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Calibration; 2.8.2 Photometric Calibration

2.9 Summary of Important PointsReferences; Chapter 3: Image Digitization; 3.1 Introduction; 3.2 Resolution; 3.3 Sampling; 3.3.1 Interpolation; 3.3.2 Aliasing; 3.4 Noise; 3.5 Shading; 3.6 Photometry; 3.7 Geometric Distortion; 3.8 Complete System Design; 3.8.1 Cumulative Resolution; 3.8.2 Design Rules of Thumb; 3.8.2.1 Pixel Spacing; 3.8.2.2 Resolution; 3.8.2.3 Noise; 3.8.2.4 Photometry; 3.8.2.5 Distortion; 3.9 Summary of Important Points; References; Chapter 4: Image Display; 4.1 Introduction; 4.2 Display Characteristics; 4.2.1 Displayed Image Size; 4.2.2 Aspect Ratio; 4.2.3 Photometric Resolution4.2.4 Grayscale Linearity; 4.2.5 Low-Frequency Response; 4.2.5.1 Pixel Polarity; 4.2.5.2 Pixel Interaction; 4.2.6 High-Frequency Response; 4.2.7 The Spot-Spacing Compromise; 4.2.8 Noise Considerations; 4.3 Volatile Displays; 4.4 Sampling for Display Purposes; 4.4.1 Oversampling; 4.4.2 Resampling; 4.5 Display Calibration; 4.6 Summary of Important Points; References; Chapter 5: Geometric Transformations; 5.1 Introduction; 5.2 Implementation; 5.3 Gray-Level Interpolation; 5.3.1 Nearest-Neighbor Interpolation; 5.3.2 Bilinear Interpolation; 5.3.3 Bicubic Interpolation; 5.3.4 Higher-Order Interpolation5.4 Spatial Transformation; 5.4.1 Control-Grid Mapping; 5.5 Applications; 5.5.1 Distortion Removal; 5.5.2 Image Registration; 5.5.3 Stitching; 5.6 Summary of Important Points; References; Chapter 6: Image Enhancement; 6.1 Introduction; 6.2 Spatial Domain Methods; 6.2.1 Contrast Stretching; 6.2.2 Clipping and Thresholding; 6.2.3 Image Subtraction and Averaging; 6.2.4 Histogram Equalization; 6.2.5 Histogram Specification; 6.2.6 Spatial Filtering; 6.2.7 Directional and Steerable Filtering; 6.2.8 Median Filtering; 6.3 Fourier Transform Methods; 6.3.1 Wiener Filtering and Wiener Deconvolution

Sommario/riassunto

Digital image processing, an integral part of microscopy, is increasingly important to the fields of medicine and scientific research. This book provides a unique one-stop reference on the theory, technique, and applications of this technology. Written by leading experts in the field, this book presents a unique practical perspective of state-of-the-art microscope image processing and the development of specialized algorithms. It contains in-depth analysis of methods coupled with the results of specific real-world experiments. Microscope Image Processing covers image digitization and di
