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SOURCE : Japan
TITLE : Cascade coding of H. 26x and H. 261
PURPOSE : Information

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1. Introduction

One of the possible means for achieving compatibility between H. 26x (=MPEG-2) and H. 261 is to use a transcoder that receives H. 26x and H. 261 bitstreams and re-transmits H. 261 and H. 26x bitstreams, respectively.

(For the detailed discussions for general system requirements for compatibility and advantages/disadvantages of other technical possibilities such as embedded and simulcast coding, see AVC-278 and AVC-419.)

This document reports simulation results if such transcoding add any further degradations in picture quality.

2. Simulation Parameters

The sequence "Flower Garden" is first coded and decoded using MPEG-2, then the picture format is converted from CCIR Rec. 601 (525 lines) to CIF, and finally the CIF sequence is coded by H. 261. The result was compared with the situation where the original "Flower Garden" is directly converted to CIF and coded by H. 261.

- MPEG-2
  - Bitrate: 4 Mbps
  - Frame Base TM2
  - N=15, M=3
- Format Conversion
  - Horizontally: 2-to-1 downsampling using an FIR filter with the coefficients (1/2, 1/2).
  - Vertically : 5 line-to-3 line conversion using an FIR filter with 5 taps.
- H. 261
  - Bitrate: 1.5 Mbps, 384 kbps, 128 kbps
  - RM8 with 3-step MC ($\pm 15 \times \pm 15$).

3. Simulation Results

H. 261 Bitrate	H. 261 Frame rate	Y SNR	CB SNR	CR SNR	Remarks
1.5 Mbps	30 F/sec	27.55dB	30.81dB	33.13dB	from Original
		27.76dB	31.62dB	34.48dB	via MPEG-2
	15 F/sec	30.56dB	32.71dB	34.59dB	from Original
		30.76dB	33.62dB	36.21dB	via MPEG-2
384 kbps	15 F/sec	24.25dB	28.74dB	31.91dB	from Original
		24.50dB	29.46dB	33.06dB	via MPEG-2
	10 F/sec	25.72dB	29.64dB	32.49dB	from Original
		25.92dB	30.41dB	33.72dB	via MPEG-2
64 kbps	5 F/sec	19.08dB	25.53dB	30.97dB	from Original
		19.26dB	25.91dB	31.99dB	via MPEG-2
	3 F/sec	21.28dB	26.67dB	31.66dB	from Original
		21.46dB	27.14dB	32.77dB	via MPEG-2

4. Discussions

It was found that MPEG-2 coding/decoding as a preprocess to H. 261 coding does not affect the efficiency of the following H. 261 coding.

Also, it was observed that there was no subjective diffrence between two H. 261 coded sequences with and without MPEG-2 coding.

5. Conclusion

It is concluded that transcoding between H. 26x (=MPEG-2) and H. 261 is a possible solution for realizing comatibility between the terminals that employ two different coding algorithms.