Errata for the <u>2nd & 3rd Printings</u> of "Understanding Digital Signal Processing, 2/E",

by Richard Lyons

I beg your pardon for the typographical errors in the book. It will not take long to make these corrections. I promise.
- Rick Lyons

Page 7: In the third line below Eq. (1-7), the text:

   "... indicate that $X_{sum}(n)$ has a frequency ..."

The uppercase "X" should be lowercase "x" as:

   "... indicate that $x_{sum}(n)$ has a frequency ..."

[Found by Angela Livingstone, 3/30/08; [Production Error]

Page 23: Equation (2-3), ends with the text:

   "... $\sin(2\pi(f_o + \frac{1}{32})nt_s$ (2-3)

The $\frac{1}{32}$ should be $\frac{m}{nt_S}$ & there is a missing "final" right

parenthesis, and period, after the "nt_s". The Eq. (2-3) should end with:

   "... $\sin(2\pi(f_o + \frac{m}{nt_S})nt_s$**).**   (2-3)

[Found by Jimmy Ceilidh, 12/30/04; & Jim Murphy, 9/14/05.][Production Error]

Page 31: In the 3rd line above EQ. (2-6), in the text:

   "... and negative bands, P and Q, just butt up ...

the letters "P" & "Q" should be swapped making it:

   "... and negative bands, **Q** and **P**, just butt up ...

[Found by Jimmy Ceilidh [12/29/04].][Author Error]

Page 34: In the 5th line down, the text:

   "... where spectral replications do not butt up against each
    other except at zero Hz."

is confusing. Please edit it as follows:

   "... where spectral replications ~~do not~~ butt up against each
     other ~~except~~ at zero Hz."

Page 37: The "f_s" labels, within the arrows, at the very bottom of Figure 2-13 should be "$f_s/2$".

[Found by Author [6/20/06].][Author Error]

Page 38: In the fifth line up from the bottom of the page, the text:

   "... where m_{odd} is an odd integer[14]."

should be changed to:

   "... where m_{odd} is an odd integer greater than one[14]."

[Found by Jim Murphy [9/14/05] & Justin Reeves [6/20/06].][Author Error]

Page 40: In the 2nd line below Eq. (2-14), the text:

   "m = 2 provide an optimum ..."

should be changed to:

   "m_{even} = 2 provide an optimum ..."

[Found by Justin Reeves, 6/20/06.][Author Error]

Page 42: In the middle of Table 2-2, on the right side, the text:

   "m_{odd} is any positive odd integer ..."

should be changed to:

   "m_{odd} is an odd integer greater than one ..."

[Found by Justin Reeves, 6/20/06.][Author Error]

Page 46: Equation (3-2), toward the middle of the page, was printed as:

   **DFT equation
   (expotential form):**$\rightarrow$ ...

The word **"expotential"** is misspelled, and should be "exponential", making Eq. (3-2) become:

   **DFT equation
   (exponential form):**$\rightarrow$ ...

[Found by Author, 6/6/04.][Production Error]

Page 48: The incorrect letter "v" in the third line of Eq. (3-4d) should be replaced with a "$\cdot$" multiplication symbol.

[Found by Uday Padmanabhan, 11/19/08.][Author Error]

Page 62: The second part of equation (3-18') printed as:

$$x(n) = \frac{1}{\sqrt{N}} \sum_{n=0}^{N-1} X''(m) e^{j2\pi nm/N} \qquad\qquad (3\text{-}18')$$

should have the lower limit of the summation changed to "m" instead of "n", as :

$$x(n) = \frac{1}{\sqrt{N}} \sum_{m=0}^{N-1} X''(m) e^{j2\pi nm/N}$$ (3-18')

[Found by Larry Ong, 2/19/08.][Author Error]

Page 63: on line 9, the text:

"..., that $X(N/2+1)$, when $m = N/2+1$"

should be

"..., that $X(N/2)$, when $m = N/2$"

[Found by Antoine Trux, 12/15/04.][Author Error]

Page 76: Equation (3-26) was printed as:

$$X_\omega(m) = \sum_{n=0}^{N-1} \omega(n) x(n) e^{-j2\pi mn/N}$$ (3-26)

Those two ω (omega) characters, in the subscript and inside the summation, should be italicized lowercase "w" characters, making Eq. (3-26) become:

$$X_w(m) = \sum_{n=0}^{N-1} w(n) x(n) e^{-j2\pi mn/N}$$ (3-26)

[Found by Author, 5/6/04.][Production Error]

Page 77: Toward the top of the page, for the Triangular Window equation (3-28) printed as:

Triangular Window: $\omega(n) = \dfrac{n}{N/2}$, for $n = 0,1,...$

That ω (omega) character should be an italicized lowercase "w", making Eq. (3-28) become:

