Quantization Effect (1)



平滑图像左上角DC大

An 8 x 8 block from the Y image of 'Lena'

```
200 202 189 188 189 175 175 175
                                    515 65 -12 4
                                     <del>-16</del> 3
200 203 198 188 189 182 178 175
203 200 200 195 200 187 185 175
                                     -12 6 11 -1 3 0 1 -2
200 200 200 200 197 187 187 187
                                      -8 3 -4 2 -2 -3 -5 -2
200 205 200 200 195 188 187 175
                                       0 -2 7 -5 4 0 -1 -4
                                       0 -3 -1 0 4 1 -1 0
200 200 200 200 200 190 187 175
205 200 199 200 191 187 187 175
                                      3 -2 -3 3 3 -1 -1 3
                                      -2 5 -2 4 -2 2 -3 0
210 200 200 200 188 185 187 186
                                              F(u,v)
            f(i,j)
```

Fig. 9.2: JPEG compression for a smooth image block.



Quantization Effect (2)

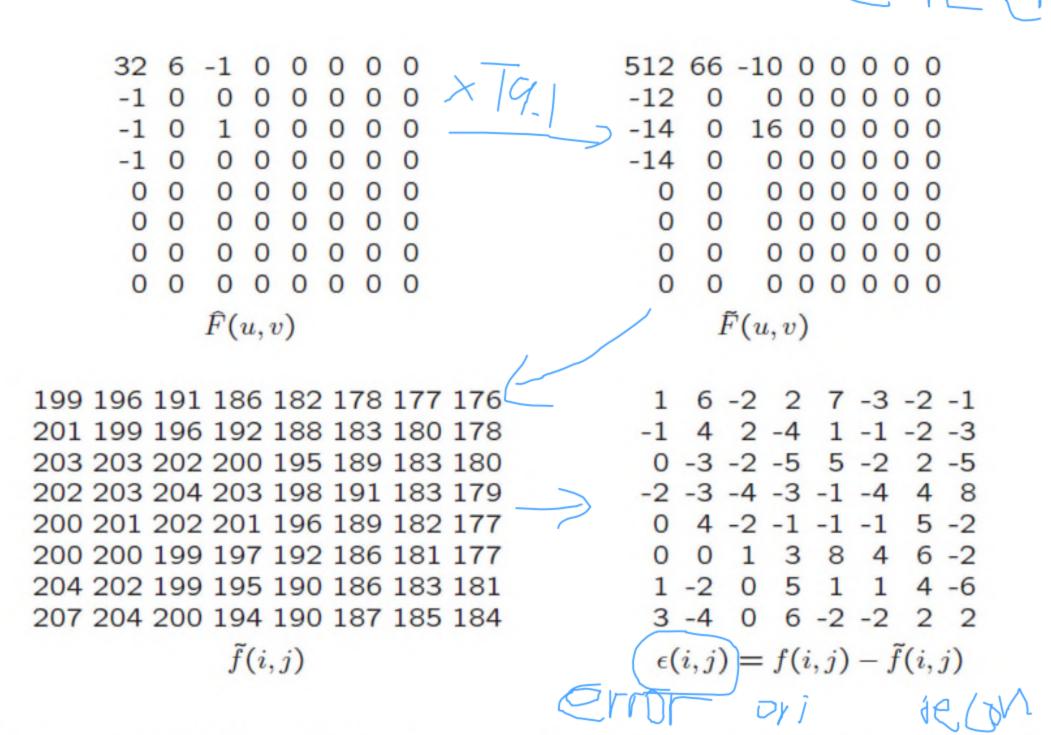


Fig. 9.2 (cont'd): JPEG compression for a smooth image block.

用于平滑图像块的JPEG压缩。



Quantization Effect (3)



Another 8×8 block from the Y image of 'Lena'

```
-80 -40 89 -73
70 70 100 70 87 87 150 187
                                              44 32 53 -3
                                          6 14 -3-13-28
                                -135 - 59 - 26
85 100 96
           79 87 154 87 113
                                 47-76 66 -3-108-78 33 59
100 85 116
           79
              70 87 86 196
                                 -2 10-18
                                          0 33 11-21
136 69 87 200
              79 71 117 96
                                          8 32 65-36 -1
161 70 87 200 103 71 96 113
                                 -1 -9-22
161 123 147 133 113 113 85 161
                                  5-20 28-46 3 24-30 24
146 147 175 100 103 103 163 187
                                  6-20 37-28 12-35 33 17
156 146 189 70 113 161 163 197
                                 -5-23 33-30 17 -5 -4 20
                                        F(u,v)
            f(i,j)
```

纹理图像左上角小

Fig. 9.3: JPEG compression for a textured image block.

用于纹理图像块的JPEG压缩。



Quantization Effect (4)

```
-80-44 90-80 48 4051
    -5 -4 9 -5 2 1 1 0
   -11 -5 -2 0 1 0 0 -1
                              -132-60-28 0 26 0 0-55
                                42-78 64 0-120-57 0 56
    3 -6 4 0 -3 -1 0 1
    0 1 -1 0 1 0 0 0
                                0 17-22 0
                                           51
                                              0 0 0
    0 0 -1 0 0 1 0 0
                                0 0-37
                                            0109 0 0
                                        O
    0 -1 1 -1 0 0 0 0
                                0-35 55-64
                                            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 0 0
        \widehat{F}(u,v)
                                   \tilde{F}(u,v)
70 60 106 94 62 103 146 176 0 10 -6 -24 25 -16 4 11
85 101 85 75 102 127 93 144 0 -1 11 4 -15 27 -6 -31
98 99 92 102 74 98 89 167 2 -14 24 -23 -4 -11 -3 29
132 53 111 180 55 70 106 145
                               4 16 -24 20 24 1 11 -49
173 57 114 207 111 89 84 90
                              -12 13 -27 -7 -8 -18 12 23
164 123 131 135 133 92 85 162
                               -3 0 16 -2 -20 21 0 -1
```

5 - 12 6 27 - 3 2 14 - 37

6 5 -6 -9 6 14 -47 44

 $\epsilon(i,j) = f(i,j) - \tilde{f}(i,j)$

Fig. 9.3 (cont'd): JPEG compression for a textured image block.

用于纹理图像块的JPEG压缩。

141 159 169 73 106 101 149 224

150 141 195 79 107 147 210 153

 $\tilde{f}(i,j)$

