

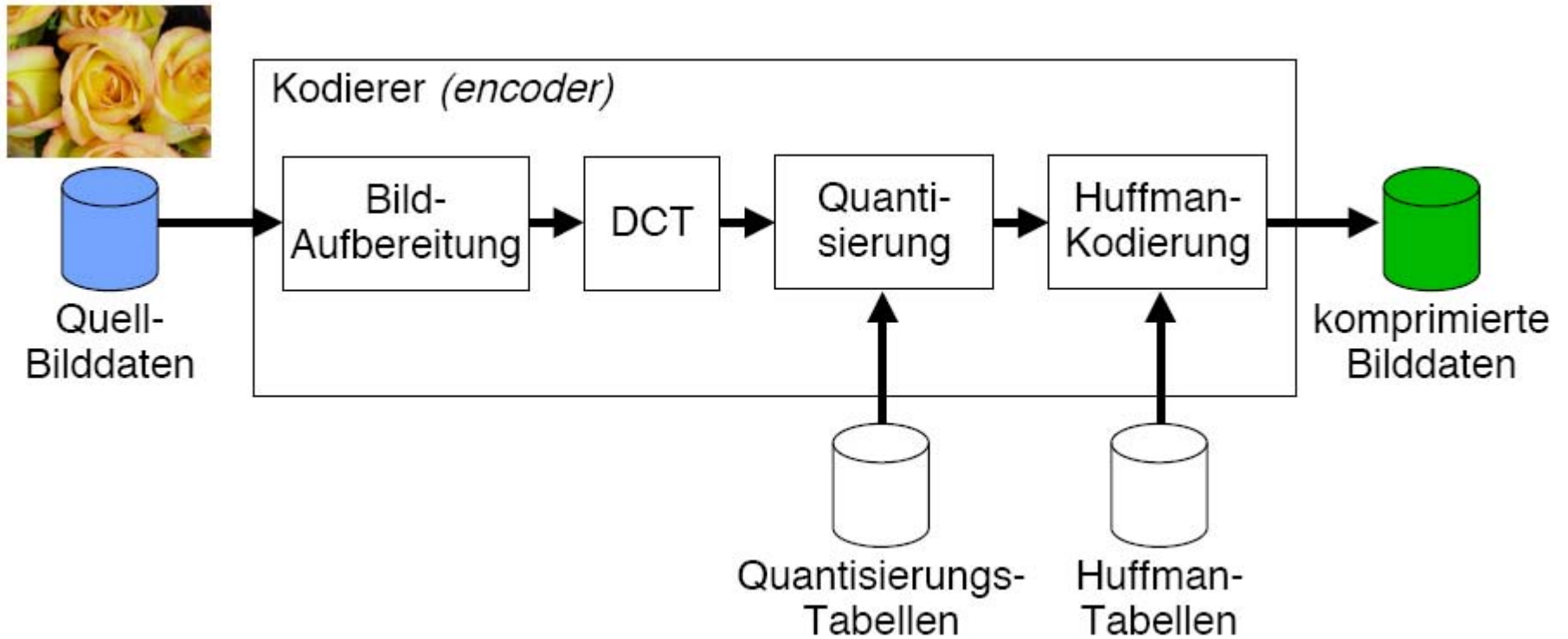
Digitale Medien

Übung

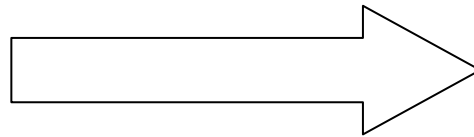
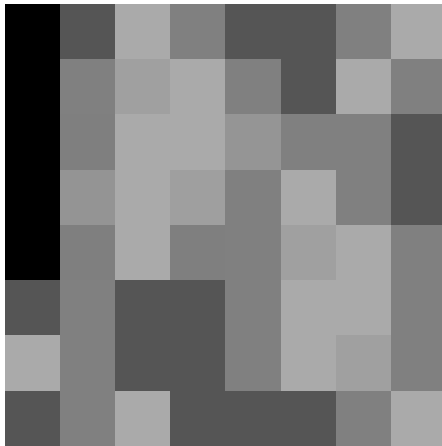
Heute

- JPEG-Komprimierung

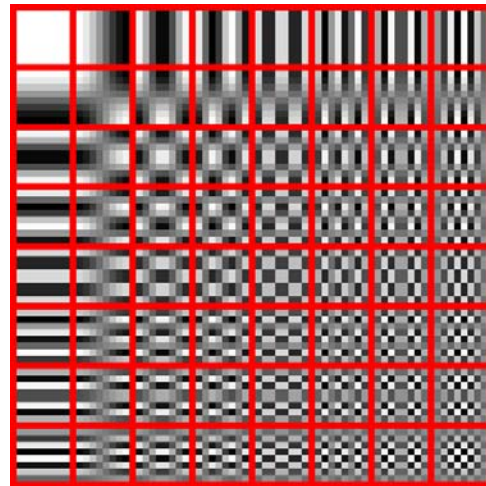
JPEG-Verfahren



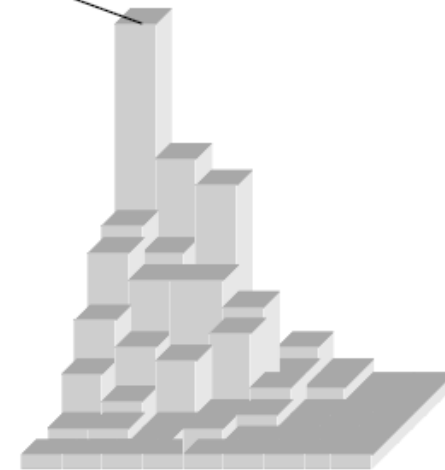
Konvertierung von 8x8 Bildblöcken in den Frequenzraum



Diskrete
Cosinus
Transformation



DC-Koeffizient $F(0,0)$



http://www-mm.informatik.uni-mannheim.de/veranstaltungen/animation/multimedia/2d_dct/

2-Dim COSINE Transformation Visualizer

Program Solution ?