Triangular Window: $w(n) = \dfrac{n}{N/2}$, for $n = 0,1,...$

[Found by Author, 5/6/04.][Production Error]

Page 77: For **both** Eq. (3-29) and Eq. (3-30), the "-1" characters should be deleted from the denominator of the cosine arguments. The cosine argument, in both equations, should be:

"$\ldots\cos(2\pi n/N)$,"

[Found by Author, 10/26/07.][Author Error]

Page 93: The last term in Equ. 3-37 has a missing minus sign in

its exponent. The last term should be:

$$... + e^{-jq(K-1)}].$$

[Found by Stan Moore, 3/19/12.][Production Error]

Page 105: In Table 3-1, on the second row the 1st column text:

"Frequency in radians"

should be replaced with:

"Frequency in radians/second"

[Found by Antoine Trux, 12/15/04.][Author Error]

Page 108: In the column of Equation numbers down the right side of the page, the first Equation number:

(3-46)

should be changed to:

(3-43)

[Found by Author, 4/26/04.][Author Error]

Page 110: In both lines of Equation (3-58) there is a missing minus sign in front of the "j" in the exponent of "e".
For both lines of Eq. (3-58) the printed expression should be:

$$= e^{-j(2\pi n/N)...}$$

[Found by Antoine Trux, 12/15/04.][Author Error]

Page 114: The label text above the arrow in Figure 3-41 states:

" ... transform of $x(n)$ ..."

There is a missing "c" subscript, the arrow's label text should state:

" ... transform of $x_c(n)$ ..."

[Found by Jimmy Ceilidh [12/26/04].][Author Error]

Page 115: In the equation above Table 3-3, the ratio in the middle is missing a minus sign in the numerator, and the prime tick should be deleted in the denominator in the last ratio. The equation should look as:

$$\frac{\sin(\pi(0-m))}{\sin(\pi(0-m)/N)} = \frac{-\sin(\pi m)}{-\sin(\pi m/N)} = \frac{\sin(\pi m)}{\sin(\pi m/N)}$$

[Found by Douglas Barton, 7/10/04.][Production Error]

Page 116: There is a missing minus sign in front of the "j" in the exponent of the 2nd term of Eq. (3-73). That second line of Eq. (3-73) should begin as:

$$... + e^{-j[\pi(k+m)-\pi(k+m)/N]} ...$$

[Found by Author with help from Doug Hudson, 11/6/04.][Production Error]

Page 122: The caption to Figure 3-47 was printed as:

"DTFT magnitude $|X_O(w)|$"

The "w" should be the Greek "ω" character, making the caption:

"DTFT magnitude $|X_O(\omega)|$"

[Found by Author, 4/16/05.][Production Error]

Page 135: On the 3rd line from the bottom, the "1" in:

"$e^{-j\pi} = 1$"

should be a minus 1 as

"$e^{-j\pi} = -1$"

[Found by Antoine Trux, 1/2/07.][Author Error]

Page 143: In Figure 4-10, in the middle stage there is
the number 4 on the 1st and 2nd (counting down from the top)
southeast-pointing arrows. Those 4s should not be there.
The 4s should be on the 3rd and 4th southeast-pointing arrows
of the middle stage as shown below.
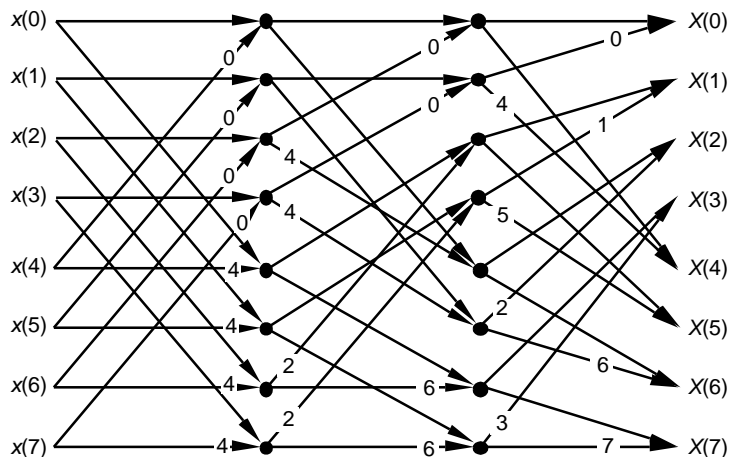
[Found by Antoine Trux, 1/2/07.][Author Error]

Page 163: The text on the bottom line, printed as:

"Figures 5-8(a) and 5-8(b)."

should be changed to

"Figures 5-8(b) and 5-8(c)."

[Found by Antoine Trux, 12/15/04.][Author Error]

Page 178: In the 3rd & 4th lines of the 1st paragraph the text
printed as:

"... defined by 32 discrete samples, to which 480 zeros were ..."

should be

"... defined by 16 discrete samples, to which 496 zeros were ..."

