~~**Claims:**~~

CLAIMS

1.- A method of encoding or decoding video data, comprising:

~~locating at least one~~storing a plurality of reconstructed ~~sample~~samples of video data in memory;

determining ~~at least one extended angular intra prediction mode to use for intra prediction of at least one sample~~ that a height of a current block~~;~~

~~intra predicting, using the at least one extended angular intra prediction mode, at least one sample~~ and a width of the current block ~~based on the at least one reconstructed sample, extended angular intra prediction modes including angular intra prediction modes other than angular prediction modes between horizontal -45 degrees and vertical -45 degrees; and~~are not equal;

based on the determination that the height and the width of the current block are not equal, shifting, by an offset, a value indicative of an angular intra prediction mode to obtain a shifted value, the angular intra prediction mode being within a set of angular intra prediction modes;

generating a prediction block by intra predicting based on a shifted angular intra prediction mode associated with the shifted value and at least one reconstructed sample among the plurality of reconstructed samples; and

encoding or decoding the current block based on the ~~at least one predicted sample~~prediction block.

2.- The method of claim 1 wherein the ~~at least one extended angular intra prediction mode comprises at least one of an angular mode beyond horizontal -45 degrees or an angular mode beyond vertical -45 degrees.~~

~~3. The method of claim 1 further comprising determining whether the at least one extended~~shifted angular intra prediction mode is ~~available for intra~~ associated with an angular prediction direction that is different from angular prediction ~~of the current block based on a shape of the current block~~directions associated with the set of angular intra prediction modes.

3. The method of claim 1 further comprising:

based on a determination that the height of the current block is greater than the width of the current block, shifting the value indicative of the angular intra prediction mode based on a first offset, or

based on a determination that the width of the current block is greater than the height of the current block, shifting the value indicative of the angular intra prediction mode based on a second offset,

where the first offset and the second offset have different values.

4. The method of claim 1 further comprising determining whether the ~~at least one extended~~shifted angular intra prediction mode is available for intra prediction of the current block based on an availability of ~~at least one~~a reconstructed sample ~~that neighbors~~neighboring the current block.

5. The method of claim 1 further comprising intra predicting at least one of a luma component or a chroma component of the current block based on the ~~at least one extended~~shifted angular intra prediction mode.

6. The method of claim 1 further comprising ~~determining the at least one extended angular intra prediction mode in response to replacing an angular intra prediction mode between horizontal -45 degrees and vertical -45 degrees.~~:

~~7. The method of claim 1 further comprising determining the at least one extended angular intra prediction mode in response to shifting an angular intra prediction mode between horizontal -45 degrees and vertical -45 degrees within a range of angular directions of the extended angular intra prediction modes.~~

~~8. The method of claim 1 further comprising:~~

~~generating a first prediction block associated with the current block based on an angular intra prediction mode between horizontal -45 degrees and vertical -45 degrees;~~

generating a second prediction block ~~associated with~~for intra prediction of the current block based on ~~the at least one extended~~another angular intra prediction mode~~;~~ within the set of angular intra prediction modes;

determining a weighted sum of the ~~first~~ prediction block and the second prediction block;

~~generating~~ a final prediction block based on the weighted sum; and

~~predicting~~encoding or decoding the current block based on the final prediction block.

7. The method of claim 1 wherein the shifted angular intra prediction mode is associated with an angular prediction direction that is available only when the height and the width of the current block are not equal.

8. The method of claim 7 wherein the shifted angular intra prediction mode is associated with one of a first set of extended angular prediction directions that is available only when the block width is smaller than the block height.

9.- The method of claim 8 wherein the shifted angular intra prediction mode is associated with one of a second set of extended angular prediction directions that is available only when the block width is larger than the block height.

