

BIOMEDICAL IMAGE ANALYSIS

Corrections and Additions

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p vii, Preface, Section: Background and Motivation, line 2: Röntgen should be Röntgen or Roentgen.

p15, Section 1.5 X-ray Imaging, line 2: Röntgen should be Röntgen or Roentgen.

p155, Section 3.1.1 Random noise, line 22: Replace “It then follows that the” with “The”.

p156, Section 3.1.1 Random noise, Equation 3.9: On the left-hand side, delete “, k” from the argument of ϕ_f .

p200, Figure 3.32: The clock image, of size 101×101 pixels, was padded with zeros to obtain the Fourier spectrum of size 128×128 pixels. For this reason, the spectrum in part (b) of the figure and the result of ideal-lowpass filtering in part (c) of the figure have artifacts.

p205, Section 3.5.2 Matrix representation of images: On the fifth and sixth lines after Equation 3.49, replace “autocorrelation” with “covariance” (twice).

After the sentence “Then, $\sigma = \mathbf{D} \rho \mathbf{D}$.” following Equation 3.51, insert the following:

“Note that the autocorrelation ϕ is equal to the covariance σ if $\bar{\mathbf{f}} = 0$.”

p222, Section 3.5.6 Block-circulant matrix representation of a 2D filter: In the fourth line, change “subtracting Laplacian operator” to “Laplacian operator”.

p226, Section 3.6.1 The Wiener filter: In the third point in the list after Equation 3.116, at the end of the point starting with “ $E[\mathbf{f} \boldsymbol{\eta}^T] = 0$ ”, insert “and $E[\boldsymbol{\eta}] = 0$ ” before “;”.

p292, Section 4.4.1 Gray-scale thresholding, Equations 4.2 and 4.3: \geq should be $>$.

p329 and p330, Figures 4.29 and 4.30: The clock and myocyte images were padded with zeros to obtain the Fourier spectrum. For this reason, the results of filtering have artifacts.

p364, Section 5.1 Thresholding and Binarization, Equation 5.1: \geq should be $>$.

p431, Section 5.5.3 Fuzzy region growing: Two lines after the list of points, the definition of a should be

$$a = | \text{mean_seed_region} + \text{standard_deviation_seed_region} - \mu |.$$

p432, caption of Figure 5.34: The definition of a should be

$$a = | \text{mean_seed_region} + \text{standard_deviation_seed_region} - \mu |.$$

p543, Section 6.1.5 Parabolic modeling of contours: “successive points inflection” should be “successive points of inflection”

p559, Section 6.2.2 Moments: In Equation 6.48, change $[d(n) - m_1]^2$ to $[d(n) - m_1]$.

p560: Change F_1' to F_1 three times in the first paragraph.

p565, Section 6.3 Fourier Descriptors: In the fifth line of the paragraph titled **Shape factor based upon Fourier descriptors**, delete “the magnitude of”.

In the definition of the normalized Fourier descriptors in the equation (not numbered), eighth line from the bottom, $|Z(1)|$ should be $Z(1)$.

In the fifth line from the bottom, $|Z(-1)|$ should be $Z(-1)$.

p602, Section 7.3.2 Haralick’s measures of texture: In Equation 7.22 for F_{13} , the power at the end of the equation should be $\frac{1}{2}$ instead of 2.

In Equation 7.25 for $\mathbf{Q}(l_1, l_2)$, the denominator should be $p_x(l_1) p_y(k)$ instead of $p_x(k) p_y(k)$.

pp641–642, Section 8.2.2 The principal axis: The moments in Equations 8.2 to 8.5 are taken with reference to the centroid as the origin; hence, m could be changed to μ as the two types of moments are the same with the centroid (\bar{x}, \bar{y}) equal to $(0, 0)$.