

Discrete Wavelet Transformations: An Elementary Approach with Applications

Errata Sheet

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Please report any errors you find in the text to Patrick J. Van Fleet at pjvanfleet@stthomas.edu.

The Errata Stakes

Here is a breakdown of who is winning the race to find the most errors in the text! I haven't thought far enough ahead about awarding a prize, but something may be on the horizon – especially if I win!

Name	# Typos
Caroline Haddad	26
Kristin Pfabe	137
William Ross	1
David Ruch	16
Quiang Shi	2
Patrick Van Fleet	22
Roger Zarnowski	5

Preface

1. Page xiv, change *planned I* to *I planned*. (Kristin Pfabe)
2. Page xx, First sentence: Change *that* to *than*. (Roger Zarnowski)

Chapter 1

1. Page 3, paragraph 2, line 2: \tilde{W}^3 should be \tilde{W}^T . The 3 is a footnote marker. (Patrick Van Fleet)

Chapter 2

1. Page 20, Exercise 2.7: The $\langle \mathbf{u}, \mathbf{v} \rangle$ should be replaced by $\mathbf{u} \cdot \mathbf{v}$. And here is a real howler. The identity to prove should read:

$$\mathbf{u} \cdot \mathbf{v} = \frac{1}{4} \|\mathbf{u} + \mathbf{v}\|^2 - \frac{1}{4} \|\mathbf{u} - \mathbf{v}\|^2$$

(Caroline Haddad)

2. Page 21, Problem 2.10: In the definition of $\|v\|_\infty$, delete $1 \leq k \leq n$ under max. (Kristin Pfabe)
3. Page 23, Definition 2.5: Change **Dimensions of a Matrix** to **Dimension of a Matrix**. (Roger Zarnowski)
4. Page 38, paragraph 1: replace *learned* with *we will learn* to make tenses align. (David Ruch)
5. Page 39, First line: Change 2×1 to 1×2 . (Roger Zarnowski)
6. Page 41, First line: Change *dimensions* to *dimension*. (Roger Zarnowski)
7. Page 46, Exercise 2.33: A 's should be M 's in the last inline formula. (Caroline Haddad)

Chapter 3

1. Page 76, The matrix W in Problem 3.17 is the white matrix W defined in Problem 3.14. (David Ruch).
2. Page 77, In Problem 3.19a, replace u and v with i and q , respectively. (David Ruch)
3. Page 79, Definition of Entropy, line 3: The a_k should be a_i . (Caroline Haddad)
4. Page 79, last line: the word *the* is missing before the word *elements*. (Caroline Haddad)
5. Page 81, Definition 3.2: Add $\mathbf{v} \neq \mathbf{0}$ to the definition. (Kristin Pfabe)
6. Page 83, Definition 3.3, second line: Replace \mathbf{u} and \mathbf{v} , by A and B , respectively. (William Ross)
7. Page 84, Problem 3.22(a): Replace c any real number with $c \neq 0$ any real number. (Kristin Pfabe)
8. Page 84, Problem 3.23: Replace c any real number with $c \neq 0$ any real number. (Patrick Van Fleet)
9. Page 84, Problem 3.24: Part (i) should be Part (h). (Caroline Haddad)

10. Page 85, Problem 3.27: Replace *bpp* with *bits per character*. (Kristin Pfabe)
11. Page 85, Problem 3.27: $n \geq 4$. (Qiang Shi)
12. Page 86, Problem 3.29(b): Show that the inequality holds for $0 < t \leq 1$ with equality at $t = 1$. (Caroline Haddad and Qiang Shi)
13. Page 92, next to last paragraph, line 5: replace *bit bit* with *bit*. (Caroline Haddad)

Chapter 4

1. Page 100, Line above **Conjugates**: Change $11 + i$ to $11 + 7i$. (Kristin Pfabe)
2. Page 114, paragraph before Example 4.5, next to last line: *id* should be *is*. (Caroline Haddad)
3. Page 116, equation (4.15): *kodd* should be *k odd*. (Patrick Van Fleet)
4. Page 122, Problem 4.26(c): No negative sign in front of the $2i$. (Caroline Haddad)
5. Page 123, Problem 4.34(b): Replace $d_k = \overline{c_{-k}}$ with $d_k = \overline{c_k}$. (Kristin Pfabe)
6. Page 123, Problem 4.31: plot f_n for $n = 1, 2, 5, 10, 50$. (Caroline Haddad)
7. Page 124, Problem 4.37(b): The integrand for the second integral should be $e^{2\pi i j \omega / 2L} e^{-2\pi i k \omega / 2L}$ instead of $e^{2\pi i k \omega / 2L} e^{-2\pi i k \omega / 2L}$ (Caroline Haddad)
8. Page 125, Problem 4.37: an ω is missing in the complex exponential in the integrand used to define c_k . (Kristin Pfabe)