10. An apparatus configured to encode or decode video data, the apparatus comprising:

~~a~~ memory configured to store ~~at least one~~a plurality of reconstructed ~~samples~~samples of video data; and

at least one processor in communication with the memory, the at least one processor being configured to:

~~identify at least one reconstructed sample;~~

determine ~~at least one extended angular intra prediction mode to use for intra prediction of at least one sample~~that a height of a current block and a width of the current block are not equal;

~~intra predict, using the at least one extended angular intra prediction mode, at least one sample~~based on the determination that the height and the width of the current block ~~based on the~~ are not equal, shift, by an offset, a value indicative of an angular intra prediction mode to obtain a shifted value, the angular intra prediction mode being within a set of angular intra prediction modes;

generate a prediction block by intra prediction based on a shifted angular intra prediction mode associated with the shifted value and at least one reconstructed sample~~, extended angular intra prediction modes including angular intra prediction modes other than angular prediction modes between horizontal -45 degrees and vertical -45 degrees~~; and

encode or decode the current block based on the ~~at least one predicted sample~~prediction block.

~~10.~~ 11. The apparatus of claim ~~9~~10 wherein the ~~at least one extended~~shifted angular intra prediction mode ~~comprises at least one of~~ is associated with an angular ~~mode beyond horizontal -45 degrees or an~~prediction direction that is different from angular ~~mode beyond vertical -45 degrees.~~

~~11. The apparatus of claim 9 wherein~~prediction directions associated with the ~~at least one processor is further configured to determine whether the at least one extended~~ set of angular intra prediction ~~mode is available for intra prediction of the current block based on a shape of the current block~~modes.

12.~~-~~ The apparatus of claim ~~9~~10 wherein the at least one processor is further configured to:

based on a determination that the height of the current block is greater than the width of the current block, shift the value indicative of the angular intra prediction mode based on a first offset, or

based on a determination that the width of the current block is greater than the height of the current block, shift the value indicative of the angular intra prediction mode based on a second offset,

where the first offset and the second offset have different values.

13. The apparatus of claim 10 wherein the at least one processor is further configured to determine whether the ~~at least one~~shifted extended angular intra prediction mode is available for intra prediction of the current block based on an availability of ~~at least one~~a reconstructed sample ~~that neighbors~~neighboring the current block.

~~13.~~ 14. The apparatus of claim ~~9~~10 wherein the at least one processor is further configured to intra predict at least one of a luma component or a chroma component of the current block based on the ~~at least one extended~~shifted angular intra prediction mode.

~~14.~~ 15. The apparatus of claim ~~9~~10 wherein the at least one processor is further configured to~~ determine the at least one extended angular intra prediction mode in response to a replacement of an angular intra prediction mode between horizontal -45 degrees and vertical -45 degrees.~~:

~~15. The apparatus of claim 9 wherein the at least one processor is further configured to determine the at least one extended angular intra prediction mode in response to a shift of an angular intra prediction mode between horizontal -45 degrees and vertical -45 degrees to be within a range of angular directions of the extended angular intra prediction modes.~~

~~16. The apparatus of claim 9 wherein the at least one processor is further configured to:~~

~~generate a first prediction block associated with the current block based on an angular intra prediction mode between horizontal -45 degrees and vertical -45 degrees;~~

generate a second prediction block ~~associated with~~for intra prediction of the current block based on ~~the at least one extended~~another angular intra prediction mode~~;~~ within the set of angular intra prediction modes;

determine a weighted sum of the ~~first~~ prediction block and the second prediction block;

~~———————~~generate a final prediction block based on the weighted sum; and

~~———————predict~~encode or decode the current block based on the final

prediction block.

16. The apparatus of claim 10 wherein the shifted angular intra prediction mode is associated with an angular prediction direction that is available only when the height and the width of the current block are not equal.

17. The apparatus of claim 16 wherein the shifted angular intra prediction mode is associated with one of a first set of extended angular prediction directions that is available only when the block width is smaller than the block height.

18. The apparatus of claim 17 wherein the shifted angular intra prediction mode is associated with one of a second set of extended angular prediction directions that is available only when the block width is larger than the block height.

