



$$\begin{bmatrix} .299 & .587 & .144 \\ -.159 & -.332 & .050 \\ .500 & -.419 & -.081 \end{bmatrix} \times \begin{bmatrix} R \\ G \\ B \end{bmatrix} = \begin{bmatrix} Y \\ Cb \\ Cr \end{bmatrix}$$

Transform Colour Space

JPEG Compression

Pixel values

49	61	69	61	78	89	100	112
68	60	51	42	62	69	80	89
90	81	58	49	69	72	68	69
100	91	79	72	69	68	59	58
111	100	101	91	82	71	59	49
131	119	120	102	90	90	81	59
148	140	129	99	92	78	59	39
151	140	142	119	98	90	72	39

Forward DCT

Quantisation Factors

16	11	10	16	24	42	51	61
12	12	14	19	26	58	60	55
14	13	16	24	40	57	69	55
14	17	22	29	51	87	80	62
18	22	37	58	68	109	123	77
24	35	55	64	81	104	113	92
49	64	78	87	108	121	120	101
72	92	95	98	122	100	103	99

672	101	13	21	-13	0	6	9
-104	-144	35	-5	9	-17	-3	0
31	-21	-1	7	9	0	0	4
22	-21	19	-13	2	3	2	2
9	-2	-17	-11	0	5	1	-2
4	6	1	0	-2	-7	0	-1
21	12	3	2	-4	3	0	-1
-5	8	-3	2	1	-6	0	2

Quantising

42	9	1	1	-1	0	0	0
-9	-12	3	0	0	0	0	0
2	-2	0	0	0	0	0	0
2	-1	0	0	0	0	0	0
1	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0

Sequencing

9, -9, 2, -12, 1, 1, 3, -2, 2, 1, -1, 0, 0, -1 followed by 49 0s

Lossless Data Compression

Combine DC components for each block into a single sequence

36	37	36	45
39	40	44	39
38	42	41	38
38	42	39	43

Sequencing

36, 37, 36, 45, 39, 40, 44, 39, 38, 42, 41, 38, 38, 44, 39, 43

Delta Encoding

36, -1, 1, -9, 6, -1, -4, 5, 1, -4, 1, 3, 0, -6, 5, -4

Lossless Data Compression

JPEG File

Assignment Project Exam Help

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