CCITT SGXV
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Specialists Group on Coding for Visual Telephony

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TITLE : Coding results using adaptive quantizer

1. Introduction

In the doc. #460, a motion adaptive quantizer has been introduced. In this document, we study the advanced adaptive quantization.

2. Adaptive quantization method

(a) In the doc. #460, we have introduced the following adaptive technique.

Aiming to improve the picture quality of motion compensated blocks, modified step size (g') is given to the macro blocks with a motion vector

$$g' = g + \Delta g$$

where g is the quantizer step size defined in RM 8.

(b) The following technique is newly combined with the above method.

Modified step size is given to the macro blocks which were quantized with large step size frequently in order to improve the picture quality of the blocks which were quantized coarsely. This modification is limited in the case that the buffer occupancy is low.

3. Simulation results

The simulation results using the combination of the above two methods are shown in Table 1. The picture quality becomes improved especially in "Salesman".

4. Conclusion

The picture quality can be improved with the combination of the above two methods. The optimization of the adaptive control parameters is a further study.

Table 1 Simulation results

($p = 1$, 10 [*frame / sec*])	Claire		Miss America		Salesman		Swing	
	RM 8	modified	RM 8	modified	RM 8	modified	RM 8	modified
SNR for Y [dB]	38.48	38.15	38.12	38.01	31.65	32.55	34.91	35.13
SNR for Cb [dB]	39.10	39.59	37.90	37.78	38.67	39.78	36.45	36.86
SNR for Cr [dB]	42.14	42.89	38.87	38.64	39.51	40.83	37.02	37.48

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