~~17.~~ 19. An apparatus configured to encode or decode video data, the apparatus comprising:

means for storing ~~at least one~~ a plurality of reconstructed ~~sample~~samples of video data;

~~means for identifying at least one reconstructed sample;~~

means for determining ~~at least one extended angular intra prediction mode to use for intra prediction of at least one sample~~that a height of a current block~~;~~

~~means for intra predicting, using the at least one extended angular intra prediction mode, at least one sample~~ and a width of the current block ~~based on the at least one reconstructed sample, extended angular intra prediction modes including angular intra prediction modes other than angular prediction modes between horizontal -45 degrees and vertical -45 degrees; and~~are not equal;

based on the determination that the height and the width of the current block are not equal, means for shifting, by an offset, a value indicative of an angular intra prediction mode to obtain a shifted value, the angular intra prediction mode being within a set of angular intra prediction modes;

means for generating a prediction block by intra predicting based on a shifted angular intra prediction mode associated with the shifted value and at least one

reconstructed sample among the plurality of reconstructed samples; and

means for encoding or decoding the current block based on the ~~at least one predicted sample~~prediction block.

~~18.~~ 20. The apparatus of claim ~~17~~19 wherein the ~~at least one extended angular intra prediction mode comprises at least one of an angular mode beyond horizontal -45 degrees or an angular mode beyond vertical -45 degrees.~~

~~19. The apparatus of claim 17 further comprising means for determining whether the at least one extended~~shifted angular intra prediction mode is ~~available for intra~~ associated with an angular prediction direction that is different from angular prediction ~~of the current block based on a shape of the current block~~directions associated with the set of angular intra prediction modes.

21. The apparatus of claim 19 further comprising:

based on a determination that the height of the current block is greater than the width of the current block, means for shifting the value indicative of the angular intra prediction mode based on a first offset, or

based on a determination that the width of the current block is greater than the height of the current block, means for shifting the value indicative of the angular intra prediction mode based on a second offset,

where the first offset and the second offset have different values.

~~20.~~ 22. The apparatus of claim ~~17~~19 further comprising means for determining whether the ~~at least one extended~~shifted angular intra prediction mode is available for intra prediction of the current block based on an availability of ~~at least one~~a reconstructed sample ~~that neighbors~~neighboring the current block.

~~21.~~ 23. The apparatus of claim ~~17~~19 further comprising means for intra predicting at least one of a luma component or a chroma component of the current block based on the ~~at~~

~~least one extended~~shifted angular intra prediction mode.

~~22.~~ 24. The apparatus of claim ~~17~~19 further comprising ~~means for determining the at least one extended angular intra prediction mode in response to a replacement of an angular intra prediction mode between horizontal -45 degrees and vertical -45 degrees.~~:

~~23. The apparatus of claim 17 further comprising means for determining the at least one extended angular intra prediction mode in response to a shift of an angular intra prediction mode between horizontal -45 degrees and vertical -45 degrees to be within a range of angular directions of the extended angular intra prediction modes.~~

~~24. The apparatus of claim 17 further comprising:~~

~~means for generating a first prediction block associated with the current block based on an angular intra prediction mode between horizontal -45 degrees and vertical -45 degrees;~~

~~———————~~means for generating a second prediction block ~~associated with~~for intra prediction of the current block based on ~~the at least one extended~~another angular intra prediction mode~~;~~ within the set of angular intra prediction modes;

~~———————~~means for determining a weighted sum of the ~~first~~ prediction block and the second prediction block;

~~———————~~means for generating a final prediction block based on the weighted sum; and

~~———————~~means for ~~predicting~~encoding or decoding the current block based on the final prediction block.

25. The apparatus of claim 19 wherein the shifted angular intra prediction mode is associated with an angular prediction direction that is available only when the height and the width of the current block are not equal.

26. The apparatus of claim 25 wherein the shifted angular intra prediction mode is associated with one of a first set of extended angular prediction directions that is available only when the block width is smaller than the block height.