[Found by Fitzgerald Sungkyung Park, 4/25/06.][Author Error]

Page 179: In the 5th line of the next to the last paragraph the text printed as:

"... by 32 discrete samples, with 480 zeros appended, ..."

should be

"... by 16 discrete samples, with 496 zeros appended, ..."

[Found by Fitzgerald Sungkyung Park, 4/25/06.][Author Error]

Page 198: On line 8, the text:

"... in Figure-34(b), ..."

Should be:

"... in Figure 5-40(b), ..."

[Found by Antoine Trux, 12/15/04.][Author Error]

Page 213: Equation (6-1) was printed as:

$$y(n) = h(0)x(n) + h(1)x(n\text{-}1) + h(2)x(n\text{-}2) + h(3)x(n\text{-}3) + h(4)x(n\text{-}4). \qquad (6\text{-}1)$$

The final **h(4)x(n-4)** term should be deleted making
Eq. (6-1) become:

$$y(n) = h(0)x(n) + h(1)x(n\text{-}1) + h(2)x(n\text{-}2) + h(3)x(n\text{-}3). \qquad (6\text{-}1)$$

[Found by Nikhil Sarma, 4/27/04.] [Author Error]

Page 222: In Figure 6-7(a), the label above the arrow should be

"$\sigma = -a_0/a_1$"

just as it is in Figure 6-8(a)

[Found by Antoine Trux, 12/15/04.][Author Error]

Page 241: In Figure 6-21(a), the "Imag z" axis label is missing.

[Found by Nikhil Sarma, 4/28/04.] [Author Error]

Page 244: The normalized-frequency labeling (radians/sample) on the frequency axis of Figures 6-24(b) and 6-24(c) should be changed as:

-2π changed to -4π
$-\pi$ changed to -2π
π changed to 2π
2π changed to 4π

Page 245: On the second line the text:

     "... if Figure 6-4(a) ..."

should be changed to

     "... if Figure 6-24(a) ..."

Page 247: On the last line of the footnote, the text:

     "... in Step 5."

should be changed to:

     "... in Step 6."

Page 257: In the eleventh line below Eq. (6-87)

      "... Figure 6-21(b). Knowing that ..."

should be changed to:

     "... Figure 6-**22**(b). Knowing that ..."

Page 264: In the 6th line of the first full paragraph, the text:

     "...squeezed in toward zero Hz."

should be:

     "...squeezed in toward $\mathbf{f_s/2}$ Hz."

Page 264: In the next to the last line of the first full paragraph there's a
missing "|" vertical bar character indicating "magnitude". The text:

     "...in $|H_d(f_d)-$..."

should be:

     "...in $|H_d(f_d)|-$..."

Page 265: The first line of the caption to Figure 6-32 was printed as:

            "... between the f_d and f_c frequencies: ..."

     The subscripted "c" should be an "a", making the text:

            "... between the f_d and f_a frequencies: ..."

Page 267: There is a missing "x(n)" factor in Equation (6-114), the
first part of that equation should be:

      y(n) = 0.20482712·**x(n)** + 0.40965424·x(n–1) + ...

Page 286:   The last sentence on the page printed as:

      "A single-section FSF *z*-domain transfer function is ..."

Should be changed to:

      "The comb filter's *z*-domain transfer function is ..."

Page 286:   If the feedback coefficient of the resonator in
Figure 7-3 is:

   $e^{j\square r}$

it should be changed to:

   $e^{j\omega r}$

Page 300:   At the very right side of the numerator in Eq. (7-21),
printed as:

$$+\sum_{k=1}^{N/2-1} \frac{(-1)^k |H(k)|[2-2r\cos(2\pi k/N)z^-}{1-[2r\cos(2\pi k/N)]z^{-1}+r^2z^{-2}} \Big]. \qquad (7\text{-}21)$$

there are missing " ^{1}] " (a superscripted one and a right bracket)
characters after the "z¯" characters in the numerator. Eq. (7-21)
should be:

$$+\sum_{k=1}^{N/2-1} \frac{(-1)^k |H(k)|[2-2r\cos(2\pi k/N)z^{-1}]}{1-[2r\cos(2\pi k/N)]z^{-1}+r^2z^{-2}} \Big]. \qquad (7\text{-}21)$$

Page 300: In Figure 7-18(b), the feedback coefficient label
on the right side of the figure printed as:

      2*r*cos(2≠*k*/*N*),

the "≠" should be replaced with "π" (pi), as:

      "2*r*cos(2π*k*/*N*)"

Page 339: In Figure 8-3, the last fraction on the right of the second line down was printed as:

$$(jf)^6/6!$$

The letter "f" should be changed to the Greek letter ϕ, as:

$$(j\phi)^6/6!$$

Page 345: On the right side of Figure 8-8 the term $e^{j2\pi f_o t}$ should be divided by two, making it

$$e^{j2\pi f_o t}/2.$$

Page 346: In the sixth line down, the text:

   "... given in Eqs. (8-13) and (8-11)."

should be

   "... given in Eqs. (8-13) and (8-**14**)."

