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Nota di contenuto	2-D and 3-D Image Registration; Contents; Preface; Acknowledgments; Acronyms; 1 Introduction; 1.1 Terminologies; 1.2 Steps in Image Registration; 1.3 Summary of the Chapters to Follow; 1.4 Bibliographical Remarks; 2 Preprocessing; 2.1 Image Enhancement; 2.1.1 Image smoothing; 2.1.2 Deblurring; 2.2 Image Segmentation; 2.2.1 Intensity thresholding; 2.2.2 Boundary detection; 2.3 Summary; 2.4 Bibliographical Remarks; 3 Feature Selection; 3.1 Points; 3.2 Lines; 3.2.1 Line detection using the Hough transform; 3.2.2 Least-squares line fitting; 3.2.3 Line detection using image gradients; 3.3 Regions 3.4 Templates3.5 Summary; 3.6 Bibliographical Remarks; 4 Feature Correspondence; 4.1 Point Pattern Matching; 4.1.1 Matching using scene coherence; 4.1.2 Matching using clustering; 4.1.3 Matching using invariance; 4.2 Line Matching; 4.3 Region Matching; 4.3.1 Shape matching; 4.3.2 Region matching by relaxation labeling; 4.4 Chamfer Matching; 4.4.1 Distance transform; 4.5 Template Matching; 4.5.1 Similarity measures; 4.5.2 Gaussian-weighted templates; 4.5.3 Template size; 4.5.4 Coarse-to-fine methods; 4.6 Summary; 4.7 Bibliographical Remarks; 5 Transformation Functions

5.1 Similarity Transformation; 5.2 Projective and Affine Transformations; 5.3 Thin-Plate Spline; 5.4 Multiquadric; 5.5 Weighted Mean Methods; 5.6 Piecewise Linear; 5.7 Weighted Linear; 5.8 Computational Complexity; 5.9 Properties of the Transformation Functions; 5.10 Summary; 5.11 Bibliographical Remarks; 6 Resampling; 6.1 Nearest Neighbor; 6.2 Bilinear Interpolation; 6.3 Cubic Convolution; 6.4 Cubic Spline; 6.5 Radially Symmetric Kernels; 6.6 Summary; 6.7 Bibliographical Remarks; 7 Performance Evaluation; 7.1 Feature Selection Performance; 7.2 Feature Correspondence Performance; 7.3 Transformation Function Performance; 7.4 Registration Performance; 7.5 Summary; 7.6 Bibliographical Remarks; 8 Image Fusion; 8.1 Fusing Multi-Exposure Images; 8.1.1 Image blending; 8.1.2 Examples; 8.2 Fusing Multi-Focus Images; 8.3 Summary; 8.4 Bibliographical Remarks; 9 Image Mosaicking; 9.1 Problem Description; 9.2 Determining the Global Transformation; 9.3 Blending Image Intensities; 9.4 Examples; 9.5 Mosaicking Range Images; 9.6 Evaluation; 9.7 Summary; 9.8 Bibliographical Remarks; 10 Stereo Depth Perception; 10.1 Stereo Camera Geometry; 10.2 Camera Calibration; 10.3 Image Rectification; 10.4 The Correspondence Process; 10.4.1 Constraints in stereo; 10.4.2 Correspondence algorithms; 10.5 Interpolation; 10.6 Summary; 10.7 Bibliographical Remarks; Glossary; References; Index

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Sommario/riassunto

To master the fundamentals of image registration, there is no more comprehensive source than 2-D and 3-D Image Registration. In addition to delving into the relevant theories of image registration, the author presents their underlying algorithms. You'll also discover cutting-edge techniques to use in remote sensing, industrial, and medical applications. Examples of image registration are presented throughout, and the companion Web site contains all the images used in the book and provides links to software and algorithms discussed in the text, allowing you to reproduce the results in the text

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