Bibliography

[1] I. E. Abdou and W. K. Pratt. Quantitative design and evaluation of enhancement/thresholding edge detectors. *Proceedings of the IEEE*, 67(5):753–763, May 1979.

[2] J. K. Aggarwal and N. Nandhakumar. On the computation of motion from sequences of images: A review. Technical Report TR-88-2-47, University of Texas, Austin, April 1988.

[3] N. Ahuja and A. L. Abbot. Active stereo: Integrating disparity, vergence, focus, aperture, and calibration for surface estimation. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 15(10):1007–1029, 1993.

[4] J. Aisbett. Optical flow with an intensity-weighted smoothing. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 11(5):512–522, May 1989.

[5] J. Y. Aloimonos. Shape from texture. *Biological Cybernetics*, 58(5):345, 1988.

[6] J. Y. Aloimonos and I. Rigoutsos. Determining the 3-d motion of a rigid planar patch without correspondence, under perspective projection. *Proc. Workshop on Motion*, pages 167–174, 1986.

[7] J. Y. Aloimonos and I. Rigoutsos. Determining the 3-d motion of a rigid surface patch without correspondence, under perspective projection. i. planar surfaces; ii. curved surfaces. *Proc. National Conf. on Artificial Intelligence*, pages 681–688, 1986.

[8] J. Y. Aloimonos, I. Weiss, and A. Bandyopadhyay. Active vision. *Int. J. Computer Vision*, 1:333–356, 1988.

[9] P. Anandan. A computational framework and an algorithm for the measurement of visual motion. *Int. J. Computer Vision*, 2(3):283–310, 1989.

[10] H. Asada and M. Brady. The curvature primal sketch. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 8(1):2–14, January 1986.

[11] N. Ayache and B. Faverjon. Efficient registration of stereo images by matching graph descriptions of edge segments. *Int. J. Computer Vision*, pages 107–131, 1987.

[12] N. Ayache and F. Lustman. Fast and reliable trinocular stereovision. *Proc. First Intl. Conf. Computer Vision*, pages 422–427, 1987.

[13] R. Bajcsy and L. Lieberman. Texture gradient as a depth cue. *Comp. Graph. and Image Proc.*, 5:52–67, 1976.

[14] R. Bajcsy. Active perception. *Proc. IEEE*, 76(8):996–1005, 1988.

[15] H. H. Baker and R. C. Bolles. Generalizing epipolar-plane image analysis on the spatiotemporal surface. *Int. J. Computer Vision*, 3:33–49, 1989.

[16] H. H. Baker and T. O. Binford. Depth from edge and intensity based stereo. *Proc. 7th Int. Joint Conf. AI*, pages 631–636, 1981.

[17] W. H. Baker. *Elements of Photogrammetry*. Ronald Press Company, New York, 1960.

[18] D. H. Ballard. Generalizing the hough transform to detect arbitrary shapes. *Pattern Recognition*, 13(2):111–122, 1981.

[19] D. H. Ballard and C. M. Brown. *Computer Vision*. Prentice-Hall, Englewood Cliffs, New Jersey, 1982.

[20] S. T. Barnard and M. A. Fischler. Computational stereo. *Computing Surveys*, 14(4):553–572, December 1982.

[21] S. T. Barnard and W. B. Thompson. Disparity analysis of images. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 2(4):333–340, July 1980.

[22] R. H. Bartels, J. C. Beatty, and B. A. Barsky. *An Introduction to Splines for Use in Computer Graphics and Geometric Modeling*. Morgan Kaufmann, Los Altos, California, 1987.

[23] D. M. Bates and D. G. Watts. *Nonlinear Regression Analysis and Its Applications*. Wiley, New York, 1988.

[24] J. V. Beck and K. J. Arnold. *Parameter Estimation in Engineering and Science*. Wiley, New York, 1977.

[25] F. Bergholm. Edge focusing. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 9(6):726–741, November 1987.

[26] P. J. Besl. Active, optical range imaging sensors. *Machine Vision and Applications*, 1:127–152, 1988.

[27] P. J. Besl and R. C. Jain. Three-dimensional object recognition. *Computing Surveys*, 17(1):75–145, March 1985.

[28] P. J. Besl and R. C. Jain. Segmentation through variable-order surface fitting. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 10(2):167–192, March 1988.

