Errata

p26 A more unambiguous formulation of Exercise 2.4 is the following.

Let $v$ and $e$ be two random vectors of zero mean that are jointly Gaussian. Let $e$ have a positive definite covariance matrix. Show that there exist a unique matrix $B$ and a random vector $w$ such that

(i) $v = Be + w$
(ii) $e$ and $w$ are independent

p114 A more unambiguous formulation of Exercise 4.1 is the following.

Give a simple example of two stochastic processes, say $y_1(t)$ and $y_2(t)$, that fulfill the following:

(i) The first and all second order moments are the same, that is
$$E y_1(t) = E y_2(t)$$
$$E y_1(t)y_1(t + \tau) = E y_2(t)y_2(t + \tau) \quad \text{all } \tau$$

(ii) The realizations (outcomes) of $y_1(t)$ and $y_2(t)$ look significantly different. From a measured data record $y(1), y(2), \ldots, y(N)$, it should be possible to tell if $y_1(t)$ or $y_2(t)$ is observed.

p134 A more unambiguous formulation of Exercise 5.1 is the following.
Let \( x \sim \mathbf{N}(m_x, R_x) \) and \( e \sim \mathbf{N}(0, R_e) \) be independent Gaussian random vectors. Suppose one observes 

\[
y = Cx + e.
\]

(a) Determine the mean square optimal estimate of \( x \) based on the observation \( y \).

(b) What is the covariance matrix of the estimation error? What is the covariance matrix of the estimate?

265.2 This line is missing and should read:
   to let the correct model in operation have a probability close to one.

265.4- Read
   \[
   \hat{x}(t) \triangleq \mathbb{E}[x(t)|Y^t] = \int x(t)p(x(t)|Y^t) \, dx(t)
   \]

268.5- Read
   \[
   \hat{x}(t) = \mathbb{E}[x(t)|Y^{t-1}]
   \]

268.4-, 3-, 1- Replace \( N \) by \( M \), totally 6 times.

p367.6 Read (c) \( p_{\eta \mathcal{K}=x}(y) = \gamma(y; 2 - 2\rho + 2\rho x, 4 - 4\rho^2) \)

p368.10 The answer to Exercise 4.19, last line should read
   \[
   H^{(2)} = \left( \begin{array}{cc} H^{(1)} & I \end{array} \right), \quad R_x^{(2)} = 0.
   \]

p368.8- The answer to Exercise 5.1 should read:

(a) \( (x|y) \sim \mathbf{N}(\hat{x}, P), \quad \hat{x} = m_x + R_x C^T(CR_x C^T + R_e)^{-1}(y - Cm_x) \).

(b) \( \text{cov}(x - \hat{x}) = P = R_x - R_x C^T(CR_x C^T + R_e)^{-1}C R_x \),
\( \text{cov}(\hat{x}) = \text{cov}(x) - P = R_x - P = R_x C^T(CR_x C^T + R_e)^{-1}C R_x \).