Errors in published version of Principles of Digital Communication

The following errata have been found since the book went to press. This will be kept up to date as new errors are found. I would greatly appreciate any one finding errors to let me know. (6/15/11)

p3, end of paragraph 4 of Sec. 1.1: layer $i$ should be layer $i + 1$.
p29, line 5: derivative should be derivative.
p30, line above Eqn. (2.10): less than or equal to should be greater than or equal to.
p41, 2nd line below Eqn. (2.23): aggregate should be aggregate.
p46, 2nd line of Ex 2.8.1: $X_m$ should be $X_k$.
p46, 6th line of Ex. 2.8.1: hollow $\blacklozenge$ should be $S$.
p47, 3rd line of Def. 2.8.1: $m \geq 1$ should be $k \geq 1$.
p47, 2nd line of Def. 2.8.2: $X_1, X_2, \ldots$ should be $X_1, X_2, \ldots$.
p47, last sentence of paragraph after Definition 2.8.2: $[00] \rightarrow [0]1$ should be $[00] \rightarrow [01]$.
p64, Eq. 2.44, the first and third $\varepsilon$ should each be $\varepsilon'$.
p67, 5th line of 3rd paragraph: discrete encoder should be discrete decoder.
p69, 6th line of Section 3.2.1: $b_j = a_j + a_{j+1}/2$ should be $b_j = (a_j + a_{j+1})/2$.
p74, Next to last line: quantization interval should be quantization region.
p80, 1st line of last paragraph: $h(u)$ should be $h(U)$.
p97, 5th line below Eq. (4.4): integral should be integer.
p98, Figure 4.3(a) caption: should be $u(t) = \text{rect}[2t - 1/2]$.
p98, Figure 4.3(b) caption: $\cos$ should be $\sin$.
p101, Figure 4.4(a) right side of caption should be $\sum_{i=1}^{i_0} u_i T/i_0$.
p103, 2nd line of Example 4.3.1: $\mu_{1j} = 2^{-2j}$ should be $\mu_{1j} = T2^{-2j}$.
p108, Eq. (4.16): Insert ‘$dt$’ into first and second integral.
p109, 4th line: integral of $u(t)$ should be integral of $|u(t)|$
p116, line above Eq. (5.51): replace ‘$\varepsilon$’ with ‘$\subseteq$’.
p118, last line of proof of Lemma 4.5.1: asimple should be a simple.
p121, eqn. (5.58): Replace ‘$\text{rect}(\frac{t}{2}W)$’ with ‘$\text{rect}(\frac{t}{2W})$’.
p123, 2nd line of 2nd par. of Example 4.3.1: $u(t)$ should be $v(t)$.
p123, line 2 after end of Example 4.6.1: Replace ‘$v(t)$’ with ‘$u(t)$’.
p123, line 3 of Def. 4.6.1: Replace ‘$|f| > 0$’ with ‘$|f| > W$’.
p123, 4th line from bottom: $|f| > 0$ should be $|f| > W$.
p126, last line before Section 7.4: entire line should be
L₂ function \( \{ v(t) : \mathbb{R} \to \mathbb{C} \} \) which has these sample values and is bandlimited to \([\Delta - W, \Delta + W] \) where \( W = 1/2T \).

p127, line below eqn (4.73): Replace ‘not not’ with ‘not’.

p137, 2nd line below eqn (4.98): Replace \( B \) with \( \mathcal{B} \).

p138, Eq. (4.97): the first \( \mu(\mathcal{B}) \) should be \( \mu(\mathcal{B}) \).

p138, 2nd line above eq. 4.98: thus \( \mu^o(\mathcal{B}) \leq \mu(\mathcal{B}) \) should be \( \mu^o(\mathcal{B}) \leq \mu(\mathcal{B}) \).

p141, 1st line of eq 4.102: \( \mu^o(A_1 \cup A_2) \) should be \( \mu^o(A \cup A_2) \).

p148, Exer. 4.25 (c): \( \int_{-\infty}^{\infty} |\hat{u}(f) - \hat{u}_A(f)|^2 df \) should be \( \int_{-\infty}^{\infty} |\hat{u}(f) - \hat{u}_A(f)|^2 df \).

p149 Exer. 4.29, line 2, replace \( \{ u(t) : [-1/2, 1/2] \to \mathbb{R} \} \) with \( u(t) : \hat{u}(f) = 0 \) for \(|f| > 1/2 \).

p150, Exercise 4.31, line 2 of part b: \( T = 1/2W \) should be \( 1/2W \); line 2 of part f: \( v(t) \leq 2 \) should be \( v(t) \leq 2T \); line 1 of part (g): \( |v(t)| \leq 2 \) should be \( |v(t)| \leq 2T \).