[29] P. J. Besl and N. D. McKay. A method for registration of 3-d shapes. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 14(2):239–256, February 1992.

[30] J. R. Beveridge et al. Segmenting images using localized histograms and region merging. *Int. J. Computer Vision*, 2(3):311–347, 1989.

[31] J. D. E. Beynon and D. R. Lamb, editors. *Charge-Coupled Devices and Their Applications*. McGraw-Hill Book Company (UK) Limited, London, 1980.

[32] B. Bhanu and C. Ho. CAD-based 3-d object recognition for robot vision. *Computer*, 20(8):19–36, 1987.

[33] T. O. Binford. Spatial understanding: The successor system. *Proc. DARPA Image Understanding Workshop*, pages 12–20, 1989.

[34] T. O. Binford. Survey of model-based image analysis systems. *Int. J. Robotics Research*, 1(1):18–64, 1982.

[35] A. Blake and A. Zisserman. *Visual Reconstruction*. MIT Press, Cambridge, 1987.

[36] D. Blostein and N. Ahuja. Shape from texture: Integrating texture-element extraction and surface estimation. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 11(12):1233–1251, 1989.

[37] R. C. Bolles, H. H. Baker, and D. H. Marimont. Epipolar-plane image analysis: An approach to determining structure from motion. *Int. J. Computer Vision*, 1:7–55, 1987.

[38] R. C. Bolles and M. A. Fischler. A RANSAC-based approach to model fitting and its application to finding cylinders in range data. In *Int. Joint. Conf. Artificial Intelligence*, pages 637–643, 1981.

[39] F. L. Bookstein. *The Measurement of Biological Shape and Shape Change*. Lecture Notes in Biomathematics, 24. Springer, New York, 1978.

[40] F. L. Bookstein. A statistical method for biological shape comparisons. *J. Theoretical Biology*, 107:475–520, 1984.

[41] F. L. Bookstein. Size and shape spaces. *Statistical Science*, 1:181–242, 1986.

[42] F. L. Bookstein. Principal warps: Thin-plate splines and the decomposition of deformations. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 11(6):567–585, June 1989.

[43] G. E. P. Box, W. G. Hunter, and J. S. Hunter. *Statistics for Experimenters: An Introduction to Design, Data Analysis, and Model Building*. Wiley, New York, 1978.

[44] K. L. Boyer and A. C. Kak. Color-encoded structured light for rapid active ranging. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 9(1):14–28, January 1987.

[45] J. M. Brady and H. Asada. Smoothed local symmetries and their implementation. *Int. J. Robotics Research*, 3:36–61, 1984.

[46] M. Brady, J. Ponce, A. Yuille, and H. Asada. Describing surfaces. *Computer Vision, Graphics and Image Processing*, 32(1):1–28, October 1985.

[47] T. J. Broida and R. Chellappa. Estimation of object motion parameters from noisy images. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 8(1):90–99, January 1986.

[48] T. J. Broida and R. Chellappa. Performance bounds for estimating three-dimensional motion parameters from a sequence of noisy images. *J. Opt. Soc. Am. A*, 6(6), June 1989.

[49] R. A. Brooks. Model-based three-dimensional interpretations of two-dimensional images. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 5(2):140–149, 1983.

[50] R. A. Brooks, R. Greiner, and T. O. Binford. The acronym model-based vision system. In *Int. Joint. Conf. Artificial Intelligence*, 1979.

[51] D. C. Brown. Close range camera calibration. *Photogrammetric Engineering*, 37(8):855–866, August 1971.

[52] P. J. Burt. Fast algorithms for estimating local image properties. *Computer Vision, Graphics and Image Processing*, 21:368–382, 1983.

[53] J. F. Canny. A computational approach to edge detection. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 8(6):679–698, November 1986.

[54] P. Cavanaugh. Size and position invariance in the vision system. *Perception*, 7:167–177, 1978.

[55] P. Cavanaugh. Size invariance: Reply to Schwartz. *Perception*, 10:469–474, 1981.

[56] I. Chakravarty and H. Freeman. Characteristic views as a basis for three-dimensional object recognition. *Proc. SPIE Conf. Robot Vision*, 336:37–45, 1982.

[57] R. T. Chin and C. R. Dyer. Model-based recognition in robot vision. *ACM Computing Surveys*, 18(1):67–108, March 1986.

[58] W. F. Clocksin. Perception of surface slant and edge labels from optical flow: A computational approach. *Perception*, 9:253–269, 1980.

