

~~WHAT IS CLAIMED IS:~~

CLAIMS

1. A method of decoding video data, the method comprising:
 - ~~—— determining whether a condition is true~~ an intra mode difference for a ~~first~~ block of a current picture of the video data;
 - ~~—— based on the condition being true for the first block, applying a non-smoothing interpolation filter to unfiltered reference samples of the first block to generate predictive samples of the first block;~~
 - ~~—— determining whether the condition is true for a second block of the current picture;~~
 - ~~based on the condition being false for the second block, applying a smoothing interpolation filter to unfiltered reference samples of the second block to generate predictive samples of the second block;~~
 - ~~—— reconstructing the first block based on the predictive samples of the first block; and~~
 - ~~—— reconstructing the second block based on the predictive samples of the second block.~~
2. ~~The method of claim 1, wherein:~~
 - ~~the method further comprises:~~
 - ~~determining an intra mode difference for the first block, wherein determining the intra mode difference for the first block comprises determining the intra mode difference for the first block as a minimum of: (1) an absolute value of a difference between an intra mode index for the first block and an intra mode index of a horizontal intra prediction mode, and (2) an absolute value of a difference between the intra mode index for the first block and an intra mode index of a vertical intra prediction mode; and~~
 - ~~—— determining an, based at least in part on a comparison of the intra mode difference for the second block~~ block and a threshold, which one of a non-smoothing interpolation filter and a smoothing interpolation filter to apply to unfiltered reference samples of the block;
 - ~~—— based on the determination, applying the non-smoothing interpolation filter or the smoothing interpolation filter to the unfiltered reference samples of the block to generate predictive samples of the block; and~~
 - ~~—— reconstructing the block based on the predictive samples of the block.~~
2. The method of claim 1, wherein determining which one of the non-smoothing

interpolation filter and the smoothing interpolation filter to apply to the unfiltered reference samples of the block comprises determining, based on the comparison of the intra mode difference for the second block comprises determining the intra mode difference for the second block as a minimum of: (1) an absolute value of a difference between an intra mode index for the second block and the intra mode index of the horizontal intra prediction mode, and (2) an absolute value of a difference between the intra mode index for the second block and the intra mode index of the vertical intra prediction mode, block and the threshold and based on one or more additional conditions, which one of the non-smoothing interpolation filter and the smoothing interpolation filter to apply to the unfiltered reference samples of the block.

~~—determining whether the condition is true for the first block comprises determining whether the condition is true for the first block based at least in part on whether the intra mode difference for the first block is greater than a threshold;~~

~~—determining whether the condition is true for the second block comprises determining whether the condition is true for the second block based at least in part on whether the intra mode difference for the second block is less than the threshold.~~

3. The method of claim 2, wherein:

~~—determining whether the condition is true for the first block further comprises determining, based on one or more additional conditions, whether the condition is true for the first block, and~~

~~—determining whether the condition is true for the second block further comprises determining, based on the one or more additional conditions, whether the condition is true for the second block.~~

4. ~~The method of claim 3, wherein the one or more additional conditions include one or more of: dependencies on luma or chroma, usage of a position dependent intra prediction combination tool, and/or usage of a non-separable secondary transform.~~

4. The method of claim 1, wherein:

determining which one of the non-smoothing interpolation filter and the smoothing interpolation filter to apply to the unfiltered reference samples of the block comprises determining based on the comparison of the intra mode difference for the block and the threshold and based on a property of interpolation filters used in one or more neighboring blocks of the block, which one of the non-smoothing interpolation filter and the smoothing interpolation filter

to apply to the unfiltered reference samples of the block.

5. The method of claim 1, wherein:

determining ~~whether~~which one of the condition is true for~~non-smoothing interpolation filter and the first smoothing interpolation filter to apply to the unfiltered reference samples of the block comprises determining whether the condition is true for the first block based at least in part on a property of interpolation filters used in one or more neighboring blocks of the first block, and~~

~~—determining whether the comparison of the condition is true~~intra mode difference ~~for the second block comprises determining whether and the condition is true for the second block threshold and based at least in part on a property of interpolation filters used in one or more neighboring blocks of the second block.~~

6. ~~The method of claim 1, wherein:~~

~~—determining whether the condition is true for the first block comprises determining whether the condition is true for the first block based at least in part on whether bidirectional intra prediction coding is applied for the first block, and~~block, which one of the non-smoothing interpolation filter and the smoothing interpolation filter to apply to the unfiltered reference samples of the block.

~~—determining whether the condition is true for the second block comprises determining whether the condition is true for the second block based at least in part on whether bidirectional intra prediction coding is applied for the second block.~~

76. The method of claim 1, wherein the smoothing interpolation filter is a Gaussian interpolation filter and the non-smoothing interpolation filter is a cubic interpolation filter.