Chapter 5

1. Page 128, first line in Section 5.1: *OVector* should be replaced with *Vector*. (Caroline Haddad)
2. Page 132, last line: The output for \mathbf{y} should be

$$\mathbf{y} = (\dots, 0, 0, 0, 18, 15, \mathbf{14}, 44, 13, 13, 15, 0, 0, 0, \dots)$$

That is, the 8 in the vector should be 13. (David Ruch)

3. Page 137, Exercise 5.13: Delete the sentence “Show that $\mathbf{h} * \mathbf{x}_m = \mathbf{y}_m$.” (Patrick Van Fleet)

4. Page 139, first displayed equation below Definition 5.2: Some subscripts are wrong. The equation should read:

$$y_n = \cdots = h_0 x_n + h_1 x_{n-1} + h_2 x_{n-2} + h_3 x_{n-3} + \cdots$$

(Caroline Haddad)

5. Page 142, first line after subsection **Lowpass Filter Defined**: Delete the *of* in the sentence. (Caroline Haddad)
6. Page 143, the two displayed equations above (5.9): remove the minus signs in the complex exponentials. (Kristin Pfabe)
7. Page 147, Problem 5.16: The definition of $H(\omega)$ should not have a minus sign in the complex exponential but the definition of h_k *should* have a minus sign in the complex exponential. Also change dx to $d\omega$. (Kristin Pfabe)
8. Page 148, Problem 5.19: The $\frac{1}{2}$ should be replaced by $\pm\frac{1}{2}$. (David Ruch)
9. Page 149, Problem 5.25: L is an odd positive integer. (Kristin Pfabe)
10. Page 149, Problem 5.27(a): Replace $(1 + \cos \omega)$ with $(\frac{3}{2} + \cos \omega)$. (Kristin Pfabe)
11. Page 152, second sentence: Replace $\tilde{\mathbf{h}}$ with $\tilde{\mathbf{y}}$. (Caroline Haddad)
12. Page 154, second displayed equation: Left side should be $\frac{1}{2+e^{iw}}$. (David Ruch)

Chapter 6

1. Page 161, Equation (6.3): The subscripts on the y s and z s should be even - $y_{-2}, y_0, y_2, y_4, \dots$ and $z_{-2}, z_0, z_2, z_4, \dots$ to keep things consistent with the presentation. (David Ruch)
2. Page 163, last line: replace \mathbf{y} with \mathbf{v} . (Kristin Pfabe)
3. Page 165, displayed matrix equation near page top: The values 101 and 60 in the vector should be interchanged. (Kristin Pfabe)
4. Page 170, matrix equation after line 5: The second $\frac{\sqrt{2}}{2}$ (in front of the vector \mathbf{y}) should not be there. (Kristin Pfabe)
5. Page 170, displayed equations, middle of page: These equations should be

$$\frac{\sqrt{2}}{2}(y_k + y_{k+N/2}) = v_{2k} \quad \text{and} \quad \frac{\sqrt{2}}{2}(y_k - y_{k+N/2}) = v_{2k-1}$$

(David Ruch and Kristin Pfabe)

6. Page 171, top two lines in Algorithm 6.2: These lines should be

$$\begin{aligned}v_{2k-1} &= (y_k - y_{k+N/2}) \\v_{2k} &= (y_k + y_{k+N/2})\end{aligned}$$

(David Ruch and Kristin Pfabe)

7. Page 171, Exercise 6.2: Change *sitefor* to *site for*. (Kristin Pfabe)
8. Page 171, Exercise 6.5: Change $\mathbf{g} = (g_0, g_1) = (-\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2})$ to $\mathbf{g} = (g_0, g_1) = (\frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2})$. (Kristin Pfabe)
9. Page 173, first line of Section 6.2: \mathbb{R} should be \mathbb{R}^N . (David Ruch)
10. Page 174, Last line of Example 6.3: *WHT* should be *HWT*. (David Ruch)
11. Page 180, equations (6.21) and (6.22): 2^{i-1} should be $2^i - 1$ in both equations. (David Ruch)
12. Page 180, last vector on the page: This vector should be

$$\begin{bmatrix} \mathbf{y}^{2\ell} \\ \mathbf{y}^{2h} \\ \mathbf{y}^{1h} \end{bmatrix}$$