Page 353: In the sentence just before Eq. (8-17), the described notion of orthogonality of $i(n)$ and $q(n)$ is only conditionally true. Because this orthogonality topic was not described in sufficient detail, I suggest you strike out both the sentence just before Eq. (8-17) as well as Eq. (8-17).

Page 354: In the third line from the bottom, the text:

    "... about zero Hz, not f_c Hz as in Figure 8-17(b)."

should have a comma inserted after "f_c Hz", as:

    "... about zero Hz, not f_c Hz, as in Figure 8-17(b)."

(Note: The missing comma is essential because it changes the meaning of the sentence.)

Page 373: Item# 3 is not worded properly. In the second sentence printed as:

   "We can widen (somewhat) and reduce the ..."

Please replace the above "(somewhat)" with:

   "We can widen **the passband** and reduce the ..."

Page 373: In Figure 9-11, in the middle and bottom figures, the
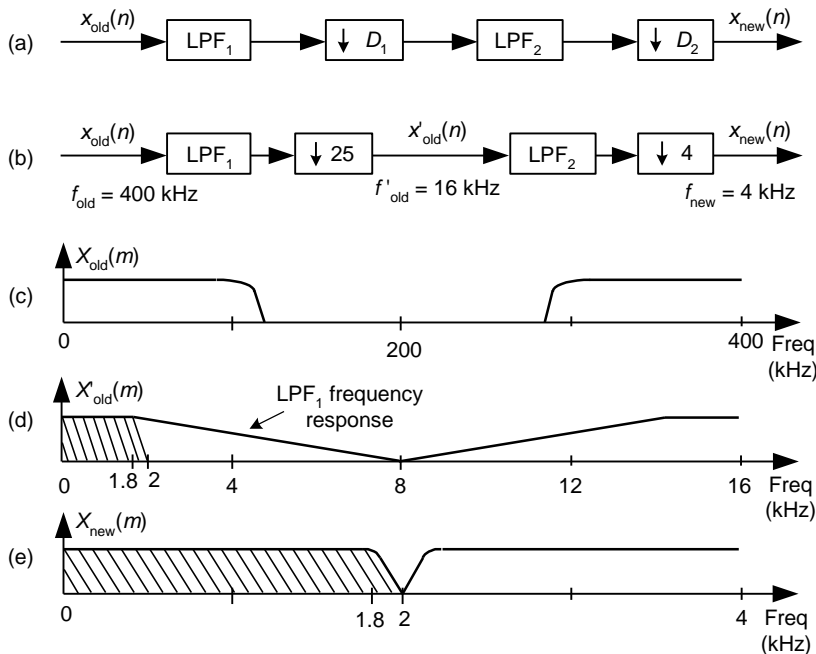two labels within the figures printed as:

> "... of $H_1(\square)$"

should be changed to

> "... of $H_1(\omega)$"

Page 384: The "shading" in two places at
the bottom in Figure 10-3 doesn't show up in the figure.

The shading in Figure 10-3 should look like the following:

Page 389: In the seventh line of the second paragraph, the
text is printed as:

> "The lower the attenuation, the ...".

Please change the word "lower" to "greater" so that
the text reads:

> "The **greater** the attenuation, the ...".

Page 390: In the second paragraph that starts with the sentence:

> "Notice the frequency response of $LPF_{M/D}$ must be designed so the
> beginning of its stopband frequency is less than $f_{new}/2$ in order to
> avoid aliasing after the decimation."

Please replace the above sentence with:

"To avoid aliasing after the decimation, the cutoff frequency of $LPF_{M/D}$ must be the minimum of the cutoff frequencies required by LPF_M and LPF_D."

[Found by Author, 5/18/04.] [Author Error]

Page 399: Equation (10-8) was printed as:

$$Y(z) = \frac{1}{D} [X(n) + X(n)z^{-1} + X(n)z^{-2} + ... + X(n)z^{-D+1}] \qquad (10\text{-}8)$$

The X(n) terms should all be X(z), so Eq. (10-8) should be

$$Y(z) = \frac{1}{D} [X(z) + X(z)z^{-1} + X(z)z^{-2} + ... + X(z)z^{-D+1}] \qquad (10\text{-}8)$$

[Found by Gurpal Gill, 4/7/05.] [Author Error]

Page 430, fourth line down in 1st paragraph of Section 11.4:

The words printed as:

   "... (*N*–1)-tap FIR filter ..."

Shold be changed to read as:

   "... *N*-tap FIR filter ..."

