

From: Kerofsky, Louis <lkerofsky@sharplabs.com>
Sent: Monday, September 16, 2002 6:46 PM
To: 'Iole Moccagatta'; Gary Sullivan
Cc: Iole Moccagatta (LSI); JVT experts
Subject: [jvt-experts] Re: FW: No provision for 1/2 pel?

Iole,

Some work in this direction was studied a few years ago under the name Adaptive Motion Accuracy. In the early stages of H26L, 1/2, 1/3 and 1/6 pel motion vectors were used. Advantages were seen in adjusting the resolution used to code motion vector in this case, q15i31 & q15i38. When moving to 1/4 pel, the analog would adapt between 1/2 and 1/4 pel. A core experiment was done for the Osaka Meeting, Q15-J-09, where for each MB one bit was used to signal 1/2 pel or 1/4 pel motion accuracy. Motion vectors are then coded with the appropriate accuracy. The advantages of AMA were not as significant, Q15-J-15, Q15-J-25. The codec has changed considerably since that time and the results could be different but that is the history.

Naturally, there is the overhead of signaling the motion vector resolution. Additionally, keep in mind that the motion vectors are coded differentially so even though the motion vector of the current MB may be 1/2 pel, the motion vector predictor may be 1/4 pel requiring you to code the 1/2 pel motion vector with 1/4 pel precision.

Regards,

Louie

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

From: Iole Moccagatta [mailto:imoccaga@lsil.com]
Sent: Friday, September 13, 2002 7:21 PM
To: Gary Sullivan
Cc: Iole Moccagatta (LSI); JVT experts
Subject: [jvt-experts] Re: FW: No provision for 1/2 pel?

Gary,

thanks for your replay. See my comments below.

Gary Sullivan wrote:

> We also don't know how
> much better it is to customize the decoder for this lower-quality
> encoding than it is to just let the encoder do that by itself without
> requiring anything special in the decoder to support it.

Actually, my point is not much about supporting a low-quality encoder, but to make sure that H.264 delivers good coding efficiency at high resolution w/o unnecessary inflating the cycle budget.

Let's say that the encoder figure out in some way that 1/2 and 1/4 pel motion estimation generate a similar prediction error. However, because H.264 supports only 1/4 pel, all motion vectors need to be encoded at 1/4 pel precision. Does this mean that the 1/2 pel motion vectors coded at 1/4 pel resolution are going to cost more bits than the same 1/2 pel motion vectors coded as 1/2 pel resolution? Is this the case with the motion vector coding technique in the current FCD?

Best,

Iole

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=   "Spatium...ultima confinia.... Haec sunt itinera astranavis =
=   Incepti. Huic missio quinque annorum: explorare mundos alienos novos,
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=   petere vitam novam novosque cultus, ire fortiter quo nemo iverit
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