(David Ruch)

13. Page 186, Example 6.8, third line: $W_{440}^T A$ should be AW_{440}^T . (David Ruch)
14. Page 193, displayed equation: The matrix on the right hand side should not be multiplied by 2. (Caroline Haddad)
15. Page 193, 2 lines below displayed equation: The C_1 should be A . (Caroline Haddad)
16. Page 196, For loop at top of page: Replace $k \leq i$ with $k < i$. (Patrick Van Fleet)
17. Page 204, the bitstream length of 98,304 should be $8 \times 98,304 = 786,432$. (Caroline Haddad)
18. Page 215, first line: Replace W_{384} with W_{512} . (Kristin Pfabe)
19. Page 215, first line after Table 6.7: Change the second \mathcal{V} to \mathcal{D} . (Caroline Haddad)
20. Page 217, Problem 6.26(a), last line: Replace $k + N/2$ by k as the subscript for d . (Patrick Van Fleet)

21. Page 220, second paragraph, second line: eliminate the word *does*. (Caroline Haddad)
22. Page 220, Problem 6.31(d): Change the first \mathcal{H} to \mathcal{B} . (Caroline Haddad)
23. Page 220, Problem 6.31(e): Change *three* to *any*. (Patrick Van Fleet)

Chapter 7

1. Page 223, second paragraph: The vector \mathbf{v} should be $\mathbf{v} = [100, 102, 200, 202]^T$ and $\tilde{\mathbf{v}}$ should be $\tilde{\mathbf{v}} = [-1, 1, -1, 1]^T$. (Kristin Pfabe)
2. Page 223, next to last line: A space is needed between *be* and $\tilde{\mathbf{y}}$. (Roger Zarnowski)
3. Page 224, Third line in Section 7.1: W^T should be W_N^T . (Kristin Pfabe)
4. Page 229, Equation (7.17): $h_0 - h_1 - ch_1 + ch_0 = 0$ should be $h_0 - h_1 - ch_1 - ch_0 = 0$. (Kristin Pfabe)
5. Page 231, first paragraph, next to last line: after *approach*, insert 0 *at*. (Caroline Haddad)
6. Page 232, first line: Replace *Now if use* with *Now if we use*. (Kristin Pfabe)
7. Page 232, first indented equation after (7.25): The $3 + \sqrt{3}$ should be $3 - \sqrt{3}$. (Kristin Pfabe)
8. Page 233, sentence below (7.31): change (7.17) to (7.15) (Kristin Pfabe)
9. Page 234, second boxed equations: g_0 should be $g_0 = h_3 = \frac{1}{4\sqrt{2}}(1 - \sqrt{3})$ and g_1 should be $g_1 = -h_2 = -\frac{1}{4\sqrt{2}}(3 - \sqrt{3})$. (Kristin Pfabe)
10. Page 236, first indented equation below (7.38): Replace $e^{5i\omega}$ with $e^{ik\omega}$. (Kristin Pfabe)
11. Page 241, first sentence of last paragraph: change *slight* to *slightly*. (Kristin Pfabe)
12. Page 248, Problem 7.13: the identities in parts (a) and (c) are missing negative signs on the right hand sides. They should be $G(\omega) = -e^{-3i\omega}\overline{H(\omega + \pi)}$ and $G(\omega) = -e^{-5i\omega}\overline{H(\omega + \pi)}$, respectively. (Kristin Pfabe)
13. Page 257, first displayed equation: Replace $(-i)$ by i . (Kristin Pfabe)
14. Page 258, last paragraph: Change (7.63), (7.69), (7.80), (7.71), and (7.75) to (7.76)–(7.80). (Kristin Pfabe)
15. Page 260, Table 7.4: Change last two entries from 6 to 8. (Kristin Pfabe)

