Errata for First Printing

Last update was 21 March 2001.

We will attempt to keep this file up to date as errors are found in the printed book. Please send your questions or detections to stockman@cse.msu.edu and shapiro@cs.washington.edu.

1. First errata posted 31 January 2001.

2. Second set posted 11 March 2001.

3. Third set posted 21 March 2001.

Colorplates after Chapter 6.

Figure 9.6 has a problem as discussed under Ch. 9 below.

The right sides results of Figures 10.1, 10.4, and 10.5 are permuted. The bottom right picture belongs at the top right. The top right picture belongs at the center right and the center right picture belongs at the bottom right. The grayscale pictures in Ch. 10 are correct.
Color segmentations are preferred, however, and appear under Ch 10 below.

Figures 15.17, 15.18, and 15.19 are courtesy of Kari Pulli.

Ch 1: Introduction.

Part (c) of Figure 1.3 page 5 would be better if it were shifted 3/16" to the left so that it would align with the label images in parts (d) and (e).

Ch 3: Binary Image Analysis

The summation formulas in Equations 3.8 and 3.9 are not set well; they would be better as done in Equation 3.7.

centroid:

$$r = \frac{1}{A} \sum_{(r,c)\in R} r \tag{1}$$

$$c = \frac{1}{A} \sum_{(r,c)\in R} c \tag{2}$$

Figure 3.22: name is misspelled; correct name is Uthaisombut.

Ch 5: Filtering and Enhancing Images.

Last sentence in the top paragraph of page 153 would be better if it read as follows: *Integrating 121 pixels can take a lot more time than integrating 9 of them if done in hardware.*

The very last sentence of page 167 uses symbol **H[i]** when it should be **H[i, j]**.

In the definition of the Convolution Theorem in the center of page 182, the rightmost use of **F** in **F**$[u, v]$ is a slight misuse of notation. In the last expression, **F** is actually the *name* of the frequency representation resulting from the Fourier transformation of the spatial function $f(x, y)$, whereas the leftmost 4 symbols **F** denote the transformation itself.

Ch 6: Color

The phrase "See colorplate." should be added to the caption of Figure 6.1.

The phrase "See colorplate." should be added to the caption of Figure 6.9. Stockman improved this figure but did not make appropriate changes to the text. The caption of Figure 6.9 is correct; however, the text that refers to the figure on page 196 is incorrect. The second and third sentences should read as follows: *The center image is the result of increasing the saturation S of all individual pixels by 40% and the right image is the result of decreasing S by 20%. Relative to our experience, colors in the center image appear overdone while those in the right image appear washed out.*

Figure 6.9 (Left) Input RGB image; (center) saturation S increased by 40%; (right) saturation S decreased by 20%. (Photo by Frank Biocca.)

The phrase "See colorplate." should be added to the caption of Figure 6.10.
The phrase "See colorplate." should be added to the caption of Figure 6.11.
The phrase "See colorplate." should be added to the caption of Figure 6.12.
The phrase "See colorplate." should be added to the caption of Figure 6.13.

Ch 7: Texture

The last sentence on page 212 would read better as follows: This chapter discusses what texture is, how it can be represented and computed, and how it can be used in image analysis.

The phrase "See colorplate." should be added to the caption of Figure 7.8.

Ch 8: Content-Based Image Retrieval

The phrase "See colorplate." should be added to the caption of Figure 8.1.
The phrase "See colorplate." should be added to the caption of Figure 8.3.
The phrase "See colorplate." should be added to the caption of Figure 8.4.
The phrase "See colorplate." should be added to the caption of Figure 8.5.
The phrase "See colorplate." should be added to the caption of Figure 8.6.
The phrase "See colorplate." should be added to the caption of Figure 8.7.
The phrase "See colorplate." should be added to the caption of Figure 8.9.

Ch 9: Motion

Remove the two occurrences of "of (a)" in the caption of Figure 9.4 page 257. (Or label the two parts of the figure "(a)" and "(b)".

Oh my! The printers were inconsistent with the grayscale Figure 9.6 on page 259, which IS CORRECT, and the color version in the center of the book. "Turn the color figures upside down" and read the caption from page 259. Add to the caption of the figure on page 259 "See colorplate".
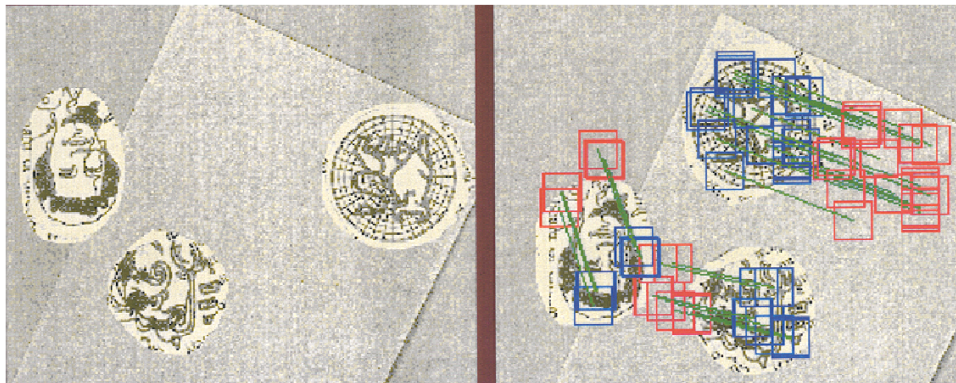

