

# Feature Extraction and Image Processing - Corrections

Underlines show changed/new words.

Aguado is incorrect on the spine and on the rear cover!

P21 It's not Matlab 5.3.1 now.. line 13 should read "The current version is Matlab 6, but..."

Page 35 –  $e^{-j\omega t}$  ..... gives the frequency components in  $p(t)$

Page 36 – (as plotted in Figure 2.3**b**) suggests that

P65 Change Bob Damper's book (Damper 1995) for Ifeachor's excellent book (Ifeachor 2002)

P65 remove Damper reference (as it's now out of print): Damper R. I. , *Introduction to Discrete-Time Signals and Systems*, Chapman and Hall, London UK, 1995

P66 introduce Ifeachor reference: Ifeachor, E. C., and Jervis, B. W., *Digital Signal Processing 2<sup>nd</sup> Ed.*, Prentice Hall, Hemel Hempstead UK, 2002

P83 Code 3.7 swap order of `for x` and `for y` statements So Code 3.7 is (with approximations to the fancy symbols)

```
sum ← winsize .winsize  
for x ∈ 0..winsize - 1  
  for y ∈ 0..winsize -1
```

Page 86. In Figure 3.16 the columns should be headed (a), (b) and (c) not (a), (a) and (a)

Page 88 – the error in  $N$  samples is  $O(1/N)$ , E 3.23 is then

error = mean/N

P89 line -3. Delete :

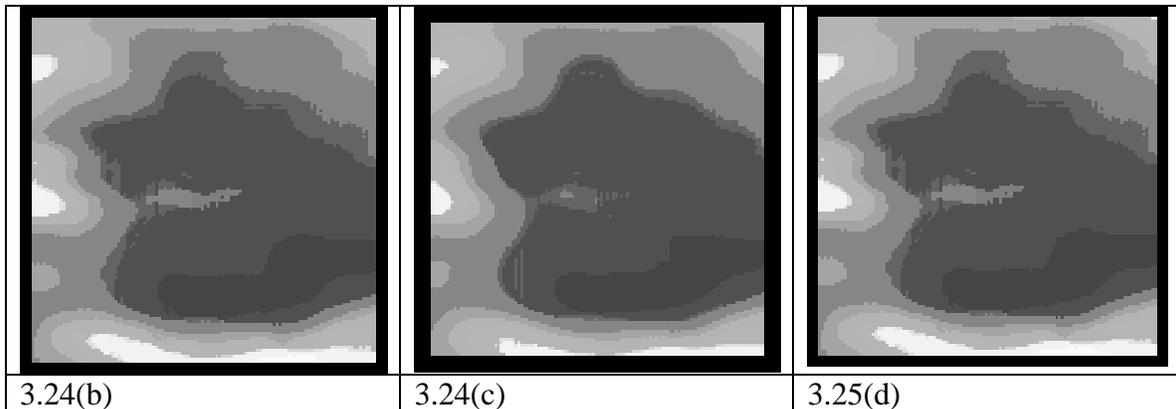
P94 Code 3.14 missed the check whether the mean equalled the median which results in some odd artifacts in the results (I gave out 2 beers for that one!). Code 3.14 should read in parts as

```
win ← submatrix(p,y-ha,y+ha,x-ha,x+ha)
```

and a later section becomes

```
if (winj,i<upper)·(med<ave)
  |truncc ← winj,i
  |cc ← cc+1
if (winj,i>lower)·(med>ave)
  |truncc ← winj,i
  |cc ← cc+1
newpicy,x ← median(trun) if cc>0
newpicy,x ← med otherwise
```

And the figures 3.24(b), 3.24(c) and 3.25(d) should be



Page 101 the upper edge in Figure 4.2(c) appears

Page 103 – Equation 4.6 and two lines below it have  $O(\Delta x^2)$  when it should be  $O(\Delta x)$  (and it was right on the proofs!). (That’s why – later – for  $\Delta x < 1$ ,  $O(\Delta x^2) < O(\Delta x)$ .)

Also, Eqn. 4.7 should be  $\mathbf{E}x_{x,y} = \mathbf{E}x_{x+1,y} + \mathbf{E}x_{x,y} = \dots$

P123 the LoG is  $+\frac{\partial^2 g(x,y)}{\partial y^2}$

P125 In zerox, Code 4.15,

P138 last line delete of so the sentence becomes, “to measure curvature”.

