

Errata: Robot Modeling and Control

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This list of errata has been compiled by the MEAM 520 teaching team, expanding on the list available from [Seth Hutchinson](#). Please send any additional errors to [Philip Dames](#).

Chapter 1

Page 29 In the caption for Figure 1.25, change Problem 1-15 to Problem 1-13.

Chapter 2

Page 43 The vectors x_1, x_2, x_3 should be x_1^0, x_2^0, x_3^0 , respectively.

Page 49 In the paragraph immediately before Example 2.5, change “We first rotate the frame $o_2x_2y_2z_2$ ” to “We first rotate the frame $o_1x_1y_1z_1$.”

Page 50 In Equation (2.18) the (1,2) element of the matrix $R_{z,\theta}$ should be $-s_\theta$.

Page 62 In Equation (2.67) the (3,2) element of the matrix H_1^0 should be s_z .

Chapter 3

Page 82 In the fourth line from the top, “If z_{i-l} and z_i are not coplanar ...” the first subscript should be “If z_{i-1} ...”

Page 82 In section (iii), “The most natural choice...” should be “The only choice...” Delete the sentence “However, any convenient point along the axis z_i suffices.”

Page 86 In the first line, “... could just as well be placed at joint 2” should read “... could just as well be placed at joint 1.”

Page 87 In Figure 3.8, joint 5 is shown at $\theta_5 = -90^\circ$. The end part of the wrist should be straight up to match the given DH parameters. The wrist is drawn correctly later in the chapter.

Page 87 The (3,2) element of A_5 should be +1.

Page 91 In the expressions for r_{11} , the term $-d_2$ should be $-s_1$.

- Page 92 In Figure 3.11, Frame $x_0y_0z_0$ should be drawn at the shoulder joint of the robot arm, moved up along z_0 to match the given DH parameters in Table 3.5. Alternatively, you can add d_1 as a constant parameter in the first step of the DH transformations and adjust the matrices A_1, T_4^0 .
- Page 99 In Figure 3.14, θ_1 should be θ_1 .
- Page 109 In Equation (3.70), T_4^1 should be T_4^0 .
- Page 109 In Equation (3.75), $\sqrt{1-c_2}$ should be $\sqrt{1-c_2^2}$.

Chapter 4

- Page 130 In Equation (4.46), the summation $\sum_{i=1}^n$ should be $\sum_{i=1}^n$.
- Page 135 In the second sentence, the reference to Equation (4.62) should be Equation (4.63).
- Page 140 In the sentence before Equation (4.85), $R = R_{z,\psi}R_{y,\theta}R_{z,\phi}$ should be $R = R_{z,\phi}R_{y,\theta}R_{z,\psi}$.
- Page 143 In the second line after Equation (4.90), “that the all possible” should be “that all possible”.
- Page 144 In the middle of the first paragraph, θ_4 should be θ_5 .
- Page 144 In Equation (4.99) the sign of the determinant should be switched.
- Page 153 In Equation (4.121), $\xi^T(JJ^T)^1\xi^T$ should be $\xi^T(JJ^T)^{-1}\xi$.
- Page 154 After Equation (4.124), $\lambda_1 \geq \lambda_2 \dots \leq \lambda_m$ should be $\lambda_1 \geq \lambda_2 \dots \geq \lambda_m$.
- Page 158 In problem 4-7, $\phi = \frac{\phi}{2}$ should be $\phi = \frac{\pi}{2}$.
- Page 159 In problem 4-10, the word “acts” should be “facts”.
- Page 159 In problem 4-13, $R = R_{z,\psi}R_{y,\theta}R_{z,\phi}$ should be $R = R_{z,\phi}R_{y,\theta}R_{z,\psi}$.

Chapter 5

- Page 170 In Equation (5.2), ζ should be ζ_i .
- Page 175 After Equation (5.8), “inlcudes” should be “includes”.
- Page 177 In the first equation, the term $(a_x \sin \theta a_y \cos \theta)$ should be $(a_x \sin \theta + a_y \cos \theta)$.
- Page 178 In Example 5.7, the word “repuslive” should be “repulsive”.
- Page 187 In the next-to-last paragraph, “near by” should be “nearby”.
- Page 197 In Equation (5.28), $q(t_0)$ should be $q(t)$.

Appendix A

Page 436 In the Law of Cosines, change cb^2 to b^2 to give $c^2 = a^2 + b^2 - 2ab \cos \theta$.