

Contents

Preface	1
Introduction	1
Part I: Image Restoration	5
Digital Image Restoration: A Survey, <i>H. C. Andrews (IEEE Computer, May 1974)</i>	6
Transfer Function Compensation of Sampled Imagery, <i>R. J. Arguello, H. R. Sellner, and J. A. Stuller (IEEE Transactions on Computers, July 1972)</i>	16
Space-Variant Image Motion Degradation and Restoration, <i>A. A. Sawchuk (Proceedings of the IEEE, July 1972)</i>	23
Image Restoration by Singular Value Decomposition, <i>T. S. Huang and P. M. Narendra (Applied Optics, September 1975)</i>	31
Restored Pictures of Ganymede, Moon of Jupiter, <i>B. R. Frieden and W. Swindell (Science, March 26, 1976)</i>	35
Part II: Image Processing and Correction	41
Digital Mapping and Associated Digital Image Processing, <i>L. A. Gambino and M. A. Crombie (Papers from the 40th Annual Meeting of the American Society of Photogrammetry, March 1974)</i>	42
Digital Image Processing of Earth Observation Sensor Data, <i>R. Bernstein (IBM Journal of Research and Development, January 1976)</i>	55
Digital Image Processing, <i>R. Bernstein and D. G. Ferneyhough, Jr. (Photogrammetric Engineering and Remote Sensing, December 1975)</i>	73
Digital Image Reconstruction and Resampling for Geometric Manipulation, <i>K. W. Simon (Proceedings of the IEEE Symposium on Machine Processing of Remotely Sensed Data, June 1975)</i>	84
Digital Processing of Conical Scanner Data, <i>S. W. Murphrey, R. D. Depew, and R. Bernstein (Photogrammetric Engineering and Remote Sensing, February 1977)</i>	95
Digital Techniques for Earth Resource Image Data Processing, <i>R. Bernstein and H. Silverman (Proceedings of the American Institute of Aeronautics and Astronautics 8th Annual Meeting, October 1971)</i>	107
Part III: Image Registration	121
Spatial Registration of Multispectral and Multitemporal Digital Imagery Using Fast Fourier Transform Techniques, <i>P. E. Anuta (IEEE Transactions on Geoscience Electronics, October 1970)</i>	122
A Class of Algorithms for Fast Digital Image Registration, <i>D. I. Barnea and H. F. Silverman (IEEE Transactions on Computers, February 1972)</i>	138
Techniques for Image Registration, <i>W. F. Webber (Proceedings of the IEEE Conference on Machine Processing of Remotely Sensed Data, October 1973)</i>	146
Multitemporal Geometric Distortion Correction Utilizing the Affine Transformation, <i>R. A. Emmert and C. D. McGillem (Proceedings of the IEEE Conference on Machine Processing of Remotely Sensed Data, October 1973)</i>	153
Correlation Techniques of Image Registration, <i>W. K. Pratt (IEEE Transactions on Aerospace and Electronic Systems, May 1974)</i>	162
Image Registration Error Variance as a Measure of Overlay Quality, <i>C. D. McGillem and M. Svedlow (IEEE Transactions on Geoscience Electronics, January 1976)</i>	168
Part IV: Image Enhancement for Manual Interpretation	175
Recent Developments in Digital Image Processing at the Image Processing Laboratory at the Jet Propulsion Laboratory, <i>D. A. O'Handley and W. B. Green (Proceedings of the IEEE, July 1972)</i>	176
Image Restoration: The Removal of Spatially Invariant Degradations, <i>M. M. Sondhi (Proceedings of the IEEE, July 1972)</i> ..	184
Digital Image Processing, <i>B. R. Hunt (Proceedings of the IEEE, April 1975)</i>	196
Image Processing in the Context of a Visual Model, <i>T. G. Stockham, Jr. (Proceedings of the IEEE, July 1972)</i>	212
Part V: Information Extraction by Machine Processing	227
Techniques for Change Detection, <i>R. L. Lillestrand (IEEE Transactions on Computers, July 1972)</i>	228
Digital Image-Processing Activities in Remote Sensing for Earth Resources, <i>G. Nagy (Proceedings of the IEEE, October 1972)</i>	234
Digital Image Processing for Information Extraction, <i>F. C. Billingsley (International Journal of Machine Perception of Patterns and Pictures, 1972)</i>	258
Pattern Recognition in Remote Sensing of the Earth's Resources, <i>K.-S. Fu (IEEE Transactions on Geoscience Electronics, January 1976)</i>	297
Picture Recognition, <i>A. Rosenfeld and J. S. Weszka (Digital Pattern Recognition, K. S. Fu, W. D. Keidel, and H. Wolter, Eds., 1976)</i>	306

Tree System Approach for LANDSAT Data Interpretation, <i>R. Y. Li and K. S. Fu (Proceedings of the IEEE Symposium on Machine Processing of Remotely Sensed Data, June 1976)</i>	338
Image Filtering—A Context Dependent Process, <i>R. Bajcsy and M. Tavakoli (IEEE Transactions on Circuits and Systems, May 1975)</i>	346
Pattern Recognition and Image Processing, <i>K.-S. Fu and A. Rosenfeld (IEEE Transactions on Computers, December 1976)</i> .	358
Patterns in Pattern Recognition: 1968-1974, <i>L. Kanal (IEEE Transactions on Information Theory, November 1974)</i>	369
Evaluation of Improved Digital-Processing Techniques of Landsat Data for Sulfide Mineral Prospecting, <i>R. G. Schmidt and R. Bernstein (Proceedings of the First Annual William T. Pecora Memorial Symposium, October 1975)</i>	395
Part VI: Image Data Compression/Compaction.	409
A Survey of Digital Picture Coding, <i>A. Habibi and G. S. Robinson (IEEE Computer, May 1974)</i>	410
Intraframe Coding for Picture Transmission, <i>D. J. Connor, R. C. Brainard, and J. O. Limb (Proceedings of the IEEE, July 1972).</i>	423
Transform Picture Coding, <i>P. A. Wintz (Proceedings of the IEEE, July 1972)</i>	436
Glossary	449
Bibliography.	457
Author Index	469
Subject Index	470
Editor's Biography.	473