[59] W. J. Cody and W. Waite. *Software Manual for the Elementary Functions*. Prentice-Hall, Englewood Cliffs, New Jersey, 1980.

[60] L. Cohen et al. Hierarchical region-based stereo matching. *Proc. Conf. Computer Vision and Pattern Recognition*, pages 416–421, 1989.

[61] R. W. Conners and C. A. Harlow. Equal probability quantizing and texture analysis of radiographic images. *Comp. Graph. and Image Proc.*, 8:447–463, 1978.

[62] R. Courant and D. Hilbert. *Methods of Mathematical Physics*, volume 1. John Wiley & Sons, Interscience Publishers, New York, 1937.

[63] N. A. C. Cressie. *Statistics for Spatial Data*. Wiley, New York, 1991.

[64] G. R. Cross and A. K. Jain. Markov random field texture models. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 5(1):25–39, 1983.

[65] J. L. Crowley and R. Stern. Fast computation of the difference of low-pass transform. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 6:212–222, March 1984.

[66] E. De Micheli, B. Caprile, P. Ottonello, and V. Torre. Localization and noise in edge detection. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 11(10):1106–1117, October 1989.

[67] M. P. do Carmo. *Differential Geometry of Curves and Surfaces*. Prentice-Hall, Englewood Cliffs, New Jersey, 1976.

[68] E. R. Dougherty and C. R. Giardina. *Mathematical Methods for Artificial Intelligence and Autonomous Systems.* Prentice-Hall, Englewood Cliffs, New Jersey, 1988.

[69] A. W. Drake. *Fundamentals of Applied Probability Theory.* McGraw-Hill, New York, 1967.

[70] R. O. Duda and P. Hart. *Pattern Classification and Scene Analysis.* Wiley, New York, 1973.

[71] B. Efron. Computer-intensive methods in statistical regression. *SIAM Review,* 30(3):421–449, September 1988.

[72] B. Efron and R. Tibshirani. Statistical data analysis in the computer age. *Science,* 253:390–395, July 26, 1991.

[73] D. Eggert and K. Bowyer. Computing the orthographic projection aspect graph of solids of revolution. *Proc. IEEE Workshop on Interpretation of 3-D Scenes,* pages 102–108, 1989.

[74] P. Eichel and E. Delp. Sequential edge detection in correlated random fields. In *Proc. Conf. Computer Vision and Pattern Recognition,* pages 14–21, 1985.

[75] G. J. Ettinger. Large hierarchical object recognition in robot vision. *Proc. Conf. Computer Vision and Pattern Recognition,* pages 32–41, 1988.

[76] J.-Q. Fang and T. S. Huang. Solving three-dimensional small-rotation motion equations: Uniqueness, algorithms, and numerical results. *Computer Vision, Graphics and Image Processing,* 26:183–206, 1984.

[77] J.-Q. Fang and T. S. Huang. Some experiments on estimating the 3-d motion parameters of a rigid body from two consecutive image frames. *IEEE Trans. Pattern Analysis and Machine Intelligence,* 6(5):545–554, 1984.

[78] O. Faugeras. *Three-dimensional Computer Vision, a Geometric Viewpoint.* MIT Press, Cambridge, 1993.

[79] C. L. Fennema and W. B. Thompson. Velocity determination in scenes containing several moving objects. *Comp. Graph. and Image Proc.*, 9:301–315, 1979.

[80] M. A. Fischler and R. C. Bolles. Random sample consensus: A paradigm for model fitting with applications to image analysis and automated cartography. *Communications Association of Computing Machinery*, 24(6):381–395, June 1981.

[81] J. D. Foley, A. van Dam, S. K. Feiner, and J. F. Hughes. *Computer Graphics: Principles and Practice.* Addison-Wesley, second edition, 1990.

[82] T. A. Foley. Interpolation and approximation of 3-d and 4-d scattered data. *Computers and Mathematics with Applications*, 13(8):711–740, 1987.

[83] T. A. Foley. Weighted bicubic spline interpolation to rapidly varying data. *ACM Trans. Graphics*, 6:1–18, January 1987.

[84] W. Frei and C. Chen. Fast boundary detection: A generalization and a new algorithm. *IEEE Trans. Computers*, 26(10):988–998, 1977.

