





Version: 25/1/2007 © A. Pizurica, Universiteit Gent, 2006-2007 Digital video formats			
CCIR601 625/50 PAL/SECAM (for TV-studio's) •YUV (YCrCb) format: •Y: 576 lines, interlaced, 720 pixels/line, 1Byte/pixel •U en V: 576 lines, interlaced, 360 pixels/line, 1Byte/pixel • 50 fields/s (25 frames/s) ⇒ Bit rate: 165 Mbit/s = 20 MiB/s = 70 GiB/hour			
<ul> <li>CIF (Common Intermediate Format)</li> <li>YUV (YCrCb) format:</li> <li>Y: 288 lines, progressive, 360 pixels/line, 1Byte/pixel</li> <li>U en V: 288 lines, progressive, 180 pixels/line, 1Byte/pixel</li> <li>30 fields/s (30 frames/s)</li> <li>⇒Bit rate: 37 Mbit/s = 4.4 MiB/s = 15 GiB/hour</li> </ul>			
QCIF (Quarter Common Intermediate Format) •Quarter resolution of CIF •A video conferencing format	08c.4		







Version: 25/1/2007 © W. Philips, Universiteit Gent, 1998-2006 Motion compensation				
image from past Current" image Displaced frame difference = prediction error	<ul> <li>Forward motion compensation:</li> <li>Image is divided into 16x16 blocks, named macro blocks</li> <li>The most similar block from the previous image is used as prediction</li> <li>The prediction error and the motion vector are coded instead of the block itself</li> <li>Remarks</li> <li>The motion vectors can be calculated with pixel- or with sub-pixel-accuracy</li> <li>For sub-pixel-accuracy or for interlaced images blocks have to be interpolated before they can be compared</li> </ul>			
	08c.8			



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Logarithmic search				
	- <b>3</b>			
	Try first a limited number of vectors on a coarse raster Refine the best vector by investigating a limited number of smaller corrections Repeat untill the desired resolution (e.g. pixel or ¼ of pixel accuracy) is reached Suboptimal (optimum can be missed) but much faster			
<ul> <li>Remarks</li> <li>The MPEG-standards do not define how motion vectors have to be searched, neither the weighting factors for bi-directional compensation</li> <li>This holds for other coding parameters: quantisation labels, Huffman code books</li> <li>Only the data format is determined</li> </ul>				
$\Rightarrow$ competition possible between different coders based on their				
computation time, quality, latency,				
	08c.10			











Version: 25/1/2007 © W. Philips, Universiteit Gent, 1998-2006 Color coding in MPEG				
4:2:0				
4:2:2	150     650     650     650     650     650     650     650       122     120			
Sampling positions in the luminance- and chrominance images, for progressive (not-interlaced) video				













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