16. Page 261, first displayed equation of $Q(z)$: The right hand side should be multiplied by $\frac{1-\sqrt{3}}{4\sqrt{2}}$. The right hand side of the second displayed equation of $Q(z)$ should be multiplied by $\frac{1+\sqrt{3}}{4\sqrt{2}}$. (Patrick Van Fleet)
17. Page 263, Problem 7.21(c): Insert $j+k$ between *the* and *odd* and also between *the* and *even*. (Kristin Pfabe)
18. Page 264, Problem 7.24: The identity to prove is missing a negative sign on the right hand side. It should read: show $G(\omega) = -e^{Li\omega}\overline{H(\omega + \pi)}$. (Kristin Pfabe)
19. Page 266, Matrices H_6 and H_8 need to have the horizontal divider moved up 1 and 2 rows, respectively. (Kristin Pfabe)
20. Page 268, Top matrix product: The first element of the column vector is v_1 not ℓv_1 . (Kristin Pfabe)
21. Page 272, Second paragraph, last line: $y_N/2$ should be $y_{N/2}$. (Kristin Pfabe)
22. Page 273, First paragraph, second line: Replace *2, 4, and 6* by *2, 3, and 4*. (Kristin Pfabe)
23. Page 274, second line: Change *nonwrapping row k* to *k th nonwrapping block*. (Kristin Pfabe)
24. Page 274, Equations (7.99) and (7.100): The upper limits on the summations should be $\frac{L+1}{2} + k - 1$ instead of $\frac{L+1}{2} + k$. (Kristin Pfabe)
25. Page 274, Table 7.7, second row, second column: Change h to o in summand. (Kristin Pfabe)
26. Page 275, Line 5: Insert *the* before *general*. (Kristin Pfabe)
27. Page 275, Equation (7.102): The subscript of o should be j instead of $\frac{L+1}{2} - k + j$. (Kristin Pfabe)
28. Page 275, Equations (7.103) and (7.104): The second summations in each equation should have subscript j for o and e , respectively. (Kristin Pfabe)
29. Page 276, Algorithm 7.2 description: The second entry in \mathbf{o} should be f_3 instead of f_2 . (Kristin Pfabe)
30. Page 276, Algorithm 7.2, last loop: The upper limit should be $r + k - 1$ instead of $r - k$. (Kristin Pfabe)
31. Page 276, Last line: Replace v_{L+2x-1} with v_{L+2k-1} . (Kristin Pfabe)
32. Page 277, Second to last loop: Swap the o and e . (Kristin Pfabe)

33. Page 277, Last loop: The index on o and e should be j instead of $r - k + j$. (Kristin Pfabe)

Chapter 8

1. Page 281, second paragraph, second line: insert *obtained* between *were* and *simply*. (Caroline Haddad)
2. Page 281, third paragraph, second sentence: delete the word *that*. (Kristin Pfabe)
3. Page 286, paragraph under Definition 8.2, third sentence: change *ways* to *way*. (Kristin Pfabe)
4. Page 290, rows in the middle of the page: Remove all terms that have a subscript 4 and delete the last row. (Kristin Pfabe)
5. Page 293, equation (8.22) - the right hand side is missing a negative sign. It should be $G(\omega) = -e^{iL\omega}H(\omega + \pi)$. (Kristin Pfabe)
6. Page 294, sentence above equation (8.25): change the *to* to *on*. (Kristin Pfabe)
7. Page 294, equation leading to (8.26): The second term in the right hand sides of the second and third lines should have $e^{in(\omega+\pi)+b}$ instead of $e^{n\omega+b}$. (Kristin Pfabe)
8. Page 297, third indented equation: This should be $G(\omega) = -e^{in\omega}\overline{H(\omega + \pi)}$. (Kristin Pfabe)
9. Page 297, Problem 8.6: The Fourier series for $G(\omega)$ should be $G(\omega) = -\sqrt{2}ie^{i\omega/2}\sin(\frac{\omega}{2})$. (Caroline Haddad)
10. Page 301, text below equation (8.41): Q_k should be Q_K . (Kristin Pfabe)
11. Page 302, equation after (8.46): The denominator should be $2^K e^{iK\omega}$. (Kristin Pfabe)
12. Page 306, equation (8.57): $e_{-i\omega}$ should be $e^{-i\omega}$. (Kristin Pfabe)
13. Page 308, equation (8.59) - upper sum limits should be 7 not 11. (Patrick Van Fleet)
14. Page 309, fourth paragraph: The paragraph starts with *In the case* $K = 2$. Change the three $\frac{5}{2}$'s to $\frac{3}{2}$'s. (Kristin Pfabe)
15. Page 309, last equation: The right hand side is missing a negative sign. It should be $G(\omega) = -e^{i(2K-1)\omega}\overline{H(\omega + \pi)}$. (Kristin Pfabe)
16. Page 314, Problem 8.14: Change to *Use Lemma 8.1 to verify (8.47)*. (Kristin Pfabe)
17. Page 314, Problem 8.17: In part (b), change $e^{-i\omega}$ to $e^{i\omega}$. In part (d), change *use part (b)* to *use part (c)*. (Kristin Pfabe)

