CLAIMS

1. A method of decoding comprising:

generating, by a video decoder, a first-in, first-out (FIFO) motion vector predictor (MVP) candidate list buffer, wherein generating the FIFO MVP candidate list buffer comprises:

determining, by the video decoder, motion information of a block of a current picture decoded before a current block of the current picture, wherein the motion information of the block includes a motion vector and a reference index; and

updating, by the video decoder, the FIFO MVP candidate list buffer to remove an earlier-added MVP candidate from the FIFO MVP candidate list buffer and to add the motion information of the block as an MVP candidate to the FIFO MVP candidate list buffer;

determining, by the video decoder, from among MVP candidates in the FIFO MVP candidate list buffer, an MVP for the current block,

wherein the MVP candidates in the FIFO MVP candidate list buffer include motion information of at least one non-adjacent block of the current picture that is non-adjacent to the current block;

determining, by the video decoder, based on the MVP for the current block, a motion vector of the current block;

determining, by the video decoder, a predictive block based on the motion vector of the current block; and

reconstructing, by the video decoder, based on the predictive block, sample values of the current block of the current picture.

2. The method of claim 1, wherein the MVP for the current block is in affine mode.

3. The method of claim 1, wherein determining the motion vector of the current block comprises:

determining, by the video decoder, the motion vector of the current block such that the motion vector of the current block specifies a motion vector of the MVP for the current block, or such that the motion vector of the current block is equal to a motion vector of motion information of the MVP for the current block plus a motion vector difference (MVD).

4. The method of claim 1, further comprising:

determining, by the video decoder, a set of coding unit (CU)-level frame-rate up conversion (FRUC) motion vector candidates;

selecting, by the video decoder, a CU-level FRUC motion vector candidate from the set of CU-level FRUC motion vector candidates;

determining, by the video decoder, a CU-level motion vector at least in part by performing a local search starting from the selected CU-level FRUC motion vector candidate; and

refining, by the video decoder, the CU-level motion vector at a sub-CU level with a set of FRUC sub-CU level motion vector candidates,

wherein at least one of the set of CU-level FRUC motion vector candidates and the set of FRUC sub-CU level motion vector candidates includes a non-adjacent spatial motion vector predictor (NA-SMVP) that specifies the motion vector of the non-adjacent block.

5. A method of encoding comprising:

generating, by a video encoder, a first-in, first-out (FIFO) motion vector predictor (MVP) candidate list buffer, wherein generating the FIFO MVP candidate list buffer comprises:

determining, by the video encoder, motion information of a block of a current picture encoded before a current block of the current picture, wherein the motion information of the block includes a motion vector and a reference index; and

updating, by the video encoder, the FIFO MVP candidate list buffer to remove an earlier-added MVP candidate from the FIFO MVP candidate list buffer and to add the motion information of the block as an MVP candidate to the FIFO MVP candidate list buffer;

determining, by the video encoder, from among the MVP candidates in the FIFO MVP candidate list buffer, an MVP for the current block,

wherein the MVP candidates in the FIFO MVP candidate list buffer include at least one non-adjacent block of the current picture that is non-adjacent to the current block;

determining, by the video encoder, based on the MVP for the current block, a motion vector for the current block;

determining, by the video encoder, a predictive block based on the motion vector of the current block; and

generating, by the video encoder, based on the predictive block, residual sample values.

6. The method of claim 5, wherein the MVP for the current block is in affine mode.

7. The method of claim 5, further comprising:

determining, by the video encoder, a set of coding unit (CU)-level frame-rate up conversion (FRUC) motion vector candidates;

selecting, by the video encoder, a CU-level FRUC motion vector candidate from the set of CU-level FRUC motion vector candidates;

determining, by the video encoder, a CU-level motion vector at least in part by performing a local search starting from the selected CU-level FRUC motion vector candidate; and

refining, by the video encoder, the CU-level motion vector at a sub-CU level with a set of FRUC sub-CU level motion vector candidates,

wherein at least one of the set of CU-level FRUC motion vector candidates and the set of FRUC sub-CU level motion vector candidates includes a non-adjacent spatial motion vector predictor (NA-SMVP) that specifies the motion vector of the non-adjacent block.

