

Errata and Clarifications
Digital Image Processing
3rd Edition

Gonzalez and Woods
 Prentice Hall
 © 2008

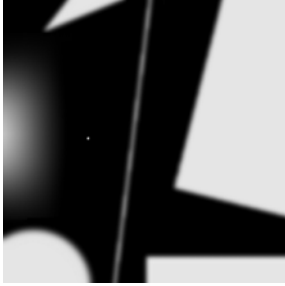
January 13, 2010

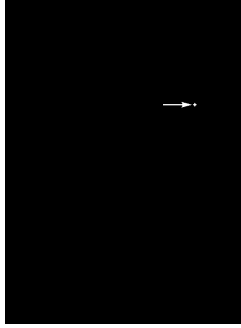
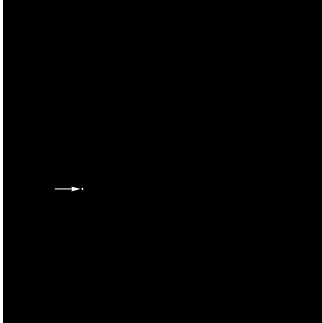
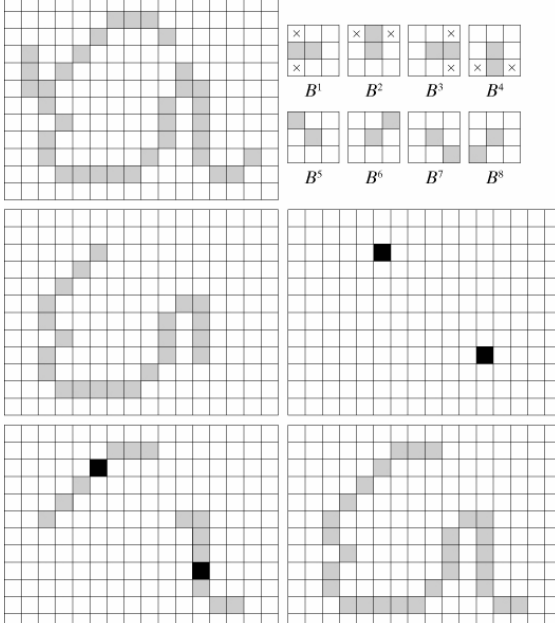
CORRECTIONS

Page	Reads	Should Read
81, 4th paragraph	that all member of the sets	that all members of the sets
88, Table 2.2, 3rd row, 3rd col	$y = v \cos + w \sin$	$y = v \sin + w \cos$
120, 7th line from top	$p(r_k) = r_k / MN$	$p(r_k) = n_k / MN$
133, 2nd line from bottom	$s_4 = 7$	$s_4 = 6$
149, footnote	The footnote should read: Because convolution is commutative, we have that $w(x, y) \star f(x, y) = f(x, y) \star w(x, y)$. This is not true of correlation, as you can see, for example, by reversing the order of the functions in Fig. 3.29(a).	
159, Fig. 3.36(c)	The 8th black dot (counting from the left) should be located on the horizontal axis instead of at -1.	
181, footnote	Change all instances of <i>med</i> to <i>mat</i> .	
185, Eq. (3.8-20)	$\dots, M\}$	$\dots, N\}$
186, 3 lines above Eq. (3.8-21)	$\mu_{\text{NOT}(A)} =$	$\mu_{\text{NOT}(A)}(z) =$
186, below Eq. (3.8-21)	We see that if all the THEN rules fire at full strength (all their responses are 1)	We see that if any of the THEN rules fires at full strength (its response is 1)
189, 7th line from top	. . . levels (talk . . .)	. . . levels (tall . . .)
203, 2nd line	$\sqrt{3}$	$\sqrt{5}$
207, 2bd equation from top	. . . AT AW . . .
220, Eq. (4.3-12)	. . . sinc $[(t - n\Delta T) / n\Delta T]$. . . sinc $[(t - n\Delta T) / \Delta T]$
235, line 8	. . . subject's left eye subject's right eye . . .
243, 2nd parag of example	its DFT is even and the odd part is odd . . .	its DFT is even and the imaginary part is odd . . .
247, 5th line from top	. . . Figure 4.22(c) shows the result.	. . . Figure 4.24(c) shows the result.
252, 6th line from bottom	. . . As rule As a rule . . .
277, Fig. 4.47 (c)	0.667	0.607
285, Table 4.5, 1st column	$\begin{Bmatrix} 1 \\ 0 \end{Bmatrix}$	$\begin{Bmatrix} 0 \\ 1 \end{Bmatrix}$
299, 4th line below Eq. (4.11-3)	. . . multiplying this result	. . . dividing this result
362, 5th line from top	With increases above 1/2 . . .	With decreases below 1/2 . . .
374, Eq. (5.11-9), 1st line	Insert a θ after $y \sin$ in the first line of the equation	
374, Eq. (5.11-11)	$G(\rho, \theta) =$	$G(\omega, \theta) =$
376, Eq. (5.11-16)	On the rightmost side of the equation, replace $y \sin \rho$ by $y \sin \theta$	
380, Eq. (5.11-18)	On the rightmost side of the equation, replace $y \sin \rho$ by $y \sin \theta$	
382, Eq. at bottom of page	$r \cos(\theta - \alpha)$	$r \cos(\theta - \varphi)$
385, 5th line from bottom	$D \sin \gamma$	$D \sin n\gamma$
390, Prob 5.11(a)	. . . elimination eliminating . . .
393, Problem 5.31(b)	$g(\rho - x_0 \cos \theta - y_0 \sin \theta, \theta)$	$g(\rho - x_0 \cos \theta - y_0 \sin \theta, \theta)$
468, 3rd line from top	. . . order K order $K - 1$.
563, line above Ex 8.12	11000000 and 01000000, respectively.	01000000 and 11000000, respectively.
602, Eq. (8.2-57)	Insert " = 0 " on the right of Eq. (8.2-57)	