Chapter 9

1. Page 319, Paragraph above Figure 9.1: Delete the last sentence *For this example, we use $\sigma = 18$.* (Kristin Pfabe)
2. Page 325, last sentence: Change *Theorem A.7* to *Proposition A.7*. (Kristin Pfabe)
3. Page 329, fourth line: after *very sparse!*, insert the phrase *the highpass portion of*. (Kristin Pfabe)
4. Page 331, fourth line: change *at* to *as*. (Kristin Pfabe)
5. Page 331, sentence before Figure 9.8: Change *is* to *are*. (Kristin Pfabe)
6. Page 331, sentence after Figure 9.8: Insert *inverse* before *wavelet transformation*. (Kristin Pfabe)
7. Page 334, Problem 9.9(d): j, k run from 1 to N , not 1 to 300. (Kristin Pfabe)
8. Page 339, fourth line: change *depend* to *depends*. (Kristin Pfabe)

Chapter 10

1. Page 351, fourth line from bottom: Change $H'(\pi) = 0$ to $H(\pi) = 0$. (David Ruch)
2. Page 352, third paragraph from bottom, last sentence: Delete *the* before *analyze*. (Kristin Pfabe)
3. Page 355, formula for c : Change \tilde{h}_{-1} to \tilde{h}_1 . (Kristin Pfabe)
4. Page 355, third equation in (10.3): Change \tilde{h}_{-1} to \tilde{h}_1 . (Kristin Pfabe)
5. Page 356, Theorem 10.1: Delete the *and* in front of *whose*. (Kristin Pfabe)
6. Page 359, equation above (10.29): Change $\tilde{H})\omega$ to $\tilde{H}(\omega)$. (Kristin Pfabe)
7. Page 360, Corollary 10.1, change *Then* to *then*. (Kristin Pfabe)
8. Page 363, \tilde{W}_8 matrices: The seventh and eighth rows in each matrix should be shifted cyclically one more unit to the right. (Kristin Pfabe)
9. Page 366, Last line of Proposition 10.3: Change the second *odd* to *even*. (Kristin Pfabe)
10. Page 367, Corollary 10.2, last sentence: delete the comma and replace *then $p \dots$ and* with *and we define $p \dots$, then*. (Kristin Pfabe)

11. Page 367, equation (10.36): h_0 and h_1 throughout the identity should be replaced with \tilde{h}_0 and \tilde{h}_1 , respectively. (Kristin Pfabe)
12. Page 370, Problem 10.13: Part (c): Change $n = -1$ to $n = 1$ and $b = 0$ to $b = \pi$. (David Ruch)
13. Page 370, Problem 10.13: Part (e) should refer to Corollary 10.1 instead of 10.2. Part (f) - change *For* to *Find*.
14. Page 373, paragraph that starts with *Unfortunately*: Change $e^{i\omega}/2$ to $e^{i\omega/2}$. (Kristin Pfabe)
15. Page 374, equation (10.42) - write $N/2$ as a fraction. (Patrick Van Fleet)
16. Page 375, The splines used should **not** be centered. B_0 should be defined as the characteristic function on $[0, 1)$ and (10.45) should be an integral over the interval $[0, 1)$ as well. The triangle function $B_1(t)$ should be replaced with $B_1(t - 1)$ and the figures in Figure 10.1 should be translated $\frac{1}{2}$ and 1 unit right, respectively. (Patrick Van Fleet)
17. Page 376: Paragraph above (10.50): Two occurrences of $(1, \frac{1}{2}, 1)$ should be changed to $(\frac{1}{2}, 1, \frac{1}{2})$. (Caroline Haddad)
18. Page 376: The dilation equation (10.48) should read

$$B_0(t) = \mathbf{1} \cdot B_0(2t) + \mathbf{1} \cdot B_0(2t - 1)$$

(Kristin Pfabe)

