

From: eric.viscito@conexant.com
Sent: Thursday, September 5, 2002 11:52 PM
To: Landais Frederic (Princeton)
Cc: 'jvt-experts@mail.imtc.org'
Subject: [jvt-experts] RE: Intra Plane Prediction for Luma16x16 and chroma blocks

Hi Fred,

You are right about the set of pixels needed for context of this planar mode.

To make the conditions under which the planar mode is available clearer, we should add the first sentence of 8.5.2.4 (luma planar mode) to 8.5.3.4 (chroma planar mode).

And I believe that the preamble sections of both 8.5.2 and 8.5.3 should be cleaned up, taking into account the comments of your last paragraph.

- eric

"Landais Frederic (Princeton)" <LandaisF@tce.com>

09/05/2002 12:31 PM

To: "jvt-experts@mail.imtc.org" <jvt-experts@mail.imtc.org>
cc: "eric.viscito@conexant.com" <eric.viscito@conexant.com>
Subject: RE: [jvt-experts] Intra Plane Prediction for Luma16x16 and chroma blocks

Thanks Eric ... and actually, it helps a lot !!!

So, just to definitely remove any remaining doubts about this mode, when the FCD states that the plane mode for the intra 16x16 prediction of luma blocks "shall be used only if all the neighbouring samples $P(x, -1)$ and $P(y, -1)$ are available" (see 8.5.2.4), it means all the samples for x or y in the range $[-1 .. 15]$, doesn't it ? Thus it shall include the sample $P(-1, -1)$. I think that the case of this sample is not clearly mentioned in the FCD. Indeed, when talking about sample availability, x or y are always considered in the range $[0 .. 15]$ which is ok for all modes but the plane mode. I think that this should be clearly stated in the FCD (as it is the responsibility of the encoder not to choose a mode if an initial condition is not valid).

This is yet less clear for the chroma blocks ; the paragraph for the plane mode (8.5.3.4) does not specify anything as for the luma case. I also think that the sentence "Whenever $P(x, y)$ is not available, $P(x, y)$ is inferred to have the value 128 [...]" (intro of 8.5.3) is quite confusing. Indeed, the DC mode is clearly specific about the problem of unavailable samples (and it actually says the same thing). However, for the horizontal and vertical modes, if the required adjacent MB is not available, the quoted condition above finally comes to do a DC prediction. So I think it should be better to mention that these two modes shall be used only if the corresponding MB (above or right) is available. Finally, for the Plane mode for chroma blocks, I guess that the use of this mode is only relevant only if all the neighbouring samples are available, including $P(-1, -1)$ (for example, using 128 for all the $P(x, -1)$ if the upper MB is not available would probably lead to a worse prediction than a DC or an horizontal prediction, wouldn't it ?).

... just my 2 cents, if these comments make sense, to perhaps introduce more specific conditions about these intra modes in the FCD (just a couple of sentences ...)

Regards,
-- Fred

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

From: eric.viscito@conexant.com [mailto:eric.viscito@conexant.com]

Sent: Thursday, September 05, 2002 2:05 PM

To: Landais Frederic (Princeton)

Cc: 'jvt-experts@mail.imtc.org'

Subject: Re: [jvt-experts] Intra Plane Prediction for Luma16x16 and chroma blocks

Hi Frederic,

Coincidentally, we were just reviewing that yesterday.

Let's use the chroma case as the example. Overall, a, b, and c in equations (8-35) to (8-37) are derived as follows:

1. a is an estimate of the value of the pixel P[3,3], computed by the average of two values P[-1,7] and P[7,-1].
2. b is an approximation of the MMSE linear fit to the data points P[-1,-1], ..., P[7,-1]. In equation (8-38), the pixel * P[3,-1] is used, but multiplied by "0". It is easy to see if you expand the sum:

H =

```
4      * P[-1,-1]
3      * P[ 0,-1]
2      * P[ 1,-1]
1      * P[ 2,-1]
0      * P[ 3,-1]
1      * P[ 4,-1]
2      * P[ 5,-1]
3      * P[ 6,-1]
4      * P[ 7,-1]
```

Hope that helps.

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"Landais Frederic (Princeton)" <LandaisF@tce.com>

09/05/2002 07:33 AM

Please respond to "Landais Frederic (Princeton)"

To: "'jvt-experts@mail.imtc.org'" <jvt-experts@mail.imtc.org>

cc:

Subject: [jvt-experts] Intra Plane Prediction for Luma16x16 and chroma blocks

Dear Experts,

There is something that disturb me a little since a while in the FCD about the intra plane predictions for both luma (16x16 mode) and chroma blocks. There are these equations to compute H and V which are the same except for the direction (see 8.5.2.4 and 8.5.3.4). For example, for H, the equation is :

$$H = \text{sum}(\text{for } i = 1 \text{ to } 8) \text{ of } (i \times (P[7+i, -1] + P[7-i, -1]))$$

Thus, in a way, this expression uses two vectors to compute H:

1st vector: { P[6,-1], P[5,-1], ..., P[0,-1], P[-1,-1] }
2nd vector: { P[8,-1], P[9,-1], ..., P[14,-1], P[15,-1] }

So, my question is the following: why the sample P[7,-1] is not used ? Actually, the 2nd vector is right above the 2nd 8x8 block of the MB, but the 1st vector is shifted by one pixel to the left above the 1st 8x8 block of the MB. Is it intentional (and if yes, why ?), or is it a typo which has been propagated in both the FCD and the Reference software since a while ?

Thanks for any light about this ...

Regards,
Frederic.

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