# "Signal Processing: A Mathematical Approach" - Typographical Errors and Errata Corrected

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**Typographical Errors and Errata**

- On page 16, Exercise 4.1, replace $f(m)$ with $s(m)$.
- On page 37, in the hint for Exercise 7.4, replace $f_n$ with $h_n$ and $h_0$ with $f_0$.
- On page 50, the exponential in the shifting property should be $e^{ia\omega}$.
- On page 67, the function $h(\omega)$ is the HT of the function $g(\omega)$, but the sequence $\{h_n\}$ is not the HT of the sequence $\{g_n\}$. To get the HT of the real sequence $\{g_n\}$, define $z(\omega) = 2g(\omega)$, for $\omega > 0$, and $z(\omega) = 0$, for $\omega < 0$. The sequence of imaginary parts of the Fourier coefficients of $z(\omega)$ is the HT of the sequence $\{g_n\}$.
- On page 84, the denominator in the expression for $d(t)$ should be $c - v$, not $c + v$.
- On page 127, in both Exercises 22.2 and 22.3 we use $x_n = n$.
- On page 140, Exercise 24.4, it should read $B = ULV^\dagger$.
- On page 160, include the assumption that $E(X_n) = 0$.
- On page 167, in the first line, it should be $E(\hat{x}) = x$. Throughout this page $|\hat{\mathbf{x}} - \mathbf{x}|$ should be $||\hat{\mathbf{x}} - \mathbf{x}||$.
- On page 175, Equation (29.5) should read

$$(A + \mathbf{x}\mathbf{x}^\dagger)^{-1} = A^{-1} - \frac{1}{1 + \mathbf{x}^\dagger A^{-1}\mathbf{x}} A^{-1}\mathbf{x}\mathbf{x}^\dagger A^{-1},$$

  as in Equation (31.1).
- On pages 182-3, $E|\hat{\mathbf{s}} - \mathbf{s}|$ should be $E||\hat{\mathbf{s}} - \mathbf{s}||$.
- On page 186,

$$E(|y_n|^2) = \sum_{k=-\infty}^{\infty} h_k \Big( \sum_{j=-\infty}^{\infty} \overline{h_j}(r_s(j-k) + r_q(j-k)) \Big)$$

$$= \sum_{k=-\infty}^{\infty} h_k (r_z * \overline{h})_k$$

  should read

$$E(|y_n|^2) = \sum_{k=-\infty}^{\infty} h_k \Big( \sum_{j=-\infty}^{\infty} \overline{h_j}(r_s(j-k) + r_q(j-k)) \Big)$$

$$= \sum_{k=-\infty}^{\infty} h_k \overline{(r_z * \overline{h})}_k$$

- On page 187, the line

$$|H(\omega)|^2 R_z(\omega) - R_s(\omega)\overline{H(\omega)} - R_s(\omega)H(\omega) + R_s(\omega)$$
$$= |H(\omega) - R_s(\omega)/R_z(\omega)|^2 - R_s(\omega) + R_s(\omega)^2/R_z(\omega).$$

  should read

$$|H(\omega)|^2 R_z(\omega) - R_s(\omega)\overline{H(\omega)} - R_s(\omega)H(\omega) + R_s(\omega)$$
$$= R_z|H(\omega) - R_s(\omega)/R_z(\omega)|^2 + R_s(\omega) - R_s(\omega)^2/R_z(\omega).$$

- On page 285, the second summation in the second equation from the bottom should be from $j = 1$ to $J$, not $j = i$.

- On page 292, Equation (48.7) should read

$$\log x_j^{k+1} = \Big(\frac{\delta_j}{\delta_j + s_j}\Big)\log\gamma_j + \Big(\frac{s_j}{\delta_j + s_j}\Big)\Big[\log x_j^k + s_j^{-1}\sum_{i=1}^{I} P_{ij}\log\big[y_i/(Px^k)_i\big]\Big].$$

- On page 294, in the first displayed equations, $\mathbf{x}_j$ should be $x_j$. The next-to-last displayed line,

$$f_l((S_{lj}/\lambda_{lj})z_j - (S_{lj}/\lambda_{lj})x_j + (S\mathbf{x})_l),$$

  should read

$$f_l\Big((S_{lj}/\lambda_{lj})z_j - (S_{lj}/\lambda_{lj})x_j\Big) + f_l((S\mathbf{x})_l).$$

  Therefore, the last displayed line should read

$$\sum_{l=1}^{p}\sum_{j=1}^{J}\lambda_{lj}f_l\Big((S_{lj}/\lambda_{lj})z_j - (S_{lj}/\lambda_{lj})x_j\Big) + \sum_{l=1}^{p} f_l((S\mathbf{x})_l).$$

- On page 353, in the fifth line from the top, it should be "Equation (59.1)".