19. Page 376: The dilation equation (10.49) should read

$$B_1(t) = \frac{\mathbf{1}}{2} B_1(2t) + \mathbf{1} \cdot B_1(2t - 1) + \frac{\mathbf{1}}{2} B_1(2t - 2)$$

and the functions in Figure 10.2 should be moved so that they are supported in the interval $[0, 2]$. Equation (10.50) should read

$$B_{\tilde{N}}(t) = \sum_{k=0}^{\tilde{N}+1} 2^{-\tilde{N}} \binom{\tilde{N}+1}{k} B_{\tilde{N}}(2t - k)$$

(Patrick Van Fleet)

20. Page 377, equation (10.52): all h_k need tildes. (Kristin Pfabe)
21. Page 380, two lines above \tilde{W}_{10} : delete *make to*. (Kristin Pfabe)
22. Page 381, second matrix: Change all $\frac{3\sqrt{2}}{8}$ to $\frac{3\sqrt{2}}{4}$. (Kristin Pfabe)

23. Page 396, Example 10.11, second display equation for $H(\omega)$: Change $-\frac{3\sqrt{2}}{8}(2\cos^2(\omega) - 1)$ to $-\frac{3\sqrt{2}}{4}(2\cos^2(\omega) - 1)$. (Kristin Pfabe)
24. Page 398, Equation (10.70): The middle term in the identity is missing a factor of $H(\omega)$. (Caroline Haddad)
25. Page 398, Equation (10.71): The middle term in the identity is missing a factor of $H(\omega + \pi)$. (Caroline Haddad)
26. Page 399, second paragraph: replace *even functions* by 2π -periodic functions. (Kristin Pfabe)
27. Page 399, footnote, last line: a space is needed between *of* and **h**. (Kristin Pfabe)
28. Page 400, last displayed equation for $P(t)$ at the bottom of page: The top argument in the binomial coefficient should be $K - 1 + j$ instead of $K - j + 1$. (Kristin Pfabe)
29. Page 401, two lines above (10.76): Replace *We now use (10.74) with $\tilde{\ell} = 2$* with *We now use (10.73) and (10.74) with $\tilde{\ell} = \ell = 2$* . (Kristin Pfabe)
30. Page 401, equation (10.77): The first occurrence of $-.373391i$ should be $.373391i$. (Kristin Pfabe)
31. Page 401, last displayed equation: An $=$ is missing after $\tilde{H}(0)$. (Kristin Pfabe)
32. Page 404 Problem 10.39: Replace 10.39 by 10.38 and insert the word *to* before *verify*. (Caroline Haddad).

Chapter 11

1. Page 410, second expression for y_1 : The last four terms on the right hand side should use v_1, v_2, v_3 , and v_4 instead of v_0, v_1, v_2 , and v_3 , respectively. (Kristin Pfabe)
2. Page 412, first paragraph, last line: Change *decrease* to *decreases*. (Kristin Pfabe)
3. Page 413, displayed equations for $z_1, z_2, z_3, z_{N/2}$: The indices of the last components in the w vector should be $w_{2L+1}, w_{2L+3}, w_{2L+5}, w_{2L+2(N/2)-1}$, respectively. (Kristin Pfabe)
4. Page 414, displayed equations for $z_1, z_2, z_3, z_{N/2}$: The indices of the last components in the w vector should be $w_{2L}, w_{2L+2}, w_{2L+4}, w_{2L+2(N/2)-2}$, respectively. (Kristin Pfabe)
5. Page 415, Algorithm 11.1 - the first time \mathbf{w} is defined, there is a mistake on the indices. It should be

$$\mathbf{w} = \mathbf{Join}[\mathbf{Join}[(v_{N-(\tilde{L}-1)+i}, \dots, v_N), \mathbf{v}], (v_1, \dots, v_{\tilde{L}-i})]$$

(Patrick Van Fleet)

