Comments and Errata

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Page 8: Figure 1.5 caption; Example 1.4 should be Example 1.3.

Page 13: Equation (25); $\cdots \sigma_n$ should be $\cdots d\sigma_n$.

Page 26: Equation (54); should add the property $(G + H)F = GF + HF$ to make the subsequent development clearer.

Page 34: Sentence below (90) beginning "Furthermore ..." should read as follows. Furthermore, a p^{th}-*degree preinverse* can be defined, and it can be shown that the p^{th}-degree post inverse also acts as a p^{th}-degree preinverse.

Page 42: Problem 1.6; Example 1.10 should be Example 1.11.

Page 43: Problem 1.19 should read as follows. Define a p^{th}-degree preinverse for a nonlinear system and calculate the homogeneous terms through degree 3. Show that this system also acts as a 3^{rd}-degree postinverse. Are the degree-3 pre and post inverses identical?

Page 58: Third and fourth equations; insert the factor $\delta_{-1}(t_1)$ into every term.

Page 61: Second paragraph; there is a reasonably neat way to write the Laplace transform of the cascade-system kernel, and the derivation is a nice homework problem.

Page 74: Equation (60); α_1 should be α_i.

Page 77: Equation (70); π in last equality should be Π.

Page 78: Figure 2.7; input signal to $H_1(s)$ should be labelled v.

Page 81: Figure 2.10; the feedback path should originate to the left of G.

Page 95: Equation below (21), third line; there should be a hat on the b.

Page 125: Every occurrence of H_{3sym} should be $3!\, H_{3sym}$.

Page 126: In the first equation, H_{3sym} should be multiplied by 3!.

Page 140: In the third equation, h_{n-1} should be h_{m-1}.

Page 157: First line of proof; $H_{reg}(s_1, \ldots, s_n)$ should be $H_{reg}(s_1, \ldots, s_j)$. Second line of proof; degree-n should be degree-j. Bottom line; $k > n$ should be $k > N$.

Page 159: Equation (69), third line; $S^{j_2}TS^{j_1}H(s_1)$ should be $S^{j_2}TS^{j_1}H_{reg}(s_1,s_2)$.

Page 169: Fifth line of proof; $k < m$ should be $k-1 \leq m$. Definition 4.3 should begin: A nonzero state... .

Page 170: Equation (92); insert $i = 1, 2, \cdots$.

Page 171: First line of proof: $(\hat{A}$ should be $(\hat{A}$. Equation (93); $c =$ should be $cT^{-1} =$.

Page 179: Second reference in Remark 4.4; there should be a comma after the word Theory. Second line of the first equation; σ_1 and σ_2 should be interchanged in the upper limit and differentials.

Page 182: Reference to P. Crouch; insert pp. 177-202.

Page 190: Equation below third figure; $\hat{b}_{n-1}$ should be $\hat{b}_n$, and $\hat{b}_{n-2}$ should be $\hat{b}_{n-1}$.

Page 195: Equation (19), last line; $d\sigma_n$ exp should be $d\sigma_n]$ exp.

Page 212: Line above (83); (82) should be (81).

Page 234: Last sentence of first paragraph; compute should be complete.

Page 241: Problem 5.6; assume the intensity A is unity.

Page 242: Problem 5.10; In the Figure change the cos to sin, and the $1/s$ to $-1/s$. Change the 1 at the end of the equation to A_c.

Page 251: Equation (33); upper limit on sums should be m. Third line from bottom; missing upper limit on sum should be ∞.

Page 265: The definition of $U_1, U_2, \ldots, U_N$ in (68) should be replaced by

$$U_1 = span\ \{S^i\hat{H}(z_1, \ldots, z_N) \mid i > 0\}$$

$$U_2 = span\ \{S^iTS^j\hat{H}(z_1, \ldots, z_N) \mid i > 0,\ j \geq 0\}$$

$$U_3 = span\ \{S^iTS^jTS^k\hat{H}(z_1, \ldots, z_N) \mid i > 0,\ j \geq 0,\ k \geq 0\}$$

Page 267: Line 4 to the bottom should be replaced by the following:

$$U_1 = span\ \left\{ \left(\frac{z_1}{z_1 - 1}, 0, \cdots \right) \right\}$$

Application of the index operator gives $T\hat{H}(z_1,z_2) = S\hat{H}(z_1,z_2)$, and an easy calculation shows that $TS\hat{H}(z_1,z_2) = 0$. Thus $U = U_1$ is a one-dimensional linear space, and it can be replaced by R^1 with the basis element 1. In terms of this basis, the shift and index operators are represented by $S = 1$ and $T = 0$. Thus $A_0 = 1$, and $A_1 = 0$. The initialization operators are represented by $L_1 = S\hat{H}(z_1,z_2) = 1$, and $L_2 = ST\hat{H}(z_1,z_2) = 1$ so that $b_1 = b_2 = 1$. The evaluation operators give

Page 268: Lines 1 through 8 should be as follows:

$$E_0S\hat{H}(z_1,z_2) = 1\ ,\quad E_1S\hat{H}(z_1,z_2) = 0$$

from which $c_0 = 1$ and $c_1 = 0$. Finally, it is clear that $d_1 = d_2 = 1$. Thus a minimal state-affine realization of the given system is

$$x(k+1) = x(k) + u(k) + u^2(k)$$

$$y(k) = x(k) + u(k) + u^2(k)$$

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