

From: Alexis M. Tourapis <alexis@msrchina.research.microsoft.com>
Sent: Saturday, August 17, 2002 6:20 PM
To: jvt-experts@mail.imtc.org
Subject: [jvt-experts] RE: On B picture (again ..)

Dear Iole,

Sorry for the delayed answer.

About your first question in your previous email (clause 10.2), you can see the sentence as a summary of how "both" spatial and temporal direct modes work. That is why all three modes are mentioned. The exact way these distinct modes work is more clearly defined within their own subclause. As you have also observed, currently the temporal technique only supports the bipredictive mode where as the spatial technique supports all three.

For the second question, again the sentence is a "method summary". The specifics of what modes are used, and not used are stated in table 7-13.

Still, if the text is too unclear maybe the sentence could be changed to clarify that only mode 16x16 (from the 3 mentioned) can be Direct.

Now about the third (intra_8x8), I am not an expert in this but I believe the description is correct. The Intra_4x4 is defined as a "macroblock type" and not a sub macroblock type. Still you are actually right in being concerned about this since it appears that the definition of this mode appears not to be clarified in the text. I think also that maybe section 8.5.1 should be corrected to mention this mode as well (this mode also uses 4x4 intra mode in the software). Possibly an easier solution would be to add a clarification at the description of this type after the two tables. Actually these tables appear to be wrong and they should say that "num_sub_mb_partition()" is 4 and not na.

There is no clear relationship of the structure of the direct macroblock and its collocated. The spatial direct macroblock/sub macroblock is most of the time a 16x16 structured macroblock. There is though a relationship in the case that any block of the collocated macroblock/ sub macroblock is stationary. Then also the corresponding block (note not the entire macroblock) is also considered as stationary (zero motion vectors and reference). All other blocks still use the 16x16 Motion vector (including blocks of 8x8 direct mode). Basically, you may say that the structure of a spatial direct mode is of a "lower order" or the same as that of the collocated.

The spatial mode is not affected by intracoded or skip mode macroblocks (and subblocks for intra). But for the temporal one, you use zero motion vectors and reference as is stated in 10.3.3.2 (second paragraph).

For skip mode, you use the same motion vectors that were used for the skip mode. This means that you will need to populate the entire motion vector plane, store all motion vectors and reference frames (including the skip ones) and use these motion vectors for the temporal case. For the spatial case you only need to store a flag for "stationary" or non stationary block. And yes only MB can be skipped. As for B frame skip, currently this is also a direct mode macroblock with no residue (again same MV parameter calculation). Thus basically you have two direct modes in B frames. You can read about this at section 7.4.4 =====

7.4.4 Slice data semantics

mb_skip_run indicates a number of consecutive macroblocks decoded as MbSkip macroblock type in P slices or Direct_16x16 macroblock type and no additional transform coefficients in B slices when entropy_coding_mode == 0. For mb_frame_field_adaptive_flag == 1, refer to the MB scanning order in Figure 6-4 (subclause 6.3). mb_skip_flag indicates that the macroblock is decoded as MbSkip macroblock type in P slices or Direct_16x16 macroblock type and no additional transform coefficients in B slices when entropy_coding_mode == 1.

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Hope the above helps.

Alexis

-----Original Message-----

From: iole moccagatta [mailto:imoccaga@lsil.com]

Sent: Saturday, August 17, 2002 8:56 AM

To: JVT experts

Cc: Iole Moccagatta

Subject: [jvt-experts] On B picture (again ..)

Experts,

Some clarifications/questions on B picture:

1) My understanding (from the first sentence in Clause 10.3.3.2) is that, in the temporal tech. direct mode, a direct mode MB and a direct mode 8x8 block will use the same structure of the co-located MB/8x8block. In the spatial tech. direct mode, which structure is assigned to the direct mode MB/8x8block ?

2) How is a direct mode MB decoded if the co-located MB is skipped or intra coded? BTW, only MB can be skipped, right?

3) How is a B-picture skipped MB decoded?

Thanks a lot for your patience.

Best,

Iole

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JTC1/SC29/WG11 (MPEG) and ITU-T SG16 Q.6 (VCEG).

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