[Found by Author, 12/18/04.][Author Error]

Page 430, last line on the page:

The words printed as:

   "... through *b*(*N*) coefficient ..."

Should be changed to read as:

   "... through *b*(*N*–1) coefficient ..."

[Found by Author, 12/18/04.][Author Error]

Page 445, fourth line down in Section 12.1.6:

The sentence printed as:

   "Offset binary represents **negative** numbers by subtracting ..."

The word "negative" should be deleted, making the sentence read as:

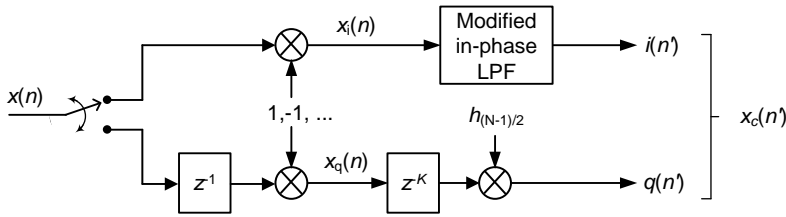   "Offset binary represents numbers by subtracting ..."

[Found by huangyijian, 8/23/04.][Author Error]

Page 478: in the fifth line down, delete the text:

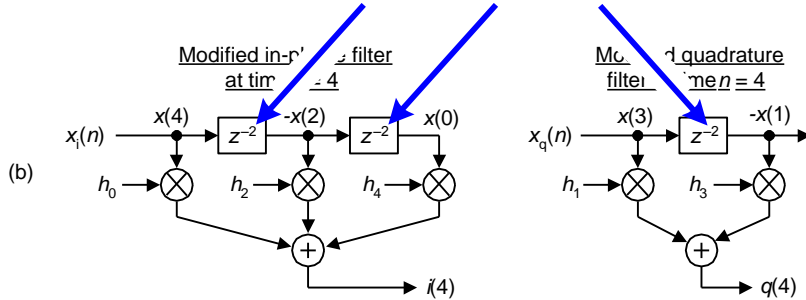   "...followed by another K delay..."

In Figure 13-6(c) the final z^{-K} delay block should be deleted
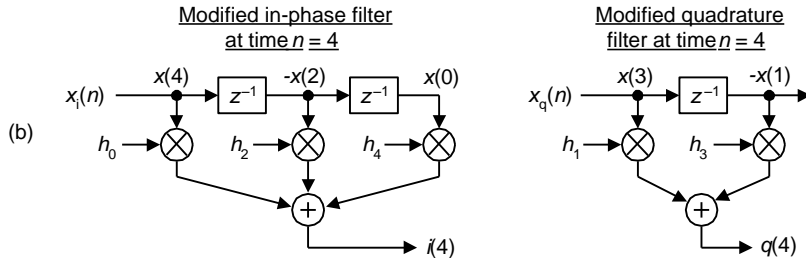
making that figure look as follows:

[Found by Brian Frantz, 8/8/17.][Author Error]

Page 479: In Figure 13-6(b) the superscripted "-2" characters shown
     by the large arrows below:

Should be changed from "-2" to "-1" making Figure 13-6(b) become:

[Found by Damon Bradley, 10/1/09.][Author Error]

Page 481, in the first line of the last paragraph:

The text printed as:

     "... Although using β = 15/16 and β = 15/32 appears to ..."

The first "β" (beta) symbol should be changed to "α" (alpha) making the
text read as:

     "... Although using $\boldsymbol{\alpha}$ = 15/16 and β = 15/32 appears to ..."

[Found by Author, 8/25/04.][Production Error]

Page 482: The text, on the top line of that page, printed as:

     "... result of Eq. (13-26). Equation (13-29) is ..."

The equation numbers should be changed to:

     "... result of Eq. (**13-7**). Equation (**13-6**) is ..."

[Found by Huangyijian, 8/23/04.][Production Error]

Page 484: Equation (13-10) has suffered a series of "foul-ups"
in different Printings of the book. Eq. (13-10) should be:

$$W(m) = \sum_{n=0}^{N-1} \alpha e^{-j2\pi nm/N} - \frac{\beta}{2} \cdot \sum_{n=0}^{N-1} e^{j2\pi n/N} e^{-j2\pi nm/N} - \frac{\beta}{2} \cdot \sum_{n=0}^{N-1} e^{-j2\pi n/N} e^{-j2\pi nm/N}$$

$$= \alpha \sum_{n=0}^{N-1} e^{-j2\pi nm/N} - \frac{\beta}{2} \cdot \sum_{n=0}^{N-1} e^{j2\pi n(m-1)/N} - \frac{\beta}{2} \cdot \sum_{n=0}^{N-1} e^{-j2\pi n(m+1)/N}. \qquad (13\text{--}10)$$

[Found by Author, 3/22/04.][Author Error]

Page 488: Equation (13-18) has minus signs where equal signs
should be. Equation (13-18) should be:

$x(0)$ **=** $a(0)$ + $jb(0)$
$x(1)$ **=** $a(1)$ + $jb(1)$
$x(2)$ **=** $a(2)$ + $jb(2)$
    . . .
    . . .
$x(N–1)$ **=** $a(N–1)$ + $jb(N–1)$ (13-18)

[Found by Author [1/11/07].][Production Error. Wierd. This
                            error was NOT in the 1st Edition!]