6. Page 416, Problems 11.4 and 11.5: Change $N = 24$ and \tilde{G}_6 to \tilde{G}_{12} . (David Ruch)
7. Page 420, Second matrix, first row: the second zero should be h_6 . (Kristin Pfabe)
8. Page 421, first line: $H_8 \mathbf{s}$ should be $H_8^T \mathbf{s}$. (Kristin Pfabe)
9. Page 421, second line: Change *odd* to *even*. (Kristin Pfabe)
10. Page 421, paragraph above equation for q_{2k-1} , third line: Change \mathbf{a} to \mathbf{c} . (Kristin Pfabe)
11. Page 421, next to last paragraph, second line: omit *and* s_2 . (Kristin Pfabe)
12. Page 426, line above (11.19): Change \mathbf{h}° to \mathbf{h}^e . (Kristin Pfabe)
13. Page 427, last line: Change \mathbf{h}^e to \mathbf{h}° . (Kristin Pfabe)
14. Page 428, Equation (11.21): Change h_o^e to h_j^o . (Kristin Pfabe)
15. Page 428, third line after equation for \mathbf{g} : change \mathbf{h}^e and \mathbf{h}° to \mathbf{g}^e and \mathbf{g}° . (Kristin Pfabe)
16. Page 429, Equation (11.25) should read $p = \lfloor \frac{L}{2} \rfloor$ and $a = \lfloor \frac{L-2}{2} \rfloor$. (Patrick Van Fleet)
17. Page 429, Equation (11.26) should read $p = \lfloor \frac{L-1}{2} \rfloor$ and $a = \lfloor \frac{L-1}{2} \rfloor$. (Patrick Van Fleet)
18. Page 429, Displayed equation for \mathbf{c} : Change two occurrences of t_N to $t_{N/2}$. Also enclose vector components with $[]$ instead of $()$ and add a transpose to the last $]$. (Kristin Pfabe)
19. Page 431, top two lines: Change $p = \lfloor \frac{L-2}{2} \rfloor$ and $a = \lfloor \frac{L+1}{2} \rfloor$ to $p = \lfloor \frac{L-1}{2} \rfloor$ and $a = \lfloor \frac{L}{2} \rfloor$, respectively. (Kristin Pfabe)
20. Page 432, Definitions of ℓ and m : Change $\ell = L$ to $\ell = L - i$ and $m = L + 1$ to $m = L + 1 - i$. (Kristin Pfabe)
21. Page 432, The first time p and a are defined (above the line defining c), they should be $p = \lfloor \frac{L}{2} \rfloor$ and $a = \lfloor \frac{L-2i}{2} \rfloor$. (Patrick Van Fleet)
22. Page 432, The second time p and a are defined (above the line defining d), they should be $p = \lfloor \frac{L-1}{2} \rfloor$ and $a = \lfloor \frac{L+1-2i}{2} \rfloor$. (Patrick Van Fleet)
23. Page 432, The last **For** statement at the bottom of the page - the upper limit should be ℓ instead of m . (Patrick Van Fleet)
24. Page 433, The **For** statement at the top of the page - the upper limit should be m instead of ℓ . (Patrick Van Fleet)

25. Page 434, Exercise 11.7 (d) and (e). Note that (11.25) and (11.26) defined in the text are incorrect - see previously noted corrections. (Patrick Van Fleet)
26. Page 437, three lines from bottom: Change $(-1)^k h_k$ to $(-1)^k h_{1-k}$. (Kristin Pfabe)
27. Page 438, second matrix: Change three occurrences of h_1 to g_2 . (Kristin Pfabe)
28. Page 441, equation (11.36): Change all y 's to z 's. (Kristin Pfabe)
29. Page 442, last equation: left hand side should be a_{n+N-1} . (Kristin Pfabe)
30. Page 443, first equation: left hand side should be a_{n+N-1} . (Kristin Pfabe)
31. Page 443, sixth line: Change \mathbf{h} to $\tilde{\mathbf{h}}$. (Kristin Pfabe)
32. Page 444, Displayed equation for $\tilde{\mathbf{h}}$: Insert two zeros after the first \dots and two zeros before the second \dots and add tildes to the subscripts $L-1$ so that they are $\tilde{L}-1$. (Kristin Pfabe)
33. Page 445, next to last line of Proposition 11.3: Change g_k to \tilde{g}_k . (Kristin Pfabe)
34. Page 445, 446, Add two zeros after the first \dots and before the second \dots in the definition of $\tilde{\mathbf{g}}$ in Propositions 11.3 and 11.4. (Kristin Pfabe)
35. Page 447, Displayed equation for \mathbf{v} in Example 11.5: last element in last vector should end with $-h_0 v_8$ instead of $+h_0 v_8$. (Kristin Pfabe)
36. Page 447, Equation (11.44): The row 8, column 8 entry should be $-h_0$ instead of h_0 . (Kristin Pfabe)
37. Page 447, Sixth line after (11.44): insert a between *for* and *two-dimensional*. (Kristin Pfabe)
38. Page 450, Line below the displayed equation for \mathbf{y} : Replace $(-1)^k h_k$ with $(-1)^k h_{1-k}$. (Kristin Pfabe)
39. Page 451, paragraph after displayed formula for \mathbf{z} : Change v_1, \dots, v_4 to v_1, v_2, v_3 . (Kristin Pfabe)
40. Page 451, Equation (11.48): Change the two occurrences of $\tilde{h}_{10} v_4$ to $\tilde{h}_1 v_{10}$. (Kristin Pfabe)
41. Page 451, Equation (11.49): Rewrite $-h_1 v_2 + h_3 v_2$ to $(h_3 - h_1) v_2$ in row 1 and $h_1 v_2 - h_3 v_2$ to $(h_1 - h_3) v_2$ in row 12. (Kristin Pfabe)
42. Page 455, Problem 11.17 Hint: For consistency, rewrite $\langle \tilde{\mathbf{w}}^k, \tilde{\mathbf{w}}^j \rangle$ as $\tilde{\mathbf{w}}^k \cdot \tilde{\mathbf{w}}^j$. (Kristin Pfabe)