27. The apparatus of claim 26 wherein the shifted angular intra prediction mode is associated with one of a second set of extended angular prediction directions that is available only when the block width is larger than the block height.

~~25.~~ 28. A computer-readable storage medium storing instructions that, when executed, causes one or more processors configured to encode or decode video data to:

~~identify at least one reconstructed sample;~~

determine ~~at least one extended angular intra prediction mode to use for intra prediction of at least one sample~~that a height of a current block and a width of the current block are not equal;

~~intra predict, using the at least one extended~~ based on the determination that the height and the width of the current block are not equal, shift, by an offset, a value indicative of an angular intra prediction mode to obtain a shifted value, the angular intra prediction mode~~, at least one sample of the current block based on the at least one reconstructed sample, extended~~ being within a set of angular intra prediction modes ~~including angular intra prediction modes other than angular prediction modes between horizontal -45 degrees and vertical -45 degrees; and~~;

generate a prediction block by intra prediction based on a shifted angular intra prediction mode associated with the shifted value and at least one reconstructed sample among the plurality of reconstructed samples; and

encode or decode the current block based on the ~~at least one predicted sample~~prediction block.

~~26.~~ 29. The computer-readable storage medium of claim ~~25~~28, further storing instructions that, when executed, cause the one or more processors configured to encode or decode the video data to ~~determine whether the at least one extended~~:

based on a determination that the height of the current block is greater than the width of the current block, shift the value indicative of the angular intra prediction mode based on a

first offset, or

based on a determination that the width of the current block is greater than the height of the current block, shift the value indicative of the angular intra prediction mode ~~is available for intra prediction of the current block based on a shape of the current block.~~based on a second offset,

where the first offset and the second offset have different values.

~~27.~~ 30. The computer-readable storage medium of claim ~~25~~28, further storing instructions that, when executed, cause the one or more processors configured to encode or decode video data to determine whether the ~~at least one extended~~shifted angular intra prediction mode is available for intra prediction of the current block based on an availability of ~~at least one~~a reconstructed sample ~~that neighbors~~neighboring the current block.

~~28.~~ 31. The computer-readable storage medium of claim ~~25~~28, further storing instructions that, when executed, cause the one or more processors configured to encode or decode video data to intra predict at least one of a luma component or a chroma component of the current block based on the ~~at least one extended~~shifted angular intra prediction mode.

~~29. The computer-readable storage medium of claim 25, further storing instructions that, when executed, cause the one or more processors configured to encode or decode video data to determine the at least one extended angular intra prediction mode in response to a shift of an angular intra prediction mode between horizontal -45 degrees and vertical -45 degrees to be within a range of angular directions of the extended angular intra prediction modes.~~

~~30. The computer-readable storage medium of claim 25~~32. The computer-readable storage medium of claim 28, further storing instructions that, when executed, cause the one or more processors configured to encode or decode video data to:

~~generate a first prediction block associated with the current block based on an angular intra prediction mode between horizontal -45 degrees and vertical -45 degrees;~~

generate a second prediction block ~~associated with~~ for intra prediction of the

current block based on another angular intra prediction mode within the ~~current block based on the at least one extended~~set of angular intra prediction ~~mode;~~ modes;

determine a weighted sum of the ~~first~~ prediction block and the second prediction block;

~~———————~~generate a final prediction block based on the weighted sum; and

~~———————predict~~encode or decode the current block based on the final prediction block.

33. The computer-readable storage medium of claim 28 wherein the shifted angular intra prediction mode is associated with an angular prediction direction that is available only when the height and the width of the current block are not equal.

34. The computer-readable storage medium of claim 33 wherein the shifted angular intra prediction mode is associated with one of a first set of extended angular prediction directions that is available only when the block width is smaller than the block height.

35. The computer-readable storage medium of claim 34 wherein the shifted angular intra prediction mode is associated with one of a second set of extended angular prediction directions that is available only when the block width is larger than the block height.