Page 489: In the 3rd line below Eq. (13-22) change
          the text from:

  "... in Eq. (13-40) , ..."

to:

  "... in Eq. (13-**2**0) , ..."

[Found by Antoine Trux, 1/11/07.][Author Error]

Page 496: In the 6th and 7th lines below Eq. (13-40)
          change the text from:

  "... real, $X_a(N)$ through $X_a(2N-1)$ are merely the
   complex conjugates of their $X_a(0)$ through $X_a(N-1)$
   counterparts ..."

to:

  "... real, $X_a(N\mathbf{+1})$ through $X_a(2N-1)$ are merely the
   complex conjugates of their $X_a(\mathbf{N-1})$ through $X_a(\mathbf{1})$
   counterparts ..."

[Found by Antoine Trux, 1/11/07.][Author Error]

I (the author) suggest you write the following in
the book's margin:

$$"X_{a,real}(N) = X_r(0) - X_i(0)"$$
$$"X_{a,imag}(N) = 0"$$

Page 506: In the second paragraph, third line, printed as:

   "... we spread the total noise power density (a fixed
       value) ..."

Please delete the word "density", resulting in:

   "... we spread the total noise power (a fixed value) ..."

[Found by Randy Yates, 6/17/04.][Author Error]

Page 518: For more accurate results, the "12/M" factor at the
beginning of Eq. (13-70) should be changed to sqrt(12/M).
Thus Eq. (13-70) should be:

$$y_{\text{desired}}(n) = \sqrt{\frac{12}{M}} \cdot \sigma' \cdot \left[\left(\sum_{k=1}^{M} x_k(n) \right) - \frac{M}{2} \right] + \mu' . \qquad (13\text{-}70)$$

[Found by Bharat Pathak, 7/13/07.][Author Error]

Page 519: Under Section 13.13, Sharpened FIR Filters, the third
sentence in the opening paragraph is printed as:

      "Actually, we can a filter's double stopband ..."

Please move the word "double" in front of the "a", resulting in:

      "Actually, we can double a filter's stopband ..."

[Found by Chris Frailey, 12/8/04.][Author Error]

Page 544: In the exponent of Eq. (13-104), originally printed as:

$$X(k) = \sum_{n=0}^{M\text{-}1} x(n) e^{-j2\pi nk/N}. \qquad (13\text{-}104)$$

The "N" should be changed to an "M", making the equation print as:

$$X(k) = \sum_{n=0}^{M\text{-}1} x(n) e^{-j2\pi nk/M}. \qquad (13\text{-}104)$$

[Found by Author 3/13/06.][Author Error]

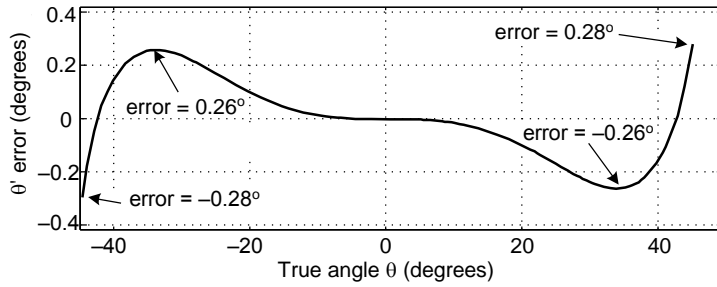**Page 548:** 4th line below Eq. (13-107), change the text:

      "... 0.26^o using ..."
to
      "... $0.2\mathbf{8}^o$ using ...".

For preciseness, you might note on Figure 13-59 that the error is -0.28^o
at True $\theta = -45^o$, and the error is $+0.28^o$ at True $\theta = +45^o$, as shown in the
following figure.

[Found by Chris Zarowski, 4/27/06.][Author Error]

Page 549: 4th line below Eq. (13-109'), change the text:

"... error is 0.26^o for ..."

to

"...error is $0.2\mathbf{8}^o$ for ...".