P140 code 4.18 in middle, replace `if op= = 'T1'` with `if op= = 'TI'`

P141 by (1,0), (0,-1), 0,1) and (-1,0)

P148 in Code 4.20 it should be displacement position

Page 153 – Eqn. 4.95 the fractions with denominator 2 should end in  $u_{x,y+1}$  and  $v_{x,y+1}$  for  $\bar{u}$  and  $\bar{v}$ , respectively. Eqn. 4.95 is then

$$\bar{u}_{x,y} = \frac{u_{x-1,y} + u_{x,y-1} + u_{x+1,y} + u_{x,y+1}}{2} + \frac{u_{x-1,y-1} + u_{x-1,y+1} + u_{x+1,y-1} + u_{x+1,y+1}}{4}$$
$$\bar{v}_{x,y} = \frac{v_{x-1,y} + v_{x,y-1} + v_{x+1,y} + v_{x,y+1}}{2} + \frac{v_{x-1,y-1} + v_{x-1,y+1} + v_{x+1,y-1} + v_{x+1,y+1}}{4}$$

Next paragraph mentions  $uu$  and  $vv$  – these should be  $tu$  and  $tv$ . So, we use the matrices  $u,v, tu, tv$  to store ...

Line 16, replace “by using Equations 4.93, 4.94, and 4.95” with “by using simplified forms of Equations 4.93, 4.94, and 4.95”.

P155 Figure 4.38 Example of differential-based

P175 the peak seen in Figure 5.7(d)

P179 line 3 The range for  $\theta$  is within  $360^\circ$ ...

```
Code 5.4 acc=zeros(rmax,360)
```

```
for m=1:360
```

Page 180 – r.h.s. of Eqns. 5.32 should be  $y_0 = \underline{y - r\sin(\theta)}$ ..

P200 It is important to notice that  $\theta$  does not define

P225 and the contour itself, con.

P238 Fig 6.11 It's  $D(i,j,..$  not  $Di(j$  so it's  $D(i,j,0.6)$  and  $D(i,j,5)$

Fig 6.12(a) the horizontal axis is alpha not theta (ie under the 0 it's  $\alpha$  not  $\theta$ )

P239 line -2 change “heart” for “club” , i.e ....and the edge image of a club...

P240 It's a corner detector in (b) and (e) and the centre is in (c) and (f). So line 1 contains “Figures **6.13**(c) and (f) are for” and line 3 contains “In Figures **6.13**(b) and (e) are for”

Page 284 – Eqn. 7.85 should result in  $\mu_{20} = m_{20} - \frac{m_{10}^2}{m_{00}}$

Page 322 – The matrix on the lower left is the wrong one (the numbers are far too large). They should be <10, consistent with the output of the logarithm operator.

Ie.

new\_pic =

|   | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 4 | 4 | 4 | 5 | 5 | 4 | 4 | 4 | 4 | 4 |
| 1 | 4 | 4 | 4 | 5 | 4 | 4 | 4 | 4 | 4 | 4 |
| 2 | 4 | 4 | 4 | 5 | 5 | 5 | 4 | 4 | 4 | 4 |
| 3 | 4 | 4 | 4 | 5 | 5 | 4 | 4 | 4 | 4 | 4 |
| 4 | 4 | 4 | 4 | 5 | 5 | 4 | 4 | 4 | 4 | 4 |
| 5 | 4 | 4 | 4 | 5 | 5 | 4 | 4 | 4 | 4 | 4 |
| 6 | 4 | 4 | 4 | 5 | 4 | 4 | 4 | 4 | 4 | 4 |
| 7 | 4 | 4 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 4 |
| 8 | 4 | 4 | 5 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| 9 | 4 | 4 | 5 | 4 | 4 | 4 | 4 | 5 | 4 | 4 |

Page 343 – Sobel33 has lost a factor of 2 and from the worksheets (where it originated!) it should be

`y_mag=image(y-1,x-1)+2*image(y,x-1)+image(y+1,x-1)...`

Page 343 - delete the error message on the left of the lower figure. Word, Word!