Chapter 12

1. Page 461, Definition of u_{jk} : When $j = 1$, $u_{jk} = \sqrt{2}/4$. (Kristin Pfabe)
2. Page 471, Paragraph preceding (12.6): Change $b = \pi$ to $b = 0$ and delete the phrase *and using the fact that $e^{\pi i} = -1$* . (Kristin Pfabe)
3. Page 471, Equation (12.6): Replace the $e^{\pi i}$ by (-1) in both \tilde{g}_k and g_k . (Kristin Pfabe)
4. Page 472, Figure 12.7: Replace \mathcal{D}^1 with \mathcal{H}^1 in the upper right hand corner of the figure. (Kristin Pfabe)
5. Page 473, Equation (12.10): Change the second occurrence of d_V^k to d_D^k . (Kristin Pfabe)
6. Page 473, Equation (12.10): Change $\frac{1}{2^{k-1}}$ to $\frac{1}{2^{i-1}}$. (Kristin Pfabe)
7. Page 473, Last two lines: Change second occurrence of d_V^1 and d_V^2 to d_D^1 and d_D^2 , respectively. (Kristin Pfabe)
8. Page 477, Displayed equations for \mathbf{o} and \mathbf{e} : Change four occurrences of parentheses to brackets. (Kristin Pfabe)
9. Page 479, Algorithm 12.2: Change $(12.16).$ to $(12.16),.$ (Kristin Pfabe)
10. Page 482, Example 12.4: Change $\frac{15}{2} + \frac{15}{2}$ to $8 + 8$ when computing s_1^* , $\frac{5}{2} + \frac{15}{2}$ to $3 + 8$ when computing s_2^* , and $6 + \frac{5}{2}$ to $6 + 3$ when computing s_3^* . (Kristin Pfabe)
11. Page 482, Equation (12.22): The argument of the floor function should be $\frac{1}{4}(d_k^* + d_{k-1}^*) + \frac{1}{2}$. (Kristin Pfabe)
12. Page 483, two lines below Equation (12.24): delete the word *from*. (Kristin Pfabe)
13. Page 486, second line in Section 12.4: Change first occurrence of *lossless* to *lossy*. (Kristin Pfabe)
14. Page 492, Figure 12.16 caption - should be upper left instead of bottom left. (Patrick Van Fleet)

Appendix A

1. Page 494, last equation: A $(0 - 2)^2$ is missing in the computation so that the variance is actually 128.4. (Kristin Pfabe)
2. Page 499, Second line in Section A.3: change *that* to *i.e.*. (Kristin Pfabe)

3. Page 502, fifth line: Change *assumes that a value is* to *assumes a value in*. (Kristin Pfabe)
4. Page 504, first indented equation: power on $(4 - y)$ should be $\frac{3}{2}$ instead of $\frac{2}{3}$. (Kristin Pfabe)
5. Page 506, 5 lines above Example A.10: Change *we're* to *we*. (Kristin Pfabe)
6. Page 509, Example A.11: First $\text{Var}(X)$ should be $\frac{1}{12}$ instead of $\frac{2}{3}$. (Kristin Pfabe)