[Found by Chris Zarowski, 4/27/06.][Author Error]

Page 551: In Figure 13-61(a) there needs to be a Delay element
inserted just after the "Inverse" operation as shown below. The length
of that (missing) Delay element should be the same length as the Delays
in the I and Q input paths.
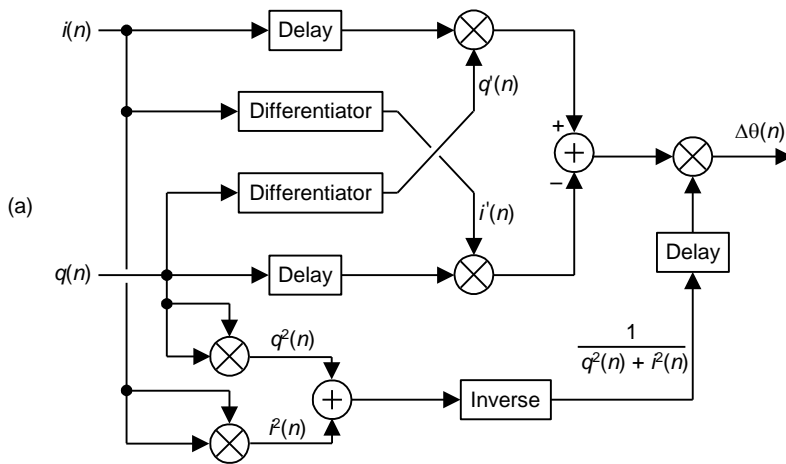
[Found by "Jerry W." on comp.dsp, 8/25/05.][Author Error]

Page 560: In Figure 13-70(b), on the right side in the
"Section 3, r = 1" part of the figure, there should be three
stages of delay lines instead of only two stages as shown
in the figure. That "Section 3, r = 1" part of the figure should
look like the following:
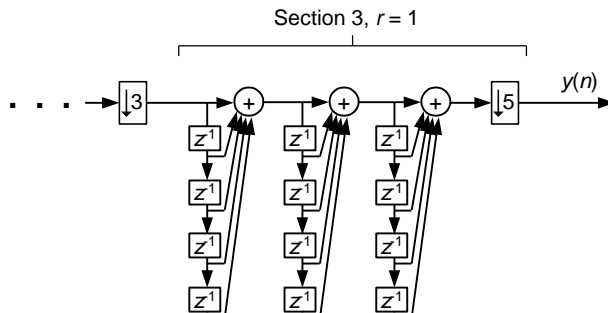
[Found by Mike Totham, 8/31/07.][Author Error]

Page 561: Equation (13-123) has a missing 1/N scale factor in
front of the summation. That equation should be:

$$M(q) = \frac{1}{N} \sum_{k=qN}^{(q+1)N-1} x(n) \qquad\qquad (13\text{-}123)$$

[Found by Author, 8/24/08.][Production Error]

Page 569: In the right $X_{\text{int}}(m)$ column of Table 13-8, the *underline* character
associated with row $m = 9$ should be a zero "0" value
as follows:

m	$X_{\text{int}}(m)$
...	...
9	0
...	...

[Found by Author, 3/21/09.][Production Error]

Page 574: In Figure 13-77(a), the "log(R)" factor applied to the
adder should be two times the log of R as:

        2log(R).

[Found by Mark Borgerding, 6/8/05.][Author Error]

Page 575: The two labels in Figure 13-78(c) were strangely messed up
during the typesetting process. The

        α = 0.7   and the   α = 0.09

labels above the graphs should be changed to

        α = 0.2   and the   α = 0.05

The bottom line in the figure caption is printed as:

        "... (c) $E(n)$ for α = 0.7 and α = 0.9."

That caption text should be changed to:

        "... (c) $E(n)$ for α = 0.2 and α = 0.05."

[Found by Author, 3/24/05.][Production Error]

Page 607: Two corrections: In the second line of Eq. (D-7),
the term:

   "... –cos(ωt)] ...

should be:

   "... –cos(**2**ωt)] ...

In the third line of Eq. (D-7), the term:

   "... $-\frac{1}{2}$(sin(ωt))..."

should be:

"... $-\frac{1}{4}\left(\sin\left(\mathbf{2}\omega t\right)\right)$..."

[Found by Julian Vrbancich, 10/23/12; [Author Error]

Page 610: The final ratio at the end of Eq. (D-12) **MAY**
be printed as:

$$\frac{(b-a)^2}{12}.$$

Make sure the numerator looks like (with a PLUS sign):

$$\frac{(b+a)^2}{12}.$$

[Found by Author, 1/15/05.][Author Error]

Page 614: In the sentence just following Eq. (E-2), there is a missing
"P_1/P_2" ratio. That sentence should read as:

   "The logarithmic function $10 \cdot \log_{10}(P_1/P_2)$, plotted in ..."

[Found by Nikhil Sarma, 5/18/05.] [Author Error]

Page 623: Under the "Chebyshev Function": the fifth line down is
   printed as:

      "...ripples in the passband and flat passbands..."

   It should be printed as:

      "...ripples in the passband and **a** flat **stopband**..."

