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| **Joint Collaborative Team on 3D Video Coding Extensions**  **of ITU-T SG 16 WP 3 and ISO/IEC JTC 1/SC 29/WG 11**  11th Meeting: Geneva, CH, 12 – 18 February 2015 | Document: JCT3V-K0052\_v2 |

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| *Title:* | **Proposed TMVP fix and CU syntax cleanup for 3D-HEVC (Specification of modification of alternative reference index approach)** | | |
| *Status:* | Input Document | | |
| *Purpose:* | Proposal | | |
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| *Source:* | Fraunhofer HHI | | |

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**I.8.3.7 Derivation process for the alternative target reference index for TMVP in merge mode**

This process is invoked when the current slice is a P or B slice.

The variables AltRefIdxL0 and AltRefIdxL1 are set equal to −1 and the following applies for X in the range of 0 to 1, inclusive:

Let currPic be the current picture.

When X is equal to 0 or the current slice is a B slice the following applies:

~~zeroIdxLtFlag = RefPicListX[ 0 ] is a short-term reference picture ? 0 : 1~~ zeroIdxLtIvFlag = ( DiffPicOrderCnt( currPic, RefPicListX[ 0 ] ) = = 0 )  
 for( i = 1; i <= num\_ref\_idx\_lX\_active\_minus1 && AltRefIdxLX = = −1; i++ ) {  
 ~~if( ( zeroIdxLtFlag && RefPicListX[ i ] is a short-term reference picture ) | |  
 ( !zeroIdxLtFlag && RefPicListX[ i ] is a long-term reference picture ) )~~ candIdxLtIvFlag = ( DiffPicOrderCnt( currPic, RefPicListX[ 0 ] ) = = 0 )  
 candIdxStFlag = ( RefPicListX[ i ] is a short-term reference picture ) ? 1 : 0  
 if( ( zeroIdxLtIvFlag && candIdxStFlag ) | | ( !zeroIdxLtIvFlag && candIdxLtIvFlag ) )  
 AltRefIdxLX = i

I.8.5.3.2.9 Derivation process for collocated motion vectors in merge mode

NOTE – This process is only invoked if merge\_flag of the current PU is equal to 1. Otherwise, (merge\_flag of the current PU is equal to 0), the derivation process for collocated motion vectors as specified in clause 8.5.3.2.9 might be invoked.

Inputs to this process are:

* a variable currPb specifying the current prediction block,
* a variable colPb specifying the collocated prediction block inside the collocated picture specified by ColPic,
* a luma location ( xColPb, yColPb ) specifying the top-left sample of the collocated luma prediction block specified by colPb relative to the top-left luma sample of the collocated picture specified by ColPic,
* a reference index refIdxLX, with X being 0 or 1.

Outputs of this process are:

* the motion vector prediction mvLXCol,
* the availability flag availableFlagLXCol.

The variable currPic specifies the current picture.

The arrays predFlagL0Col[ x ][ y ], mvL0Col[ x ][ y ], and refIdxL0Col[ x ][ y ] are set equal to PredFlagL0[ x ][ y ], MvL0[ x ][ y ], and RefIdxL0[ x ][ y ], respectively, of the collocated picture specified by ColPic, and the arrays predFlagL1Col[ x ][ y ], mvL1Col[ x ][ y ], and refIdxL1Col[ x ][ y ] are set equal to PredFlagL1[ x ][ y ], MvL1[ x ][ y ], and RefIdxL1[ x ][ y ], respectively, of collocated the picture specified by ColPic.

The variables mvLXCol and availableFlagLXCol are derived as follows:

* If colPb is coded in an intra prediction mode, both components of mvLXCol are set equal to 0 and availableFlagLXCol is set equal to 0.
* Otherwise, the motion vector mvCol, the reference index refIdxCol, and the reference list identifier listCol are derived as follows:
  + If predFlagL0Col[ xColPb ][ yColPb ] is equal to 0, mvCol, refIdxCol, and listCol are set equal to mvL1Col[ xColPb ][ yColPb ], refIdxL1Col[ xColPb ][ yColPb ], and L1, respectively.
  + Otherwise, if predFlagL0Col[ xColPb ][ yColPb ] is equal to 1 and predFlagL1Col[ xColPb ][ yColPb ] is equal to 0, mvCol, refIdxCol, and listCol are set equal to mvL0Col[ xColPb ][ yColPb ], refIdxL0Col[ xColPb ][ yColPb ], and L0, respectively.
  + Otherwise (predFlagL0Col[ xColPb ][ yColPb ] is equal to 1 and predFlagL1Col[ xColPb ][ yColPb ] is equal to 1), the following assignments are made:
    - If NoBackwardPredFlag is equal to 1, mvCol, refIdxCol, and listCol are set equal to mvLXCol[ xColPb ][ yColPb ], refIdxLXCol[ xColPb ][ yColPb ], and LX, respectively.
    - Otherwise, mvCol, refIdxCol, and listCol are set equal to mvLNCol[ xColPb ][ yColPb ], refIdxLNCol[ xColPb ][ yColPb ], and LN, respectively, with N being the value of collocated\_from\_l0\_flag.

and mvLXCol and availableFlagLXCol are derived as follows:

* + The variables curLt~~Iv~~Flag and colLt~~Iv~~Flag, specifying whether the reference pictures of the ~~inter-view prediction is utilized for the~~ current and collocated PU are long-term reference pictures derived as:
    - 1. curLt~~Iv~~Flag = LongTermRefPic( currPic, currPb, refIdxLX, LX ) (I−128)
      2. colLt~~Iv~~Flag = LongTermRefPic( ColPic, colPb, refIdxCol, listCol ) (I−129)
  + [Ed. (GT): Above changes are only renaming.]
  + The variable refPicListCol[ refIdxCol ] is set to be the picture with reference index refIdxCol in the reference picture list listCol of the slice containing prediction block currPb in the collocated picture specified by ColPic.
  + The variables curLtIvFlag and colLtIvFlag, specifying whether inter−view prediction is utilized for the current and collocated PU are derived as:
    - 1. curLtIvFlag = ( DiffPicOrderCnt( currPic, RefPicListX[ refIdxLX ] ) = = 0 ) (I−128)
      2. colLtIvFlag = ( DiffPicOrderCnt( ColPic, refPicListCol[ refIdxCol ] ) = = 0 ) (I−129)
  + When curLtIvFlag is not equal to colLtIvFlag, and AltRefIdxLX is not equal to −1, the variables, AltRefFlagLX, refIdxLX and curIvFlag are modified as follows:
    - 1. AltRefFlagLX = 1 (I−130)
      2. refIdxLX = AltRefIdxLX (I−130)
      3. curLt~~Iv~~Flag = LongTermRefPic( currPic, currPb, refIdxLX, LX ) (I−131)
  + ...

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