Errata in the First Printing

p. 18  Section I.3, Line 7 (just above the box) should refer to Section IV.6

p. 19  Section I.3, Statement 3 (eighth line from bottom, change sign from ‘≤’ to ‘≥’):
‘Then rank($A^T$) ≥ rank($A^TA$) = rank($A$).’

p. 20  Problem Set I.3, Problem 5: New second line in box (1 solution is impossible):
‘$r = m < n$  $A_2x = b$  has $\infty$ solutions for every $b$.’

p. 27  Section I.4, Problem 2: Delete last sentence ‘Then...unique.’

p. 38  Section I.6, Last sentence of Example 3: Replace ‘Increase 3 to 30 for complex
λ’s.’ by ‘Complex eigenvalues will appear if 3 is decreased to −1. Real matrices
can easily have complex eigenvalues; for example antisymmetric matrices.’

p. 52  Section I.7, Problem 3: Last line of the problem, please replace $A$ by $S$.

p. 55  Section I.7, Problem 28, Part (c): $\lambda_1$, not $\lambda$

p. 57  Section I.8, text line 3: Replace words in the bracket by ‘(multiplying singular
values gives $|\text{determinant of } A|$)’

p. 69  Section I.8, Problem 9: First line, remove $1/2$ both times. End of second line
‘...exactly $2Sx = 2\lambda x.$’

p. 70  Section I.8, Problem 19: The matrix with orthogonal columns of lengths 2, 3, 4
should be $A$ and not $S$.

p. 73  Section I.9, Subsection ‘The Frobenius Norm’: In the beginning, ignore the
words ‘Eckart-YoungFrobenius Norm’

p. 75  Section I.9, Equation (19): Change 2nd partial derivative from $\frac{\partial E}{\partial R}$ to $(\frac{\partial E}{\partial R})^T$

p. 75  Section I.9: See the book’s website for Dan Drucker’s computations!

p. 76  Section I.9: 11th line from the bottom, $A = \begin{bmatrix} 3 & -4 & 7 & 1 & -4 & -3 \\ 7 & -6 & 8 & -1 & -1 & -7 \end{bmatrix}$

p. 82  Section I.10: Last line in box, change ‘$\lambda Mx_1$’ to ‘$\lambda_1 Mx_1$’
Errata in the First Printing

p. 95  Section I.11 : Example 1, Matrix changes from
\[
\begin{bmatrix}
5 & 15 \\
15 & 45
\end{bmatrix}
\]
to
\[
\begin{bmatrix}
10 & 20 \\
20 & 40
\end{bmatrix}
\]

p. 95  Section I.11 : Example 1, Matrix changes from
\[
\begin{bmatrix}
5 & 5 \\
5 & 5
\end{bmatrix}
\]
to
\[
\begin{bmatrix}
2 & 4 \\
4 & 8
\end{bmatrix}
\]


p. 107  Section I.12 : Line 9, the word is ‘frequently’, not ‘frequency’.

p. 120  Section II.1 : Line 12 from the bottom, reference is (7) not (8).

p. 131  Section II.2 : Example, matrix changes from
\[
\begin{bmatrix}
4 & x \\
3 & x
\end{bmatrix}
\]
to
\[
\begin{bmatrix}
4 & * \\
3 & *
\end{bmatrix}
\]

p. 131  Section II.2 : Example, matrix changes from
\[
\begin{bmatrix}
5 & x \\
0 & x
\end{bmatrix}
\]
to
\[
\begin{bmatrix}
5 & * \\
0 & *
\end{bmatrix}
\]

p. 135  Section II.2, Problem 9 line 2 : Change \( a^T q_1 \) to \( b^T q_1 \)

p. 135  Section II.2, Problem 11 line 1 : Exchange the \( ^+ \) and the \( ^T \) to get \( QQ^T = AA^+ \).

Note : Those are the same projections onto \( C(A) \)

p. 162  Section III.1, first line : The first row of matrix \( M^{-1} \) should read 1 1 2

p. 182  Third reference : Change from ‘N’ to ‘N. Truhar’

p. 187  Equation 12 : Two instances of \( By \) are actually \( Bz \)

p.188  Equation 17  \( g(x) \) is actually \( g(z) \)

p. 199  Line below Equation (11) : Change reference ‘…by using A from equation (11).’

p. 216  Section IV.2, Equation 11 : Correct matrix is
\[
\begin{bmatrix}
1 & 1 & 1 & 1 \\
1 & i & i^2 & i^3 \\
1 & i^2 & i^4 & i^6 \\
1 & i^3 & i^6 & i^9
\end{bmatrix}
\]

p. 238  Section IV.5, Problem 5 : ‘The symbol 5’ (not ‘The symbol S’)


Errata in the First Printing

p. 245  Section IV.7, last printed line: Replace by ‘For 5 nodes and 2 clusters, \( C \) has only two columns (the centroids of the clusters) in \( A \approx CR \).’

p. 297  Section V.4, Equation (10): Modified,

\[
V = E \left[ (X - \bar{X}) (X - \bar{X})^T \right] \quad V_{ij} = \sum p_{ij} (X_i - m_i) (X_j - m_j)
\]

p. 395  Section VII.2, line 14: Replace ‘It is hard to predict whether deep ConvNets will be replaced by ResNets.’ with ‘By sending information far forward, features that are learned early don’t get lost before the output. Residual networks have become highly successful deep networks.’.

p. 417  Line 6 from the bottom: ‘The diagonalization (3) breaks down . . . ’