[Found by Mike Beliard, 1/29/05.][Author Error]

Page 627: The minus sign before the "0.04" value in Eq. (F-5) should
be deleted, making Eq. (F-5) end with:

      "... $= \frac{0.25}{2\pi} = 0.04$ seconds.   (F-5)"

[Found by Author, 4/22/05.][Author Error]

**Below are corrections to an *unexplainable* (!!) number of
errors in the Index. (No one that I spoke to at the
publisher's seems to know how this happened.) These
corrections, which took me many hours to compile, won't
take you too long to make. Although some people do not
think these corrections are important, I do because the
Index is a VERY important part of a book. On behalf of my
publisher, I beg your pardon for the following errors.**
                              [-Rick-]

Page 657, Right Column:

The top-level Index entry "Averaging" **<u>may</u>** be missing.

The following lines:

    Automatic gain control (AGC), 548, 571
      block, 561
      coherent, 412
      ...

should be:

    Automatic gain control (AGC), 548, 571
    Averaging
      block, 561
      coherent, 412
      ...

Page 657, Right Column:

In the following lines:

    Averaging
      ...
      moving, 398

the page numbers 152, 430, & 578 should be added making the line:

    Averaging
      ...
      moving, **152**, 398, **430**, **578**

Page 658, Left Column:

In the following line:

    Blackman windows, 86, 176

the page number 86 should be deleted and 486 added as:

    Blackman windows, 176, **486**

Page 658, Left Column:

In the following line:

    Complex down-conversion, 352

the page numbers 478 & 541 should be added as:

    Complex down-conversion, 352, **478, 541**

Page 658, Right Column:

In the following line:

    Demodulation, AM, 366, 573

the page number 573 should be changed as:

    Demodulation, AM, 366, **574**

Page 659, Right Column:

In the following lines:

```
    Down-conversion
      complex, 352
      filtering with, 476
      with spectrum analysis, 476
```

the 2nd page number 476 should be changed to 541 making the line:

```
    Down-conversion
      complex, 352
      filtering with, 476
      with spectrum analysis, 541
```

Page 659, Right Column:

In the following lines:

```
    Exponential averaging, 578
```

additional page numbers should be added making the line:

```
    Exponential averaging, 432, 575, 578
```

Page 659, Right Column:

In the following lines:

```
    Fast Fourier transform (FFT)
      averaging multiple, 128
```

the page number 128 should be changed to 422 making the line:

```
    Fast Fourier transform (FFT)
      averaging multiple, 422
```

Page 660, Left Column:

In the following lines:

```
    Filtering/filters (cont.)
      ...
      ...
      FIR comb, 284
```

the page number 284 should be changed to 286 & 398 as:

```
    Filtering/filters (cont.)
      ...
      ...
      FIR comb, 286, 398
```

Page 660, Left Column:

In the following lines:

```
    Filtering/filters (cont.)
      ...
      ...
      moving average, 398
```

the page numbers 152, 430 & 578 should be added making the line:

```
    Filtering/filters (cont.)
      ...
      ...
      moving average, 152, 398, 430, 578
----------------------------------------------------------------
```
Page 660, Left Column:

In the following lines:
```
    Finite impulse response (FIR) filters
      ...
      ...
      comb, 284
```
the page number 284 should be changed to 286 & 398, making the line:
```
    Finite impulse response (FIR) filters
      ...
      ...
      comb, 286, 398
```
[Found by Author, 8/27/04.] [Author Error]

Page 660, Right Column:

In the following lines:
```
    Frequency domain
      defined, 6
      listing of sequences, 8
      windowing in, 538
```
the page number 484 should be added making the line:
```
    Frequency domain
      defined, 6
      listing of sequences, 8
      windowing in, 484, 538
```

Page 661, Left Column:

In the following lines:
```
    Gaussian distribution, 92-99
```
the following four corrections should be made making the lines:
```
    Gaussian distribution, 416
```

Page 661, Right Column:

In the following lines:
```
    Integration processing gain, 88-91
    Intermodulation distortion, 17
```

make the following corrections:

     Integration processing gain, 88–91, **421**
     Intermodulation distortion, **16**

Page 662, Right Column:

In the following line:

     Normal distribution, 325

add the following pages numbers making the lines:

     Normal distribution, 325, **416, 610**

Page 663, Left Column:

In the following lines:

     Oscillator
       quadrature, 576

add the following 355 page number making the lines:

     Oscillator
       quadrature, **355,** 576

Page 663, Right Column:

In the following lines:

     Quadrature sampling
       description of, 545

add the following two page numbers making the lines:

     Quadrature sampling
       description of, **355, 542,** 545

Dear Reader, if you find any additional errors, no matter how trivial,
please notify me at:

           R.Lyons@ieee.org

I'd sure appreciate hearing from you and I promise I'll
reply to your E-mail.

Thanks,
[-Rick Lyons-]