[85] S. Geman and D. Geman. Stochastic relaxation, Gibbs distributions, and the Bayesian restoration of images. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 6:721–741, 1984.

[86] J. J. Gibson. Optical motion and transformations as stimuli for visual perception. *Psychological Review*, 64(5):228–295, 1957.

[87] J. J. Gibson. What gives rise to the perception of motion? *Psychological Review*, 75(4):335–346, 1968.

[88] Z. Gigus and J. Malik. Computing the aspect graph for line drawings of polyhedral objects. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 12(2):113–122, 1990.

[89] A. S. Glassner, editor. *Graphics Gems.* Academic Press, New York, 1990.

[90] R. Gonzalez and R. Woods, *Digital Image Processing.* Addison-Wesley, 1992.

[91] R. Gonzalez and R. Woods, *Digital Image Processing.* Addison-Wesley, 1992.

[92] W. E. L. Grimson. *From Images to Surfaces: A Computational Study of the Human Early Vision System.* MIT Press, Cambridge, 1981.

[93] W. E. L. Grimson. Recognition of object families using parameterized models. *Proc. First Int'l. Conf. Computer Vision*, pages 93–101, 1987.

[94] E. Grosso, G. Sandini, and M. Tistarelli. 3-d object recognition using stereo and motion. *IEEE Trans. Systems, Man, and Cybernetics*, 19(6):1465–1476, 1989.

[95] B. Hallert. *Photogrammetry: Basic Principles and General Survey.* McGraw-Hill, New York, 1960.

[96] R. W. Hamming. *Digital Filters.* Prentice-Hall, Englewood Cliffs, New Jersey, second edition, 1983.

[97] F. R. Hampel, E. M. Ronchetti, P. J. Rousseeuw, and W. A. Stahel. *Robust Statistics: An Approach Based on Influence Functions.* Wiley, New York, 1986.

[98] C. Hansen, N. Ayache, and F. Lustman. Towards real-time trinocular stereo. *Proc. Second Int'l. Conf. Computer Vision*, pages 129–133, 1988.

[99] C. Hansen and T. C. Henderson. CAGD-based computer vision. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 11:1181–1193, November 1989.

[100] R. M. Haralick, K. Shanmugam, and I. Dinstein. Textural features for image classification. *IEEE Trans. Systems, Man, and Cybernetics*, 3(6):610–621, 1973.

[101] R. M. Haralick and L. G. Shapiro. Image segmentation techniques. *Computer Vision, Graphics and Image Processing*, 29(1):100–132, 1985.

[102] R. M. Haralick. Digital step edges from zero crossing of second directional derivatives. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 6(1):58–68, January 1984.

[103] R. M. Haralick and L. G. Shapiro. *Computer and Robot Vision*. Addison-Wesley, Reading, Massachusetts, vol. 1, 1992, vol. 2, 1993.

[104] S. P. Harbison and G. L. Steele, Jr. *C: A Reference Manual*. Prentice-Hall, Englewood Cliffs, New Jersey, third edition, 1991.

[105] G. Healey. Using color for geometry-insensitive segmentation. *J. Opt. Soc. Am. A*, 6(6):920–937, 1989.

[106] D. J. Heeger. Optical flow using spatiotemporal filters. *Int. J. Computer Vision*, 1:279–302, 1988.

[107] B. K. P. Horn. *Shape from Shading: A Method for Obtaining the Shape of a Smooth Opaque Object from One View*. PhD thesis, Massachusetts Institute of Technology, 1970.

[108] B. K. P. Horn. Understanding image intensities. *Artificial Intelligence*, 8:201–231, 1977.

[109] B. K. P. Horn. *Robot Vision*. McGraw-Hill, New York, 1986.

[110] B. K. P. Horn. Closed-form solution of absolute orientation using unit quaternions. *J. Opt. Soc. Am. A*, 4(4):629–642, April 1987.

[111] B. K. P. Horn. Relative orientation. *Int. J. Computer Vision*, 4:59–78, January 1990.

[112] B. K. P. Horn and M. J. Brooks. *Shape from Shading*. MIT Press, Cambridge, 1989.

[113] B. K. P. Horn, H. M. Hilden, and S. Negahdaripour. Closed-form solution of absolute orientation using orthonormal matrices. *J. Opt. Soc. Am. A*, 5(7):1127–1135, July 1988.