Image space

Target image

191 191 191 191 191 191 191 191
 191 191 191 191 191 191 191 191
 191 191 191 191 191 191 191 191
 191 191 191 191 191 191 191 191
 191 191 191 191 191 191 191 191
 191 191 191 191 191 191 191 191
 191 191 191 191 191 191 191 191
 191 191 191 191 191 191 191 191

Your approximation

128 128 128 128 128 128 128 128
 128 128 128 128 128 128 128 128
 128 128 128 128 128 128 128 128
 128 128 128 128 128 128 128 128
 128 128 128 128 128 128 128 128
 128 128 128 128 128 128 128 128
 128 128 128 128 128 128 128 128
 128 128 128 128 128 128 128 128

Difference

63 63 63 63 63 63 63 63
 63 63 63 63 63 63 63 63
 63 63 63 63 63 63 63 63
 63 63 63 63 63 63 63 63
 63 63 63 63 63 63 63 63
 63 63 63 63 63 63 63 63
 63 63 63 63 63 63 63 63
 63 63 63 63 63 63 63 63

Frequency space

Table of coefficients U00-U07 [-2048,2048]

U00 0	U01 0	U02 0	U03 0	U04 0	U05 0	U06 0	U07 0
U10 0	U11 0	U12 0	U13 0	U14 0	U15 0	U16 0	U17 0
U20 0	U21 0	U22 0	U23 0	U24 0	U25 0	U26 0	U27 0
U30 0	U31 0	U32 0	U33 0	U34 0	U35 0	U36 0	U37 0
U40 0	U41 0	U42 0	U43 0	U44 0	U45 0	U46 0	U47 0
U50 0	U51 0	U52 0	U53 0	U54 0	U55 0	U56 0	U57 0
U60 0	U61 0	U62 0	U63 0	U64 0	U65 0	U66 0	U67 0
U70 0	U71 0	U72 0	U73 0	U74 0	U75 0	U76 0	U77 0

Reset coefficients

Try to solve in order

Example 1 (very easy)

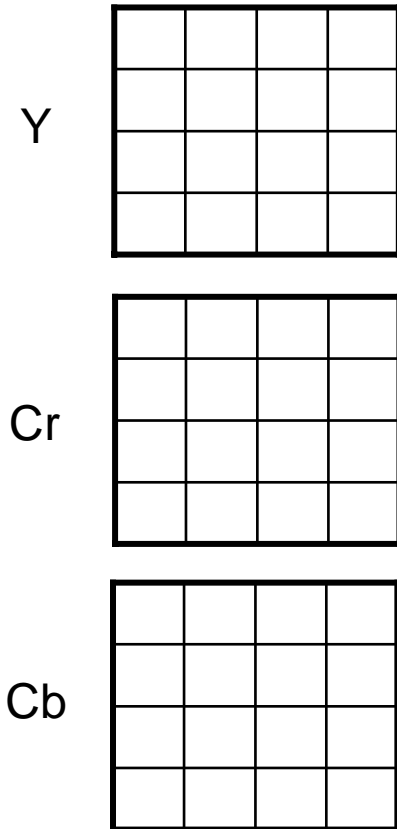
Select quantization table

Do not quantize

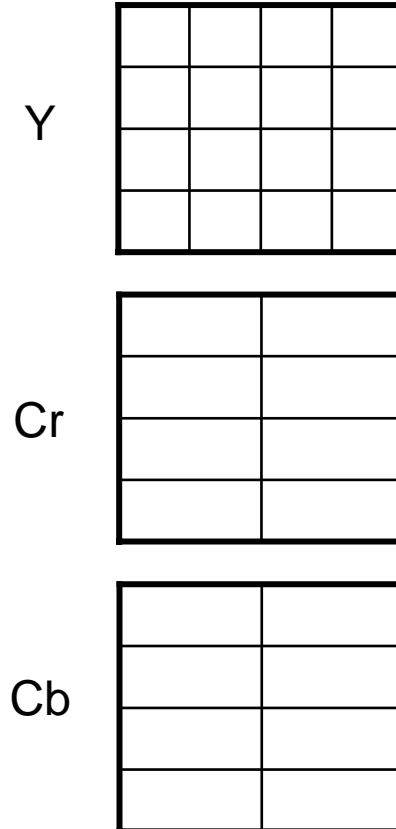
Java Applet Window

- Beide Chroma-Kanäle immer gleich abgetastet
- x: Anzahl der Luma-Samples, Vielfaches der NTSC-Abtastfrequenz
3.570 MHz; in der Regel „4“
- y: Anzahl der Cr/Cb-Chroma-Samples, horizontal
- z: Falls z=y: kein vertikales Subsampling der Chroma-Kanäle
Falls z=0: vertikales Chroma-Subsampling 2:1

"4:4:4"



"4:2:2"



"4:2:0"

