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CCITT SGXV
Working Party XV/1
Specialist Group on Coding Visual Telephony

Source: JAPAN
Title : Adaptiveness of a 2-d VLC table

1. Introduction

A new method of adaptively selecting one of the four 2-d VLC tables according to the quantizer stepsize is discussed in #373.

In this document a different method in which the selection of VLC tables occures not according to the quantizer stepsize but to some other algorithms is discussed. The selection of a VLC table is transmitted as side information.

2. Simulation

Using the reference model no. 6 at p x 64kbit/s (for p=1) and the sequence "Clair", we have generated a set of VLC tables (jointly for both Y and U-V signals) by classifying mainly according to the quantizer step size.

Then two methods for selecting VLC tables are compared:

method-1: selection by the quantizer step size
(same as in #373),
method-2: selection by optimum.

The method-2 gives the upper bound of the gain attainable by transmitting the index of the selected VLC table as side information, because the method counts the number of bits generated by four different VLC tables sepearately and selects the one that gives the best result for each GOB interval.

3. Conclusion

The improvement less than 0.15dB was obtaind by employing the method-2 instead of the method-1. Details are shown in Tables 1 and 2.

This result suggests that the method of selecting VLC tables according to the current quantizer step size, as is described in #373, is quite appropriate.

/END/

	Clair	Ms.America	Salesman
method-1	38.35dB	37.95dB	31.03dB
method-2	38.50dB	37.96dB	31.16dB
(RM 6)	(38.04dB)	(37.86dB)	(30.88dB)

Table 1. Y-SNRs

Statistics RM6(64kpbs) Institute : Japan
Sequence : Clair Date : Dec. 1988
Modification : adaptive VLC tables Frame rate : 10Hz

Mean value			(method-1) 1/163	(method-2) 1/163
1. RMS	Y		3.08	3.03
	U		2.81	2.79
	V		1.97	1.96
2. SNR	Y		38.35	38.50
	U		39.17	39.22
	V		42.24	42.29
3. Mean v. of step size			17.17	17.01
4. Mean v. of No. of non-z			3.07	3.08
5. Mean v. of No. of zeroes			4.36	4.35
6. Block type of MACRO	FIXED		269.8	269.2
	CODED MC		47.0	46.7
	FIXED MC		5.1	5.4
	CODED		73.7	74.4
	INTRA		0.4	0.4
7. Block type of Y	FIXED		1258.8	1257.4
	CODED MC		128.9	128.8
	FIXED MC		79.4	79.6
	CODED		116.9	118.2
8. Block type of UV	FIXED		673.2	673.1
	CODED MC		27.1	27.5
	FIXED MC		77.0	76.7
	CODED		14.6	14.7
9. Number of bits	Macro attribs		835.9	841.1
	End of block		1225.0	1231.4
	Motion vectors		300.2	302.2
	Coeffs	Y	3283.8	4207.5
		U	178.8	223.5
		V	85.2	106.2
		Total	3547.8	4537.2
	Total		5908.9	6912.0

Table 2. "Clair"