

CLAIMS

1. An apparatus for decoding compressed video, comprising:
 - decoder circuitry to access a decoded picture, the decoded picture comprising one of a plurality of pictures of a first layer of scalable video content, the decoded picture comprising a plurality of pixel samples;
 - the decoder circuitry to perform inter layer prediction for a current picture based at least in part on at least some of the plurality of pixel samples of the decoded picture, wherein the current picture comprises one of a plurality of pictures of a second layer of the scalable video content, wherein the second layer is different than the first layer, and wherein to perform inter layer prediction for the current picture, the decoder circuitry is to apply a multi-tap poly-phase interpolation filter to the pixel samples of the decoded picture.
2. The apparatus of claim 1, further comprising wherein the decoder circuitry is to perform inter layer prediction for the current picture in response to an indicator conveyed to the decoder circuitry in a bitstream syntax associated with the scalable video content.
3. The apparatus of claim 1, further comprising wherein the multi-tap poly-phase interpolation filter comprises a plurality of interpolation filter coefficients, and wherein the interpolation filter coefficients have been conveyed to the decoder circuitry in a bitstream syntax associated with the scalable video content.
4. The apparatus of claim 1, wherein the first layer of the scalable video content comprises a base layer, wherein the second layer of the scalable video content comprises an enhancement layer, and wherein the scalable video content comprises at least one of temporal, spatial, or quality scalable video content.
5. A system comprising the apparatus in any of the preceding claims and further comprising at least one of memory to store the at least one decoded picture, a display to display the scalable video content, or an antenna to receive a bitstream conveying the scalable video content.

6. A computer-implemented method of decoding compressed video, comprising:
 - accessing a decoded picture in memory, the decoded picture comprising one of a plurality of pictures of a first layer of scalable video content, the decoded picture comprising a plurality of pixel samples;
 - at decoder circuitry, performing inter layer prediction for a current picture based at least in part on at least some of the plurality of pixel samples of the decoded picture, wherein the current picture comprises one of a plurality of pictures of a second layer of the scalable video content, wherein the second layer is different than the first layer, and wherein performing inter layer prediction for the current picture comprises applying a multi-tap poly-phase interpolation filter to the pixel samples of the decoded picture.
7. The method of claim 6, further comprising performing inter layer prediction for the current picture in response to an indicator conveyed to the decoder circuitry in a bitstream syntax associated with the scalable video content.
8. The method of claim 6, further comprising wherein the multi-tap poly-phase interpolation filter comprises a plurality of interpolation filter coefficients, and wherein the method further comprises receiving the interpolation filter coefficients at the decoder circuitry in a bitstream syntax associated with the scalable video content.
9. An apparatus comprising means to perform a method as claimed in any of claims 6-8.
10. Machine-readable storage including machine-readable instructions, when executed, to implement a method or realize an apparatus as claimed in any preceding claim.

Claims

1. A method, comprising:
at an enhancement layer (EL) video decoder:
determining a predicted pixel of a block of an EL frame based, at least in part, on a pixel sample obtained from at least one of a lower EL frame or a base layer (BL) frame,
wherein the pixel sample corresponds to one or more co-located blocks of the lower EL frame or the BL frame,
wherein the one or more co-located blocks of the base layer frame comprise at least one of intra coded blocks, inter coded blocks, or hybrid intra/inter coded blocks.
2. The method of claim 1, further comprising accessing the pixel sample in memory.
3. The method of claim 1, wherein the EL frame comprises at least one of a temporal, spatial or quality EL frame.
4. The method of claim 1, wherein determining the predicted pixel comprises determining the predicted pixel on at least one of a slice, a picture, or a layer level.
5. The method of claim 1, wherein the block comprises one of a Coding Unit (CU), Prediction Unit (PU), or a Transform Unit (TU).
6. The method of claim 1, wherein determining a predicted pixel comprises determining a predicted pixel in response to an indicator included in a bitstream received at the EL video decoder.
7. The method of claim 6, wherein, in a first state, the indicator specifies that the EL video decoder is to perform inter-layer pixel prediction, and wherein, in a second state, the indicator specifies that the EL video decoder is to not to perform inter-layer pixel prediction.
8. The method of claim 7, wherein the indicator has been placed in one of the first state or the second state in response to a rate-distortion cost.
9. The method of claim 1, further comprising applying an upsample filter to the pixel sample prior to determining the predicted pixel.

10. The method of claim 9, wherein the upsample filter comprises one of fixed upsample coefficients or adaptive upsample coefficients.
11. The method of claim 1, further comprising applying a refining filter to the pixel sample prior to determining the predicted pixel.
12. The method of claim 11, wherein the refining filter comprises one of fixed refining coefficients or adaptive refining coefficients.
13. The method of claim 1, wherein determining the predicted pixel comprises determining the predicted pixel in response, at least in part, to the pixel sample and to a residual.
14. At least one machine-readable medium comprising a plurality of instructions that in response to being executed on a computing device, cause the computing device to carry out a method according to any one of claims 1 to 13.
15. An apparatus, when operational, configured to perform a method according to any one of claims 1 to 13.
16. An apparatus comprising means for performing any one of the method of claims 1 to 13.
17. A method, comprising:
 - at an enhancement layer (EL) video encoder:
 - determining a predicted pixel of a block of an EL frame in response, at least in part, to a pixel sample obtained from at least one of a lower EL frame or a base layer (BL) frame,
 - wherein the pixel sample corresponds to one or more co-located blocks of the lower EL frame or the BL frame,
 - wherein the one or more co-located blocks of the base layer frame comprise at least one of intra coded blocks, inter coded blocks, or hybrid intra/inter coded blocks.
18. The method of claim 17, further comprising accessing the pixel sample in memory.
19. The method of claim 17, further comprising:
 - entropy encoding the EL frame after determining the predicted pixel; and
 - generating a bitstream that includes the entropy encoded EL frame.

20. The method of claim 19, wherein the entropy encoded EL frame includes a residual.
21. The method of claim 19, further comprising:
generating an indicator, wherein, in a first state, the indicator specifies that inter-layer pixel prediction is to be performed for the block, and wherein, in a second state, the indicator specifies that inter-layer pixel prediction is not to be performed for the block; and
including the indicator in the bitstream.
22. The method of claim 21 further comprising:
placing the indicator in one of the first state or the second state in response to a rate-distortion cost.
23. The method of claim 17, wherein the EL frame comprises at least one of a temporal, spatial or quality EL frame.
24. The method of claim 17, wherein determining a predicted pixel comprises determining a predicted pixel on at least one of a slice, a picture, or a layer level.
25. The method of claim 17, wherein the block comprises one of a Coding Unit (CU), Prediction Unit (PU), or a Transform Unit (TU).
26. The method of claim 17, further comprising applying an upsample filter to the pixel sample prior to determining the predicted pixel.
27. The method of claim 26, wherein the upsample filter comprises one of fixed upsample coefficients or adaptive upsample coefficients.
28. The method of claim 17, further comprising applying a refining filter to the pixel sample prior to determining the predicted pixel.
29. The method of claim 28, wherein the refining filter comprises one of fixed refining coefficients or adaptive refining coefficients.
30. The method of claim 17, wherein determining the predicted pixel comprises determining the predicted pixel in response, at least in part, to the pixel sample and to a residual.

31. At least one machine-readable medium comprising a plurality of instructions that in response to being executed on a computing device, cause the computing device to carry out a method according to any one of claims 17 to 30.
32. An apparatus, when operational, configured to perform a method according to any one of claims 17 to 30.
33. An apparatus comprising means for performing any one of the method of claims 17 to 30.