CCITT Study Group XV
Working Party XV/1
Specialists Group on Coding for Visual Telephony

Doc #167
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Source: UK, Sweden, Netherlands, Italy, FRG, France

Title: Proposal for a Loop Filter in the Hardware Specification

Drawing on the results of simulation reported in Document #144 a loop filter with the following parameters is proposed for incorporation in the flexible hardware specification:

One 2-D response shape which can be switched on or off on a block by block basis. The same characteristic is used for luminance and chrominance.

Separable into horizontal and vertical filtering operations, but full arithmetic precision retained internally so that the order of these operations is immaterial.

Identical responses in the horizontal and vertical directions.

Filter operates on the reconstructed picture. The block prediction is an 8 pel by 8 line area from the filtered picture when both MC and filtering are used.

Each output pel derived from the input values at its own position and 8 adjacent neighbours. At block boundaries pels from adjoining blocks in the reconstructed picture are used as necessary. At the edges of the picture a border of one pel width with value 128 is deemed to exist.

Reduction to 8 bits at the filter output, with rounding upwards at the $2^0$ bit if the $2^{-1}$ bit is one or by truncation only otherwise.

Filter coefficients

$$\begin{matrix} 1/16 & 1/8 & 1/16 \\ 1/8 & 1/4 & 1/8 \\ 1/16 & 1/8 & 1/16 \end{matrix}$$

End