8. An apparatus for decoding, the apparatus comprising:

one or more storage media; and

one or more processors implemented in circuitry, the one or more processors configured to:

generate a first-in, first-out (FIFO) motion vector predictor (MVP) candidate list buffer,

wherein the one or more storage media are configured to store the FIFO MVP candidate list buffer and the one or more processors are configured, as part of generating the FIFO MVP candidate list buffer, to:

determine motion information of a block of a current picture decoded before a current block of the current picture, wherein the motion information of the block includes a motion vector and a reference index; and

update the FIFO MVP candidate list buffer to remove an earlier-added MVP candidate from the FIFO MVP candidate list buffer and to add the motion information of the block as an MVP candidate to the FIFO MVP candidate list buffer;

determine, from among MVP candidates in the FIFO MVP candidate list buffer, an MVP for the current block,

wherein the MVP candidates in the FIFO MVP candidate list buffer include motion information of at least one non-adjacent block of the current picture that is non-adjacent to the current block;

determine, based on the MVP for the current block, a motion vector of the current block;

determine a predictive block based on the motion vector of the current block; and

reconstruct, based on the predictive block, sample values of the current block of the current picture.

9. The apparatus of claim 8, wherein the MVP for the current block is in affine mode.

10. The apparatus of claim 8, wherein the one or more processors are configured to, as part of determining the motion vector of the current block:

determine the motion vector of the current block such that the motion vector of the current block specifies a motion vector of the MVP for the current block, or such that the motion vector of the current block is equal to a motion vector of motion information of the MVP for the current block plus a motion vector difference (MVD).

11. The apparatus of claim 8, wherein the one or more processors are further configured to:

determine a set of coding unit (CU)-level frame-rate up conversion (FRUC) motion vector candidates;

select a CU-level FRUC motion vector candidate from the set of CU-level FRUC motion vector candidates;

determine a CU-level motion vector at least in part by performing a local search starting from the selected CU-level FRUC motion vector candidate; and

refine the CU-level motion vector at a sub-CU level with a set of FRUC sub-CU level motion vector candidates,

wherein at least one of the set of CU-level FRUC motion vector candidates and the set of FRUC sub-CU level motion vector candidates includes a non-adjacent spatial motion vector predictor (NA-SMVP) that specifies the motion vector of the non-adjacent block.

12. An apparatus for encoding, the apparatus comprising:

one or more storage media; and

one or more processors implemented in circuitry, the one or more processors configured to:

generate a first-in, first-out (FIFO) motion vector predictor (MVP) candidate list buffer,

wherein the one or more storage media are configured to store the FIFO MVP candidate list buffer and the one or more processors are configured, as part of generating the FIFO MVP candidate list buffer, to:

determine motion information of a block of a current picture encoded before a current block of the current picture, wherein the motion information of the block includes a motion vector and a reference index; and

update the FIFO MVP candidate list buffer to remove an earlier-added MVP candidate from the FIFO MVP candidate list buffer and to add the motion information of the block as an MVP candidate to the FIFO MVP candidate list buffer;

determine from among the MVP candidates in the FIFO MVP candidate list buffer, an MVP for the current block,

wherein the MVP candidates in the FIFO MVP candidate list buffer include at least one non-adjacent block of the current picture that is non-adjacent to the current block;

determine, based on the MVP for the current block, a motion vector for the current block;

determine a predictive block based on the motion vector of the current block; and

generate, based on the predictive block, residual sample values.

13. The apparatus of claim 12, wherein the MVP for the current block is in affine mode.

14. The apparatus of claim 12, wherein the one or more processors are further configured to:

determine a set of coding unit (CU)-level frame-rate up conversion (FRUC) motion vector candidates;

select a CU-level FRUC motion vector candidate from the set of CU-level FRUC motion vector candidates;

determine a CU-level motion vector at least in part by performing a local search starting from the selected CU-level FRUC motion vector candidate; and

refine the CU-level motion vector at a sub-CU level with a set of FRUC sub-CU level motion vector candidates,

wherein at least one of the set of CU-level FRUC motion vector candidates and the set of FRUC sub-CU level motion vector candidates includes a non-adjacent spatial motion vector predictor (NA-SMVP) that specifies the motion vector of the non-adjacent block.