CCITT STUDY GROUP XV
Working Party on
Visual Telephony
Specialists Group on Coding
for Visual Telephony

Document # 87
March 1986

TITLE: Motion adaptive interpolation, based on the transmitted displacement vectors.

An example of an DCT hybrid coding scheme based on a combination of object matching and block matching at 300 Kbit/s.

SOURCE: F.R.G.

Picture format

COST sequence

Luminance: 360 x 288 Chrominance: 180 x 144
10 pictures/second

Bit-rate

304 Kbit/s (Y, U, V)

Transform DCT, 16 x 16

Motion estimation

Motion estimation is done as a combination of object matching and block matching. Only in the case, where object matching fails, the mode select is switched to block matching. The blocksize is 16 x 16 and the window is 8 x 8. For search, a coarse-fine strategie is used in addition. The maximum displacement is limited to -16 and +16 for object matching and -8 and +8 for block matching. The displacement resolution is approximately 0.25 for object matching and 1 pel for blockmatching. This technique is applicable to all blocksizes.

Switched predictor

Intra frame, inter frame without motion compensation or inter frame with motion compensation

Quantisation strategy

Uniform quantisation with VLC. The step size is fixed for one field and is a function of the prediction error. The scanning strategie is adapted to the structure in each block. Different subclasses can be used.

Transmission buffer

Buffer size: 1 frame

Preprocessing

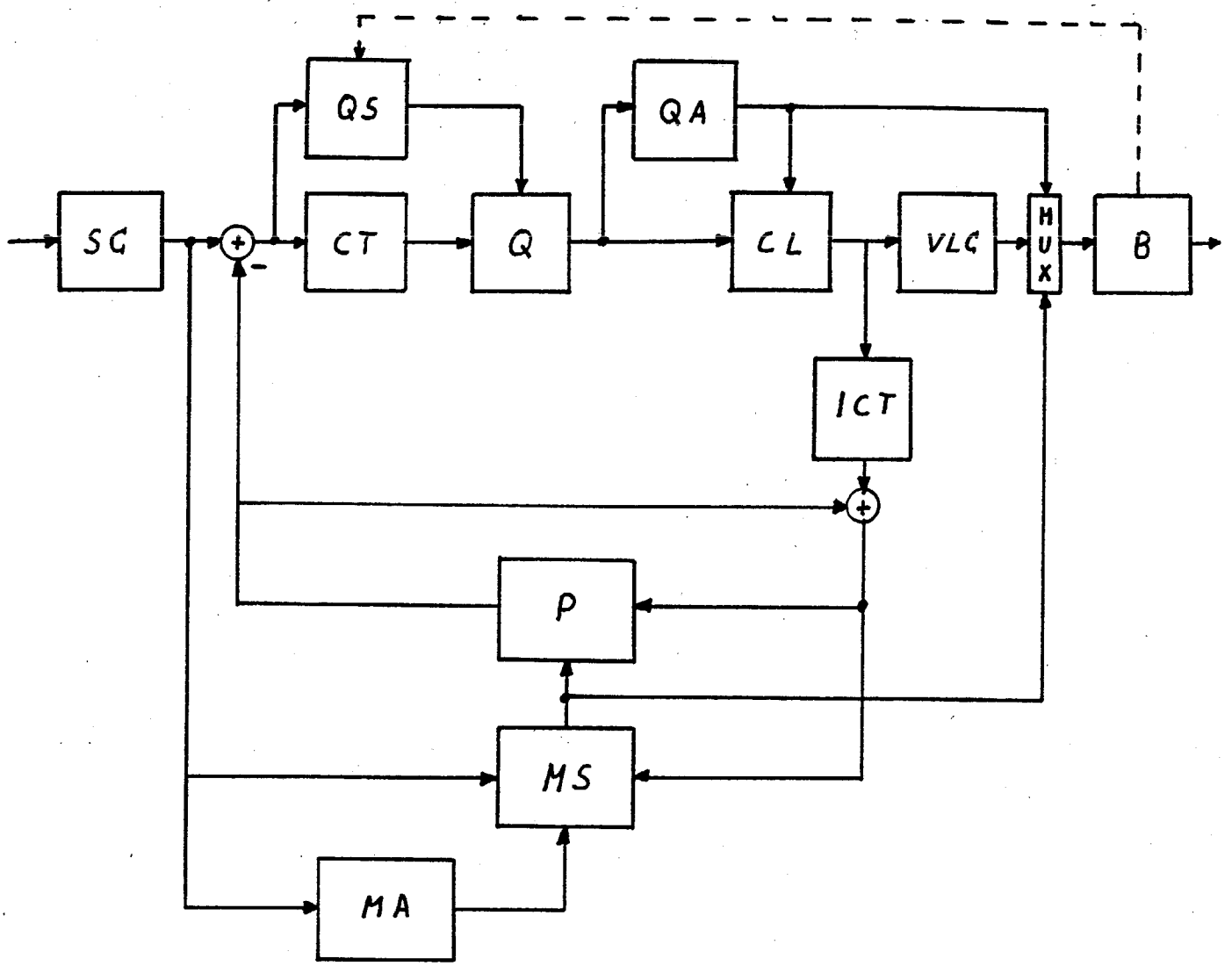
none

Postprocessing

Motion adaptive interpolation, based on the transmitted displacement vectors

Overhead

No VLC to reduce the overhead



SC	scanconverter
CT, ICT	cosine transform, blocksize 16 x 16
QS	determines the quantizer step size
Q	uniform quantizer
QA	performes the selection and adressing of the spectral components to be transmitted
CL	classification into different classes
B	buffer (one frame)
P	predictor
MA	searches blockdisplacements and calculates motion vectors for object matching
MS	performes the mode selection: intra-interframe and object / block matching (per block)