

Contents

Introduction	1
Part I—Correlation and Matching	3
Signal Detection by Complex Spatial Filtering, <i>A. Vander Lugt (IEEE Transactions on Information Theory, April 1964)</i> ..	5
Pattern Recognition Using Autocorrelation, <i>L. P. Horwitz and G. L. Shelton, Jr. (Proceedings of the IRE, January 1961)</i> ..	12
A Class of Algorithms for Fast Digital Image Registration, <i>D. I. Barnea and H. F. Silverman (IEEE Transactions on Computers, February 1972)</i>	23
The Representation and Matching of Pictorial Structures, <i>M. A. Fischler and R. A. Elschlager (IEEE Transactions on Computers, January 1973)</i>	31
Part II—Segmentation: Regions	57
The IBM 1975 Optical Page Reader, Part II: Video Thresholding System, <i>M. R. Bartz (IBM Journal of Research and Development, September 1968)</i>	59
Adjacency in Digital Pictures, <i>A. Rosenfeld (Information and Control, September 1974)</i>	69
Scene Analysis Using Regions, <i>C. R. Brice and C. L. Fennema (Artificial Intelligence, Fall 1970)</i>	79
Picture Segmentation by a Directed Split-and-Merge Procedure, <i>S. L. Horowitz and T. Pavlidis (Proceedings of the Second International Joint Conference on Pattern Recognition, August 1974)</i>	101
Part III—Region Representation and Description	111
Visual Pattern Recognition by Moment Invariants, <i>M. K. Hu (IRE Transactions on Information Theory, February 1962)</i> ..	113
Diffraction-Pattern Sampling for Automatic Pattern Recognition, <i>G. G. Lendaris and G. L. Stanley (Proceedings of the IEEE, February 1970)</i>	122
Textural Features for Image Classification, <i>R. M. Haralick, K. Shanmugam, and I. Dinstein (IEEE Transactions on Systems, Man, and Cybernetics, November 1973)</i>	141
A Transformation for Extracting New Descriptors of Shape, <i>H. Blum (Models for the Perception of Speech and Visual Form, W. Wathen-Dunn, Ed., 1967)</i>	153
Hexagonal Parallel Pattern Transformations, <i>M. J. E. Golay (IEEE Transactions on Computers, August 1969)</i>	172
Part IV—Segmentation: Boundaries	181
Edge and Curve Detection for Visual Scene Analysis, <i>A. Rosenfeld and M. Thurston (IEEE Transactions on Computers, May 1971)</i>	183
An Operator Which Locates Edges in Digitized Pictures, <i>M. H. Hueckel (Journal of the ACM, January 1971)</i>	191
Use of the Hough Transformation to Detect Lines and Curves in Pictures, <i>R. O. Duda and P. E. Hart (Communications of the ACM, January 1972)</i>	204
The Recognition of Handwritten Numerals by Contour Analysis, <i>E. C. Greanias, P. F. Meagher, R. J. Norman, and P. Essinger (IBM Journal of Research and Development, January 1963)</i>	209

An Application of Heuristic Search Methods to Edge and Contour Detection, <i>A. Martelli (Communications of the ACM, February 1976)</i>	.....
Edge Detection in Pictures by Computer Using Planning, <i>M. D. Kelly (Machine Intelligence, B. Meltzer and D. Michie, Eds., 1971)</i>	.....
Part V—Boundary Representation and Description	.....
On the Encoding of Arbitrary Geometric Configurations, <i>H. Freeman (IRE Transactions on Electronic Computers, June 1961)</i>	.....
Fourier Preprocessing for Hand Print Character Recognition, <i>G. H. Granlund (IEEE Transactions on Computers, February 1972)</i>	.....
A Formal Description for Two-Dimensional Patterns, <i>C. T. Zahn (Proceedings of the International Joint Conference on Artificial Intelligence, May 1969)</i>	.....
Computer Analysis of Moving Polygonal Images, <i>J. K. Aggarwal and R. O. Duda (IEEE Transactions on Computers, October 1975)</i>	.....
Part VI—Scene Analysis: The Blocks World	.....
Machine Perception of Three-Dimensional Solids, <i>L. G. Roberts (Optical and Electro-Optical Information Processing, J. T. Tippett et al., Eds., 1965)</i>	.....
Decomposition of a Visual Scene into Three-Dimensional Bodies, <i>A. Guzmán (Proceedings of the AFIPS Fall Joint Computer Conference, December 1968)</i>	.....
Impossible Objects as Nonsense Sentences, <i>D. A. Huffman (Machine Intelligence, B. Meltzer and D. Michie, Eds., 1971)</i>	.....
Part VII—Scene Analysis: The Natural World	.....
On Syntactic Pattern Recognition, <i>K. S. Fu and P. H. Swain (Software Engineering, Vol. 2, J. T. Tou, Ed., 1969)</i>	.....
Some Techniques for Recognising Structures in Pictures, <i>H. G. Barrow, A. P. Ambler, and R. M. Burstall (Frontiers of Pattern Recognition, S. Watanabe, Ed., 1972)</i>	.....
A Semantics-Based Decision Theory Region Analyzer, <i>Y. Yakimovsky and J. A. Feldman (Proceedings of the Third International Joint Conference on Artificial Intelligence, August 1973)</i>	.....
IGS: A Paradigm for Integrating Image Segmentation and Interpretation, <i>J. M. Tenenbaum and H. G. Barrow (Proceedings of the Third International Joint Conference on Pattern Recognition, November 1976)</i>	.....
Relaxation Labelling and the Reduction of Local Ambiguities, <i>S. W. Zucker (Proceedings of the Third International Joint Conference on Pattern Recognition, November 1976)</i>	.....
Bibliography	.....
Author Index	.....
Subject Index	.....
Editors' Biographies	.....