracy, whereby N and M are positive integers.
37. A method for video processing, comprising:
making a first determination that a motion vector difference used in a decoder side motion vector refinement (DMVR) calculation for a first video region had a resolution finer than X -pel resolution and was determined using an alternative half-pel interpolation filter, wherein X is an integer fraction;
making a second determination, due to the first determination, that information of the alternative half-pel interpolation filter associated with the first video region is not to be stored or made available to a second video region that is subsequently processed; and
performing a conversion between a video comprising the first video region and the second video region and a coded representation of the video based on the first determination and the second determination.
38. The method of claim 37, wherein the video region corresponds to a video block, a coding unit, or a prediction unit.
39. The method of claim 37, wherein the second determination is made for each sub-block of the video in case that the a DMVR is performed at a sub-block level.
40. The method of claim 37, wherein the motion vector difference has the resolution finer than X -pel resolution for at least N of sub-blocks or blocks of the video.
41. A method for video processing, comprising:
determining, whether an alternative half-pel interpolation filter is available for a current video block of a video, according to a rule;

performing a conversion between the current video block and a coded representation of the video based on the determining;

wherein the rule specifies that, in case that the current video block is coded in the coded representation as a merge block or a skip coded block, the determining is independent of whether the alternative half-pel interpolation filter is used for processing a previous block that is encoded or decode prior to the current video block.

42. The method of claim 41, wherein a parameter identifying whether the alternative half-pel interpolation filter is used for the conversion is not stored for any block of the video.

43. The method of claim 41, wherein whether to inherit or discard the alternative half-pel interpolation filter depends on coding information, and/or coding tools enabled or disabled in the current video block.

44. A method for video processing, comprising:

determining, whether an alternative half-pel interpolation filter is available for a current video block of a video, according to a rule; and

performing a conversion between the current video block and a coded representation of the video based on the determining,

wherein the rule specifies an applicability of the alternative half-pel interpolation filter that is different from a default interpolation filter based on coding information of the current video block.

45. The method of claim 44, wherein the current video block is coded in the coded representation as a merge block or a skip coded block.

46. The method of claim 44, wherein in case that the coded representation includes a merge index that is equal to K, the alternative half-pel interpolation filter is applied in the current video block coded in a merge or skip mode, whereby K is a positive integer.

47. The method of claim 44, wherein in case that the coded representation includes a merge index, $Idx \% S$ is equal to K , the alternative half-pel interpolation filter is applied in the current video block coded in a merge or skip mode, whereby S and K are positive integers.
48. The method of claim 44, wherein the alternative half-pel interpolation filter is applied to a specific merge candidate.
49. The method of claim 48, wherein the specific merge candidate corresponds to a pair-wise merge candidate.
50. A method for video processing, comprising:
determining, for a current video block of a video, coefficients of an alternative half-pel interpolation filter according to a rule; and
performing a conversion between the current video block and a coded representation of the video based on the determining,
wherein the rule specifies a relationship between the alternative half-pel interpolation filter and a half-pel interpolation filter used in a certain coding mode.
51. The method of claim 50, wherein the rule specifies that the alternative half-pel interpolation filter is aligned with the half-pel interpolation filter used in an affine inter-prediction.
52. The method of claim 51, wherein the alternative interpolation filter has a coefficient set that is $[3, -11, 40, 40, -11, 3]$.
53. The method of claim 51, wherein the alternative interpolation filter has a coefficient set that is $[3, 9, 20, 20, 9, 3]$.
54. The method of claim 50, wherein the rule specifies that the alternative half-pel interpolation filter is identical to the half-pel interpolation filter used in chroma inter-prediction.

55. The method of claim 54, wherein the alternative interpolation filter has a coefficient set that is [-4, 36, 36, -4].
56. A method for video processing, comprising:
applying, for a conversion between a current video block of a video and a coded representation of the video, an alternative half-pel interpolation filter according to a rule; and
performing a conversion between the current video block and the coded representation of the video, and
wherein the rule specifies that the alternative interpolation filter is applied to a position at X-pel, wherein X is other than 1/2.
57. The method of claim 56, wherein use of the alternative interpolation filter is explicitly or implicitly indicated.
58. The method of claim 57, wherein the alternative interpolation filter has at least one coefficient different from coefficients of a default interpolation filter that has been assigned to the position at X-pel.
59. The method of claim 56, wherein the applying of the alternative half-pel interpolation filter is performed after decoder-side motion vector refinement (DMVR), or merge mode with motion vector differences (MMVD), or symmetric motion vector differences (SMVD), or other decoder side motion derivation process.
60. The method of claim 56, wherein the applying of the alternative half-pel interpolation filter is performed in case that a reference picture resampling (RPR) is used for and that a reference picture has a different resolution from that of a current picture including the current video block.
61. The method of any of claims 56 to 60, wherein the alternative half-pel interpolation filter is applied only to one prediction direction in case that the current video block uses a bi-prediction.

62. A method for video processing:
making a first determination that an alternative interpolation filter is selected by a first video block of a video for a first motion vector component with a X-pel accuracy;
making a second determination, due to the first determination, that another alternative interpolation filter is used for a second motion vector component with an accuracy that is different from the X-pel accuracy, wherein X is an integer fraction; and
performing a conversion between the video comprising the first video block and the second video block and a coded representation of the video.
63. The method of claim 62, wherein the alternative interpolation filter and the another alternative interpolation filter correspond to Gaussian interpolation filters.
64. The method of claim 62, wherein the alternative interpolation filter and the another alternative interpolation filter correspond to Flattop interpolation filters.
65. The method of claim 62, wherein the second motion vector component has the accuracy that is finer than the X-pel accuracy.
66. The method of claim 62, wherein the second motion vector component has the accuracy that is coarser than the X-pel accuracy.
67. The method of any of claims 1 to 66, wherein the performing of the conversion includes generating the coded representation from the current video block.
68. The method of any of claims 1 to 66, wherein the performing of the conversion includes generating the current video block from the coded representation.
69. An apparatus in a video system comprising a processor and a non-transitory memory with instructions thereon, wherein the instructions upon execution by the processor, cause the processor to implement the method in any one of claims 1 to 68.

70. A computer program product stored on a non-transitory computer readable media, the computer program product including program code for carrying out the method in any one of claims 1 to 68.