87. A method of encoding video data, the method comprising:

~~—determining whether a condition is true~~an intra mode difference ~~for a first block of a current picture of the video data;~~

~~—based on the condition being true for the first block, applying a non-smoothing interpolation filter to unfiltered reference samples of the first block to generate predictive samples of the first block;~~

~~—determining whether the condition is true for a second block of the current picture;~~

———based on the condition being false for the second block, applying a smoothing interpolation filter to unfiltered reference samples of the second block to generate predictive samples of the second block;

———generating residual data for the first block based on the predictive samples of the first block;

———generating residual data for the second block based on the predictive samples of the second block; and

———including, in a bitstream that includes an encoded representation of the video data, data representing the residual data for the first block and the residual data for the second block.

9. The method of claim 8,
the method further comprises:

 determining an intra mode difference for the first block, wherein determining the intra mode difference for the first block comprises determining the intra mode difference for the first block as a minimum of: (1) an absolute value of a difference between an intra mode index for the first block and an intra mode index of a horizontal intra prediction mode, and (2) an absolute value of a difference between the intra mode index for the first block and an intra mode index of a vertical intra prediction mode; and

 determining an intra mode difference for the second block, wherein determining the intra mode difference for the second block comprises determining the intra mode difference for the second block as a minimum of: (1) an absolute value of a difference between an intra mode index for the second block and the intra mode index of the horizontal intra prediction mode, and (2) an absolute value of a difference between the intra mode index for the second block and the intra mode index of the vertical intra prediction mode;

 determining whether the condition is true for the first block comprises determining whether the condition is true for the first block, based at least in part on whether a comparison of the intra mode difference for the first block is greater than and a threshold, which one of a non-smoothing interpolation filter and a smoothing interpolation filter to apply to unfiltered reference samples of the block;

———determining whether based on the determination, applying the non-smoothing interpolation filter or the smoothing interpolation filter to the condition is true for unfiltered reference samples of the second block to generate predictive samples of the block comprises determining whether the condition is true; and

———generating residual data for the second block based at least in part on whether on the intra mode difference for predictive samples of the second block is less than the threshold.

408. The method of claim 87, wherein the smoothing interpolation filter is a Gaussian interpolation filter and the non-smoothing interpolation filter is a cubic interpolation filter.

449. A device for encoding or decoding video data, the device comprising:

a memory storing the video data; and

one or more processors configured to:

———determine ~~whether a condition is true~~an intra mode difference for a block of a current picture of the video data;

———~~based on the condition being true for the block, apply a non-smoothing interpolation filter to unfiltered reference samples of the block to generate predictive samples of the block; and~~

———~~based on the condition being false for the block, apply a smoothing interpolation filter to the unfiltered reference samples of the block to generate the predictive samples of the block.~~

12. ~~The device of claim 11, wherein:~~

———~~the one or more processors are further configured to determine an intra mode difference for the block, and~~

———~~determine whether the condition is true for the block based at least in part on whether determining the intra mode difference for the block is greater than a threshold.~~

13. ~~The device of claim 12, wherein the one or more processors are configured to determine~~comprises determining the intra mode difference for the block as a minimum of: (1) an absolute value of a difference between an intra mode index for the block and an intra mode index of a horizontal intra prediction mode, and (2) an absolute value of a difference between the intra mode index for the block and an intra mode index of a vertical intra prediction mode;

———determine, based at least in part on a comparison of the intra mode difference for the block and a threshold, which one of a non-smoothing interpolation filter and a smoothing interpolation filter to apply to unfiltered reference samples of the block; and

———based on the determination, apply the non-smoothing interpolation filter or the smoothing interpolation filter to the unfiltered reference samples of the block to generate predictive samples of the block.

~~1410.~~ The device of claim ~~129~~, wherein the one or more processors are configured to determine, based on one or more additional conditions, whether the condition is true for which one of the non-smoothing interpolation filter and the smoothing interpolation filter to apply to the unfiltered reference samples of the block.

~~1511.~~ The device of claim ~~1410~~, wherein the one or more additional conditions include one or more of: dependencies on luma or chroma, usage of a position dependent intra prediction combination tool, ~~and~~ usage of a non-separable secondary transform.

~~1612.~~ The device of claim ~~149~~, wherein the one or more processors are configured to, as part of determining which one of the non-smoothing interpolation filter and the smoothing interpolation filter to apply to the unfiltered reference samples of the block, ~~determine whether the condition is true,~~ based on the comparison of the intra mode difference for the block and the threshold and based at least in part on a property of interpolation filters used in one or more neighboring blocks of the block, which one of the non-smoothing interpolation filter and the smoothing interpolation filter to apply to the unfiltered reference samples of the block.