p151, Part a, Exercise 4.35: Replace ‘\( \hat{e}_m(f) = \text{rect}(f - m) \)’ with ‘\( \hat{e}_m(f) = \frac{1}{3} \text{rect}(f - m) \)’.

p160, 4th line of Remark: \( u|_u \) should be \( v|_u \).

p160, Eq. 5.7: A comma should separate the two parts of the inner product.

p165, 1st Eq. in Section 5.3.2: \( \langle w, \sum_{j=1}^{n} \alpha_j \phi_j \rangle \) should be \( \langle w, \sum_{j=1}^{n} \alpha_j \phi_j \rangle \).

p171, last eqn of proof of Plancherel 1 should be
\[
\lim_{A \to \infty} \| \hat{u} - \hat{u}_A \| = 0.
\]

p171, last eqn of proof of Plancherel 1: change subscript \( n + 1/2 \) to \( A \).

p172, First line of last paragraph: The interval \([2/3, 2/3 + 1/8] \) should be \([2/3, 2/3 + 1/16] \).

p175, eqn 5.38: The condition on the upper part should be \( -\frac{2n-1}{2T} < f \leq \frac{2n+1}{2T} \).

p180, Exercise 5.11 part (f): replace ‘perpendicular \( (u_2)_\perp L_1 \)’ with ‘perpendicular \( (u_3)_\perp L_1 \)’.

p180, Exercise 5.16 part (c): The final sum in the inequality should be \( \sum_{m \geq A} 2m^{-1-\varepsilon} \).

p186, par 5, line 3, the in line equation should be \( u(t) = \sum_k u_k p(t - kT) dt \).

p188, second item of itemization, next to last line: \( T \) could be increased should be \( T \) could be decreased.

p205, 4th line above Exam. 6.6.1: \( \Re\{u(t)e^{2\pi ifcT}\} \) should be \( 2\Re\{u(t)e^{2\pi ifcT}\} \).

p213, Figure 6.12: The figure should be as follows:

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                  1
                  1
                  1
                  1
                  1
                  1
                  1
                  1
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p215, Exercise 6.18, part (c): \( \Re\{u(t)\} \) should be \( 2\Re\{u(t)\} \).

p223, 2 lines above Eq. 7.12: real \( m \) by \( n \) real matrix should be real \( m \) by \( n \) matrix.

p234, Eqs. (7.37) and (7.38): The order of \( dt \) should be reversed.

p243, Eq. 757: \( K \) should be \( K_Z \).

p246, First line of section 7.7.1: \( \text{sinc}(t - kT)/T \) should be \( \text{sinc}(t-kT/T) \).
p251, Eq. (7.74) should be:

\[ f_Y(y) \frac{1}{\pi^n \det(K_Y)} \exp(-y^\dagger K_Y^{-1} y) \]

p266, Exercise 7.10 (b): if \( E[X_kX_m^*] = 0 \) should be if \( E[X_kX_m^*] = 0 \) for all \( m \neq k \).

p271, first line, If \( \bar{v}(v) \) should be If \( \bar{u}(v) \).

p274, last line of Fig. 8.2 caption: \( \eta = p_0/p_1 \) should be \( \eta = p_1/p_0 \).

p277, first line: each math a should be bold math a.

p282, 4th equation: \( f_{Y|X}(y|b) \) should be \( f_{Y|X}(y|b) \).

p283, Equation (8.39): \( \langle v, a \rangle \) should be \( \langle v, a \rangle \).

p284, 4th line above equation: \( p^*(t) \) should be \( p^*(-t) \).

p286, 2nd line of 2nd par.: The eq. number (8.31) should be (8.32) and (8.33).

p299, 2nd line of footnote 10: or binary numbers should be of binary numbers.

p300, first line of section 8.6.2: biorthogonal should be biorthogonal.

p301, 2nd line above Eq. (8.65): \( RM(r, m - 1) \) should be \( RM(r, m - 1) \).


p336, 4th par, line 1: where the the combined should be where the combined

p338, first line after Eq. (9.8): say \( y(t) \) should be say \( y_f(t) \).

p342, Eq. (9.42), end of expression: \), should be \})

p350, Eq. 9.28: \( e^{i\mathcal{L}k(f,t)} \) should be \( e^{i\mathcal{L}k(f,t)} \).

p354, Figure 9.8, line 2 of caption: \( \tau_j(mt)/T \) should be \( \tau_j(mt)/T \).

p358, first line above eq. 9.47: gap gains should be tap gains.

p374, line 5 of 2nd par: add period at end of \( 2a_i^2ng_k \).

p374, line 6 of 2nd par: \( a_i^2ng_k \) should be \( 2a_i^2ng_k \).

p391, Exercise 9.2, first line: an assumption should be approximating.

p391, Exercise 9.3, 4th line of part (a): for some constant \( r \) should be for some constant \( b \).

p392, Equation (9.88): At the end of each numerator, \) should be \}).