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SOURCE : NTT
TITLE : OBSERVATION OF SEQUENCES WITH CYCLICALLY DISTORTED PICTURES
PURPOSE: Information

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1. Introduction

This contribution addresses the implication of B-pictures by observing sequences with distorted pictures inserted cyclically in the original pictures.

One of the interpretations for why B-pictures are effective to improve coding performance is that human observers may tolerate some distortion if it is embedded in good pictures.

To test this hypothesis, intra coded pictures are inserted every other frame and resulting pictures have been visually observed.

2. Simulation method

Frame mode coding is used where two fields are simply merged. Odd numbered frames are intra coded with fixed step size, while even numbered frames are kept intact. As a reference, pictures with all frames intra coded are also produced.

Coding algorithm is a modified version of CCITT RM8 as presented in the companion document AVC-192. Only INTRA mode is used here for simplification. Typical distortion is blocking and loss of spatial resolution.

The step size is changed as follows to obtain equally spaced SNR values:

Step size	SNR for the first frame (dB)
32	28.1
24	30.0
18	32.1
14	33.9
10	36.4
8	38.1
6	40.3
5	41.6

3. Observation

Processed pictures for Flower Garden are demonstrated with D1. Step size values for just noticeable degradation depend on the picture content and are observed as follows:

	odd: intra coded even: original	all frames intra coded
For the flower part	18 - 14	11 - 8
For the roof tile part	10 - 8	< 6
For the twig part	8 - 6	< 6

4. Conclusion

If we need to use step size 8 or 10 for good pictures, it may be possible to save some bits by exploiting coarse quantization every other frame. It is difficult, however, to draw a firm conclusion from single data. There may be distortions which are easier to the eye than coarsely quantized intra pictures. This and other points are for further study.

END