~~1713.~~ The device of claim ~~149~~, wherein the one or more processors are configured to, as part of determining which one of the non-smoothing interpolation filter and the smoothing interpolation filter to apply to the unfiltered reference samples of the block, ~~determine whether the condition is true,~~ based on the comparison of the intra mode difference for the block and the threshold and based at least in part on whether bidirectional intra prediction coding is applied for the block, which one of the non-smoothing interpolation filter and the smoothing interpolation filter to apply to the unfiltered reference samples of the block.

~~1814.~~ The device of claim ~~149~~, wherein the smoothing interpolation filter is a Gaussian interpolation filter and the non-smoothing interpolation filter is a cubic interpolation filter.

~~1915.~~ The device of claim ~~149~~, wherein the one or more processors are configured to reconstruct the block based on the predictive samples of the block.

~~2016.~~ The device of claim ~~149~~, wherein the one or more processors are configured to:
generate residual data for the block based on the predictive samples of the block; and
include, in a bitstream that includes an encoded representation of the video data, data
representing the residual data for the block ~~and the residual data for the block.~~

~~21-17.~~ The device of claim ~~149~~, wherein the condition is dependent on one or more of an intra
mode, a distance of a sample from a block boundary, or block dimensions.

~~2218.~~ The device of claim ~~149~~, further comprising a display configured to display decoded
video data.

~~2319.~~ The device of claim ~~149~~, wherein the device comprises one or more of a camera, a
computer, a mobile device, or a set-top box.

~~2420.~~ A device for encoding or decoding video data, the device comprising:
———means for determining ~~whether a condition is true~~ an intra mode difference for a block of
a current picture of the video data;
———~~means for applying, based on the condition being true for the block, a non-smoothing
interpolation filter to unfiltered reference samples of the block to generate predictive samples of
the block; and~~
———~~means for applying, based on the condition being false for the block, a smoothing
interpolation filter to the unfiltered reference samples of the block to generate the predictive
samples of the block.~~

~~25.~~ ~~The device of claim 24, wherein the device further comprises:~~
means for determining ~~an intra mode difference for the block, and~~
———~~means for determining whether the condition is true for the block based at least in part on
whether the intra mode difference for the block is greater than a threshold.~~

~~26.~~ ~~The device of claim 25, further comprising~~ comprises means for determining the
intra mode difference for the block as a minimum of: (1) an absolute value of a difference
between an intra mode index for the block and an intra mode index of a horizontal intra
prediction mode, and (2) an absolute value of a difference between the intra mode index for the

block and an intra mode index of a vertical intra prediction mode;

means for determining, based at least in part on a comparison of the intra mode difference for the block and a threshold, which one of a non-smoothing interpolation filter and a smoothing interpolation filter to apply to unfiltered reference samples of the block; and;

means for applying, based on the determination, the non-smoothing interpolation filter or the smoothing interpolation filter to the unfiltered reference samples of the block to generate predictive samples of the block.

2721. A non-transitory computer-readable storage medium having stored thereon instructions that, when executed, cause one or more processors to:

determine ~~whether a condition is true~~ an intra mode difference for a block of a current picture of the video data;

~~based on the condition being true for the block, apply a non-smoothing interpolation filter to unfiltered reference samples of the block to generate predictive samples of the block; and~~

~~based on the condition being false for the block, apply a smoothing interpolation filter to the unfiltered reference samples of the block to generate the predictive samples of the block.~~

28. ~~The computer-readable storage medium of claim 27, wherein the instructions, when executed, that~~ cause the one or more processors to:

~~determine an intra mode difference for the block, and~~

~~determine whether the condition is true for the block based at least in part on whether the intra mode difference for the block is greater than a threshold.~~

29. ~~The computer-readable storage medium of claim 28, wherein the~~ comprise instructions that, when executed, cause the one or more processors to determine the intra mode difference for the block as a minimum of: (1) an absolute value of a difference between an intra mode index for the block and an intra mode index of a horizontal intra prediction mode, and (2) an absolute value of a difference between the intra mode index for the block and an intra mode index of a vertical intra prediction mode;

determine, based at least in part on a comparison of the intra mode difference for the block and a threshold, which one of a non-smoothing interpolation filter and a smoothing interpolation filter to apply to unfiltered reference samples of the block; and;

based on the determination, apply the non-smoothing interpolation filter or the smoothing

interpolation filter to the unfiltered reference samples of the block to generate predictive samples of the block.