620, Eq. (8.3-4)	$\hat{\omega}_i = \hat{c}_i - c_i$	$\hat{\omega}_i = \frac{\hat{c}_i - c_i}{\alpha c_i}$
663, Table 9.1, Skeletons	In Skeletons, remove the union sign in the second line. $S_k(A)$ should be as given by Eq. (9.5-12).	
665, last line, before figure	$\dots = b(-x -y)$	$\dots = b(-x, -y)$
670, 11th line from bottom	disk of radius 2 . . .	disk of radius 1 . . .
735, Fig. 10.33(b)	The values shown on the theta axis should be from -80 to +80 to correspond to Fig. 10.32(b).	
751, 5th line	If T is set to the maximum value of . . .	If T is set to any value less than the minimum value of . . .
751, 6th line	. . . will consists of all 0s.	. . . will consist of all 1s.
818, Eq. (11.2-5)	The divisor in Eq. (11.2-5) should be K . The summation is still 0 to $P - 1$. You can see why this is so by expanding Eq. (11.2-4) into two summations: one from 0 to $P - 1$ and the other from P to $K - 1$. All the coefficients in the 2nd summation are 0, but the divisor is still K in both expressions.	
832, Table 11.3	The double summations for Homogeneity and Entropy should be i and j , instead of i and i .	
870, Eq. (12-2-8)	Replace Eq. (12.2-8) with the following: $\gamma(x, y) = \frac{\sum_s \sum_t [w(s, t) - \bar{w}] [f(x + s, y + t) - \bar{f}_{xy}]}{\left\{ \sum_s \sum_t [w(s, t) - \bar{w}]^2 \sum_s \sum_t [f(x + s, y + t) - \bar{f}_{xy}]^2 \right\}^{\frac{1}{2}}}$	
870, 2nd and 3rd lines below Eq. (12.2-8)	. . . and $\bar{f}(x + s, y + t)$ is the average value of f in the region coincident with w and \bar{f}_{xy} is the average value of f in the region coincident with w .
921, 12th reference from top	Eng, H.-L. and Ma, K.-K. [2006] . . .	Ng, P.-E. and Ma, K.-K. [2006] . . .

CLARIFICATIONS

Page	Clarifications
59, last sentence, 2nd paragraph.	It is assumed also that the physical dimensions of the chips are the same.
117, 2nd paragraph of Ex 3.3.	Figure 3.12(c) was generated with a transformation function of the <i>form</i> shown in Fig. 3.11(b), but with the value of the constant part of the curve set to 0 instead of the high value shown in Fig. 3.11(b).
661, Fig. 9.31(c).	Although the image appears as a uniform black rectangle (all 0s), there are 1-valued points along its boundary that are difficult to see at the image scale shown and also because the background (page) is white (i.e., 1-valued). See the 3rd sentence in the first paragraph of page 661.
694, Fig. 10.2(a).	<p>The image in Fig. 10.2(a) should have the dot shown. In some printings of the book the dot is barely visible, while in others it shows perfectly, as in the image shown on the right. Also, small, random printing imperfections that sometimes show in white or gray can be confusing, and should be ignored. [Note: If you're using a low resolution monitor you may need to magnify this document in order to see the dot.]</p> 

<p>697, Fig. 10.4(d)</p>	<p>The image in Fig. 10.4(d) should have the single dot shown. The image is black (0) elsewhere. In some printings of the book the dot is barely visible, while in others it shows perfectly, as in the image shown on the right. Also, small, random printing imperfections that sometimes show in white or gray can be confusing, and should be ignored. The correct image consists of a single white dot on a uniform black background.</p>	
<p>872, Fig. 12.9(d).</p>	<p>The image in Fig. 10.9(d) should have the single white dot shown. The image is black (0) elsewhere. In some printings of the book the dot is barely visible, while in others it shows perfectly, as in the image shown on the right. Also, small random printing imperfections that sometimes show in white or gray can be confusing, and should be ignored. The correct image consists of a single white dot on a uniform black background.</p>	
<p>Pg 655, Fig. 9.25</p>	<p>Edit figure to look like the one on the right.</p>	

773, Fig. 10.55.

Note that the pixel identified by the arrow in the top left of the figure is missing in the figure in the book.

