ERRATA
Fundamentals of Matrix Computations, Second Edition
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This list does not include minor spelling and grammatical errors that the reader can easily diagnose. I have tried to restrict the list mainly to mathematical typos and other items that could cause confusion.

p. 6 In Exercise 1.1.10, the code should read as follows:

```matlab
b = zeros(n,1);
for j = 1:n
    for i = 1:n
        b(i) = b(i) + A(i,j)*x(j);
    end
end
```

p. 42 On the last line of (1.4.28), the \( \tilde{R} \) should be \( \hat{R} \).

p. 64 In Example 1.6.2, the Bucky Ball has 90 edges, not 30.

p. 71 On lines 3 and 5, the equation \( \hat{A}x = b \) should be \( \hat{A}x = \hat{b} \).

p. 72 In both arrays on this page, the entry \( a_{n2}^{(2)} \) should be \( a_{n2}^{(1)} \).

p. 89 In the expression for \( A^{(1)} \), the entry \( a_{n2}^{(2)} \) should be \( a_{n2}^{(1)} \).

p. 113 The first line of the proof of Theorem 2.1.7 should read as follows: It suffices to show that \( \|x + y\|_2^2 \leq (\|x\|_2 + \|y\|_2)^2 \).

p. 134 On line 2, change “nonsingular” to “singular.”

p. 143 The equation \( \text{fl}(x/y) = (x/y)(1+\epsilon) \) at mid page should be \( \text{fl}(\hat{x}/\hat{y}) = (x/y)(1+\epsilon) \).

p. 147 In at least five places on this page, especially in Exercise 2.5.6, the symbol \( r \) should be \( \hat{r} \). Aside from that, the equation \( \hat{r} = b - \hat{A}\hat{x} \) in Exercise 2.5.6 should read \( \hat{r} = b - \hat{A}\hat{x} \).

p. 152 On line 1, \( .833 \times 10^1 \) should be \( .833 \times 10^{-1} \).

p. 159 In Theorem 2.7.2, the matrix \( G \) is \( n \times n \).

pp. 168–169 In the MATLAB code in Exercise 2.7.25, the lower-case \( a \) should be an upper-case \( A \) in two places.
p. 196 On the third line of the proof of Theorem 3.2.30, the equation \( \gamma = 1/\| u \|_2^2 \) should be \( \gamma = 2/\| u \|_2^2 \).

p. 198 In Exercise 3.2.33, show further that \( 1 \leq \| u \|_2 \leq 2 \).

p. 210 In Exercise 3.2.68, the scalar \( \gamma \) in the definition of the reflector \( Q_i \) should have a subscript: \( Q_i = I - \gamma_i u_i u_i^T \).

p. 216 In part (a) of Exercise 3.3.10, in the MATLAB code, change \( \text{eye}(m) \) to \( \text{eye}(n) \).

p. 229 The third line of algorithm (3.4.23) should be \( \tilde{r}_{ik} \leftarrow \langle v_{k(i-1)}, \tilde{q}_i \rangle \).

p. 246 In part (b) of Exercise 3.5.26, assume that the matrices \( A \) and \( B \) have full rank.

p. 262 On the bottom half of the page, the definition of right and left singular vectors is backward. The columns of \( U \) are left singular vectors, and the columns of \( V \) are right singular vectors.

p. 265 In part (c) of Exercise 4.1.17, in the equation \( \sigma_1 = \| Au_1 \|_2 \), change the \( u_1 \) to a \( v_1 \). Earlier in the same line, I wish I'd used the symbol \( v \) instead of \( u \) in the max.

p. 267 In the second line after the second diagram, change \( A \) to \( A^{-1} \).

p. 276 In an equation in the middle of page, insert the vector \( \begin{bmatrix} \hat{y} \\ z \end{bmatrix} \) in the appropriate place to get
\[
\begin{bmatrix}
\hat{c} - \hat{\Sigma} \hat{y} \\
\hat{d}
\end{bmatrix} = \begin{bmatrix}
\hat{c} \\
\hat{d}
\end{bmatrix} - \begin{bmatrix}
\hat{\Sigma} \\
0
\end{bmatrix} \begin{bmatrix}
\hat{y} \\
z
\end{bmatrix}.
\]

Also, in the immediately preceding line, change \( \hat{r} \) to \( \hat{y} \).

p. 315 Just after (5.3.3), change \( | \lambda_2/\lambda_1 | \to 0 \) to \( | \lambda_2/\lambda_1 |^j \to 0 \).

p. 342 At the end of Exercise 5.4.27, change \( \| B \|_2 \) to \( \| \delta B \|_2 \) to get “... since \( \| \delta B \|_2 \) is (asymptotically) proportional ...”

p. 361 In the third line after displayed matrix \( A_m \), insert the word if: “More precisely, if \( | \lambda_i | > | \lambda_{i+1} | \ldots \)”

p. 369 In Exercise 5.6.25, \( R_1 \) is incorrect. It should be
\[
R_1 = \begin{bmatrix}
0 & 0 & 0 \\
0 & 0 & 0 \\
0 & 0 & 1
\end{bmatrix}.
\]

p. 371 In part (b) of Exercise 5.6.27, in the formula for \( t \), the radical in the denominator should be \( \sqrt{1 + \tilde{t}^2} \). (The \( \tilde{t} \) should be squared.)
p. 415 In the third line of the proof of Theorem 6.1.3, change span\{x_1, \ldots, x_k\} \in \mathcal{S}

\begin{align*}
\text{to span}\{x_1, \ldots, x_k\} = \mathcal{S}.
\end{align*}

p. 416 At the end of the fifth line of the proof of Theorem 6.1.6, change \( \mathbb{F}^n \) to \( \mathbb{F} \).

p. 423 On the third line from the bottom, change \( \mathbb{F}^{n \times n} \) to \( \mathbb{F}^n \).

p. 476 Two lines before (6.6.1) change \( \| \delta A_2 \| / \| A \|_2 = \epsilon \) to \( \| \delta A \|_2 / \| A \|_2 = \epsilon \).

p. 482 On the bottom line and five lines above, change \( \tilde{l}_j = l_j \delta_{j-1} / \delta_j \) to \( \tilde{l}_j = l_j \delta_j / \delta_{j+1} \).

p. 531 In Example 7.2.3, the iterates are incorrect and should be replaced by

\begin{align*}
x^{(10)} = \begin{bmatrix} 3.902 \\ 2.899 \\ 1.914 \\ 0.935 \end{bmatrix}, \quad x^{(20)} = \begin{bmatrix} 3.9965 \\ 2.9965 \\ 1.9970 \\ 0.9977 \end{bmatrix}, \quad x^{(30)} = \begin{bmatrix} 3.99988 \\ 2.99987 \\ 1.99989 \\ 0.99992 \end{bmatrix},
\end{align*}

and the statement “\( x^{(50)} \) agrees with . . . ” should be replaced by “\( x^{(80)} \) agrees with . . . ”

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