Figure 9.6 Results of applying Algorithm 9.3. At the left is the image at time t_1. At the right is the image at time t_2 with the motion analysis overlaid. Red squares indicate the location of the original neigborhoods detected by the interest operator in the image at the left. Blue squares indicate the best matches to these neighborhoods in the image at the right. There are three coherent sets of motion vectors (green lines) corresponding to three moving objects. The leftmost object moves down and slightly right. The lowest object moves right and slightly down; the rightmost object moves left and slightly up.(Analysis courtesy of Adam T. Clark.)
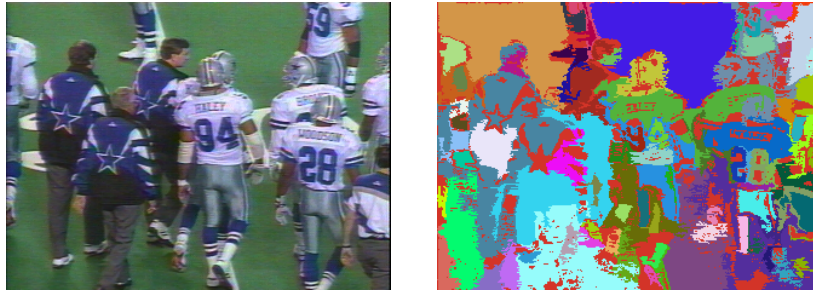
Ch 10: Image Segmentation

Figure 10.1 Football image (left) and segmentation into regions (right). Each region is a set of connected pixels that are similar in color.
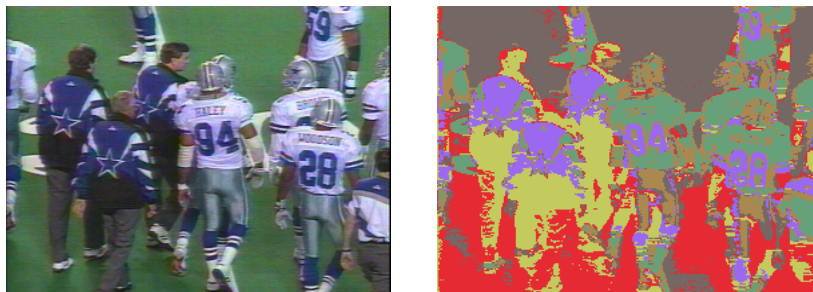

Figure 10.4 Football image (left) and K=6 clusters resulting from a K-means clustering procedure (right) shown as distinct gray tones. The six clusters correspond to the six main colors in the original image: dark green, medium green, dark blue, white, silver, and black.
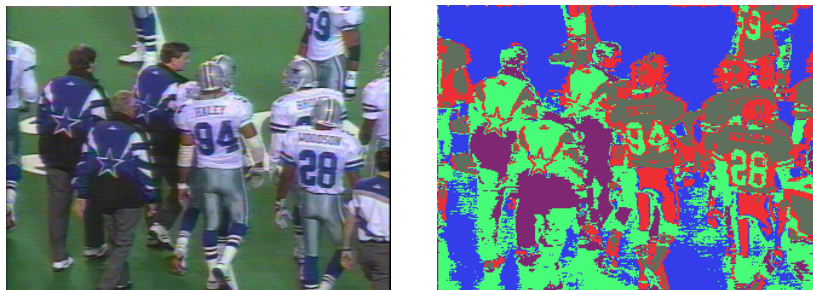

Figure 10.5 Football image (left) and K=5 clusters resulting from an isodata clustering procedure (right) shown as distinct gray tones. The five clusters correspond to five color

groups: green, dark blue, white, silver, and black.

Definition 75 is incorrectly said in words: the RMSE is exactly as the formula shows; it is "the square root of the average squared error".

Ch 11: Matching in 2D

Next to last paragraph of page 327 has too many references to Figure 11.2 and should read as "For example, we might want to cut out a subimage I_2 from an image I_1 as shown in Figure 11.2."

Figure 11.10 is Courtesy of Olivier Faugeras.

Figure 11.15 is reprinted by permission of IEEE.

