##### Specification of Intra\_Angular (2..9, 11..25, 27..34) prediction mode

Inputs to this process are:

– neighbouring samples p[ x, y ], with x, y = −1..2\*nS−1,

– a variable nS specifying the prediction size.

Output of this process is:

– predicted samples predSamples[ x, y ], with x, y =0..nS−1.

This intra prediction mode is invoked when intraPredMode is in the range of 2..9, 11..25 and 27..34.

illustrates the total 34 intra angles and specifies the mapping table between intraPredMode and the angle parameter intraPredAngle.



Figure 8‑2 – Intra prediction angle definition (informative)

Table 8‑5 – Specification of intraPredAngle

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **intraPredMode** | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| **intraPredAngle** | - | - | 32 | 26 | 21 | 17 | 13 | 9 | 5 | 2 | - | −2 | −5 | −9 | −13 | −17 | −21 |
| **intraPredMode** | **17** | **18** | **19** | **20** | **21** | **22** | **23** | **24** | **25** | **26** | **27** | **28** | **29** | **30** | **31** | **32** | **33** | **34** |
| **intraPredAngle** | −26 | −32 | −26 | −21 | −17 | −13 | −9 | −5 | −2 | - | 2 | 5 | 9 | 13 | 17 | 21 | 26 | 32 |

further specifies the mapping table between intraPredMode and the inverse angle parameter invAngle.

Table 8‑6 – Specification of invAngle

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **intraPredMode** | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| **invAngle** | −4096 | −1638 | −910 | −630 | −482 | −390 | −315 | −256 |
| **intraPredMode** | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 |
| **invAngle** | −315 | −390 | −482 | −630 | −910 | −1638 | −4096 | - |

The reference pixel array refMain[ x ], with x= −nS..2\*nS is specified as follows.

– If intraPredMode is equal or greater than 18,

refMain[ x ] = p[ −1+x, −1 ], with x=0..nS (8‑47)

* If intraPredAngle is less than 0,

refMain[ x ] = p[ −1, −1+( ( x\*invAngle+128 )>>8 ) ], with x=( nS\*intraPredAngle ) >>5..−1 (8‑48)

* Otherwise,

refMain[ x ] = p[ −1+x, −1 ], with x=nS+1..2\*nS (8‑49)

Otherwise,

refMain[ x ] = p[ −1, −1+x ], with x=0..nS (8‑50)

* If intraPredAngle is less than 0,

refMain[ x ] = p[ −1+( ( x\*invAngle+128 )>>8 ), −1 ], with x=( nS\*intraPredAngle ) >>5..−1 (8‑51)

* Otherwise,

refMain[ x ] = p[ −1, −1+x ], with x=nS+1..2\*nS (8‑52)

The values of the prediction samples predSamples[ x, y ], with x, y = 0..nS−1 are derived by the following procedures.

– The index variable iIdx and the multiplication factor iFact are derived by

iIdx = ( ( y + 1 )\*intraPredAngle ) >> 5 (8‑53)

iFact = ( ( y + 1 )\*intraPredAngle ) && 31 (8‑54)

– Depending on the value of iFact, the following applies.

* If iFact is not equal to 0, the value of the prediction samples predSamples[ x, y ] is derived by

predSamples[ x, y ] = ( ( 32 – iFact )\*refMain[ x+iIdx+1 ] + iFact\*refMain[ x+iIdx+2] + 16 ) >> 5 (8‑55)

* Otherwise, the value of the prediction samples predSamples[ x, y ] is derived by

predSamples[ x, y ] = refMain[ x+iIdx+1 ] (8‑56)

If intraPredMode is less than 18, the value of prediction samples predSamples[ x, y ] is swapped by that of predSamples[ y, x ] for y=0..nS−2, x=y+1..nS−1.