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SOURCE : JAPAN
TITLE : REPORT OF AC-LEAKY PREDICTION
PURPOSE : Information

1. Introduction

The method where predictive signals are separated to the average component (DC) and its residual component (AC) is studied. A leaky factor is applied only to AC component.
With this method, both picture quality and performance of error resilience are improved.

2. Features

AC-Leaky prediction has the advantage as bellow in comparison with Normal-leaky prediction and Slice-intra.

1) Recovering of error
   Frequent DC-intra is applicable, so any kind of error on DC is fast recovered. Application of this scheme is useful to transmission error.
2) Channel hopping
   The first, picture starts only with its DC component, so, the picture quality comes up soon. This is effective for visual quality.
3) Picture quality
   The problems of picture quality in Leaky-prediction, e.g. noisy background and limit cycle, becomes negligible. The picture quality is about the same as that with normal refreshment.

3. Results of experiments

Condition : TM3, M=1, 4Mbps
LF = 0.9375 (Non-L indicates "LF = 1")
Flower Garden, 60 frames
Frame picture

Table 1. Y SNR in Leaky-predictions

Non-L(N=15)	Leaky	AC-L(Ndc=15)	AC-L(Ndc=6)
29.05 dB	29.01 dB	29.28 dB	29.07 dB

4. Conclusion

Leaky prediction has many merits, e.g. error resilience, but some problems about picture quality still remain. AC-leaky prediction is an effective method toward these problems and also contributes to better error resilience.

Appendix. Syntax for Leaky-prediction

The leaky factor for Leaky prediction "LF" is transmitted in the picture header of P-picture and is immediately followed by "dc_refresh_flag" using the following syntax.

```
|       if (picture_coding_type ==  2) {
|          leak_factor_code                          3       uimsbf
           dc_refresh_flag                           1       uimsbf
|       }
```

A leak_factor_code of 000 is not allowed, and a leak_factor_code of 111 means "without using leaky prediction (LF=1)". Otherwise, LF=1-1/2^n where n=leak_factore_code. The value of LF is constant throughout the picture.

A dc-refresh-flag of 1 indicates DC-refresh picture and that of 0 is equivalent to non-DC-refresh. DC-refresh is applicable in the case of LF=1. In the case of DC-refresh picture, Intra type VLC tables are used for DCT coefficients.
(Reference : TM3. F7 CORE EXPERIMENT OF AC-LEAKY PREDICTION)

END