Ch 12: Perceiving 3D from 2D Images

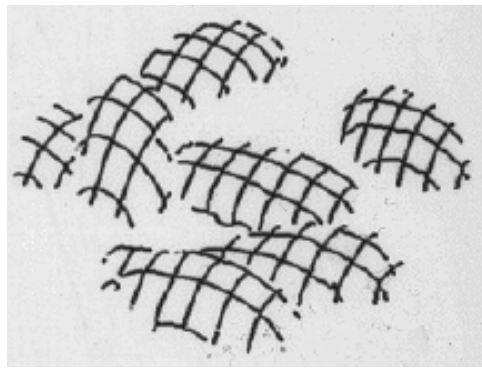The credit for Figure 12.14 was omitted; this figure is *Courtesy of Gongzhu Hu.*
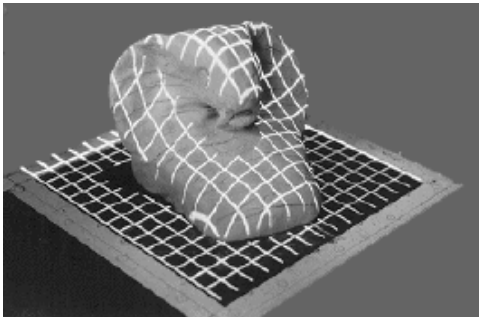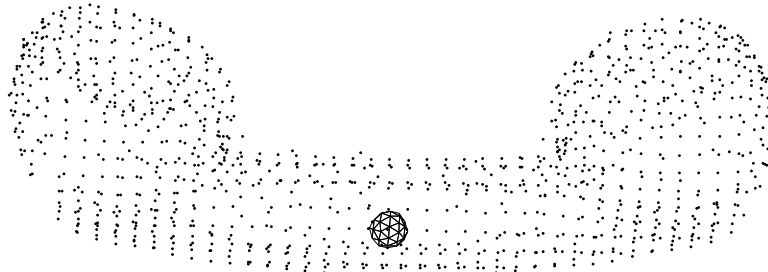

Figure 12.14 The texture formed by light stripes projected onto objects reveals their 3D surface shape: (left) a grid of light projected on a smooth sculpture on a planar background; (right) stripes on objects with planar background removed – what are the objects? Images courtesy of Gongzhu Hu.

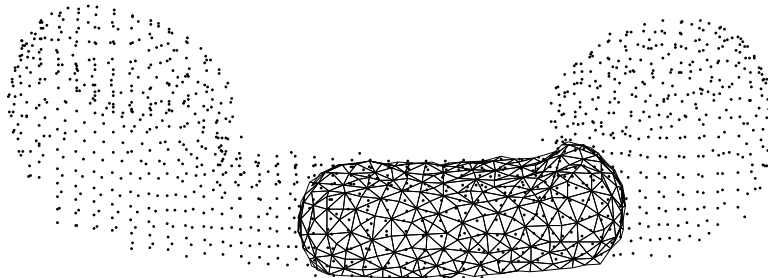# Ch 13: 3D Sensing and Object Pose Computation

Figure 13.15: remove the arrow pointing downward from point I.
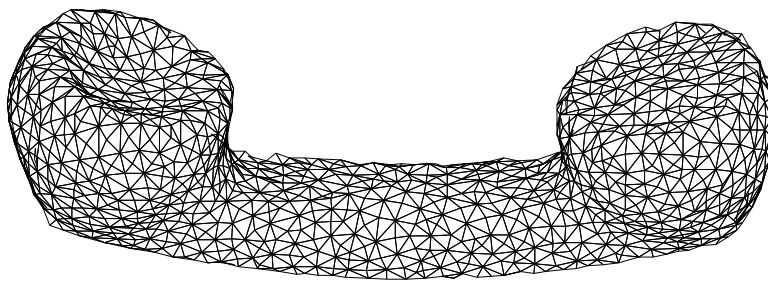
Ch 14: 3D Models and Matching

Figure 14.15, a great example by Chen and Medioni, has been destroyed in the printing process. Hopefully, it will be corrected in the next run. In the first printing, the 3D data points are shown, but not the growing mesh. Below is the correct figure parts.

(a) Initialization with balloon entirely within the 3D point cloud.

(b) Balloon inflated so that some triangles contact data.

(c) Triangular mesh at termination.

Figure 14.15 Three snapshots of the physics-based process of inflating a mesh of triangles to fit a cloud of 3D data. (Courtesy of Yang Chen and Gerard Medioni.)

Ch 15: Virtual Reality

Figure 15.14 would be better if printed lighter.

The phrase "See colorplate." should be added to the caption of Figure 15.17.
The phrase "See colorplate." should be added to the caption of Figure 15.18.
The phrase "See colorplate." should be added to the caption of Figure 15.19.