[114] B. K. P. Horn and B. G. Schunck. Determining optical flow. *Artificial Intelligence*, 17:185–203, 1981.

[115] P. J. Huber. *Robust Statistics.* Wiley, New York, 1981.

[116] M. Hueckel. A local visual operator which recognizes edges and lines. *Journal of the Association of Computing Machinery,* 20:634–646, 1973.

[117] A. Huertas and G. Medioni. Detection of intensity changes with sub-pixel accuracy using laplacian-gaussian masks. *IEEE Trans. Pattern Analysis and Machine Intelligence,* 8(5):651–664, September 1986.

[118] R. A. Hummel. Representations based on zero-crossings in scale-space. In *Proc. Conf. Computer Vision and Pattern Recognition,* pages 204–209, 1986.

[119] V. S. S. Hwang, L. S. Davis, and T. Matsuyama. Hypothesis integration in image understanding systems. *Computer Vision, Graphics and Image Processing,* 36:321–371, 1986.

[120] K. Ikeuchi and T. Kanade. Automatic generation of object recognition programs. *Proceedings of the IEEE,* 76(8):1016–1035, 1988.

[121] A. K. Jain. *Fundamentals of Digital Image Processing.* Prentice-Hall, Englewood Cliffs, New Jersey, 1989.

[122] R. C. Jain. Dynamic scene analysis using pixel-based processes. *Computer,* 12(1):12–18, 1981.

[123] R. C. Jain. Complex logarithmic mapping and the focus of expansion. *SIGGRAPH/SIGART Workshop or Motion: Representation and Control,* pages 42–49, 1983.

[124] R. C. Jain. Direct computation of the focus of expansion. *IEEE Trans. Pattern Analysis and Machine Intelligence,* 5(1):58–64, 1983.

[125] R. C. Jain. Difference and accumulative difference pictures in dynamic scene analysis. *Image and Vision Computing,* 2(2):99–108, May 1984.

[126] R. C. Jain. Segmentation of frame sequences obtained by a moving observer. *IEEE Trans. Pattern Analysis and Machine Intelligence,* 6(5):624–629, 1984.

[127] R. C. Jain, S. L. Bartlett, and N. O'Brien. Motion stereo using ego-motion complex logarithmic mapping. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 9(3):356–369, 1987.

[128] R. C. Jain and A. K. Jain, editors. *Analysis and Interpretation of Range Images*. Springer-Verlag, New York, 1990.

[129] R. C. Jain, D. Militzer, and H.-H. Nagel. Separating non-stationary from stationary scene components in a sequence of real world tv-images. In *Int. Joint. Conf. Artificial Intelligence*, pages 612–618, 1977.

[130] R. C. Jain and H.-H. Nagel. On the analysis of accumulative difference pictures from image sequences of real world scenes. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 1(2):206–214, April 1979.

[131] R. A. Jarvis. A perspective on range finding techniques for computer vision. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 5(2):122–139, 1983.

[132] M. R. M. Jenkin. Tracking three-dimensional moving light displays. *Proc. Workshop Motion: Representation Contr.*, pages 66–70, 1983.

[133] C. Jerian and R. C. Jain. Polynomial methods for structure from motion. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 12(12):1150–1166, 1990.

[134] C. Jerian and R. C. Jain. Structure from motion: A critical analysis of methods. *IEEE Trans. Systems, Man, and Cybernetics*, 1991.

[135] K. Kanatani and T. C. Chou. Shape from texture: General principle. *Proc. Conf. Computer Vision and Pattern Recognition*, pages 578–583, June 1989.

[136] K. Kanatani and T. C. Chou. Shape from texture: General principle. *Artificial Intelligence*, 38(1):1–48, 1989.

[137] H. M. Karara, editor. *Handbook of Non-Topographic Photogrammetry*. American Society of Photogrammetry, 1979.

[138] R. L. Kashyap and R. Chellapa. Decision rules for choice of neighbors in random field models of images. *Comp. Graph. and Image Proc.*, 15:301–318, 1981.

[139] R. Kasturi and R. C. Jain. *Computer Vision: Advances and Applications*. IEEE Computer Society Press, Los Alamitos, California, 1991.

[140] R. Kasturi and R. C. Jain. *Computer Vision: Principles*. IEEE Computer Society Press, Los Alamitos, California, 1991.

[141] J. K. Kearney, W. B. Thompson, and D. L. Boley. Optical flow estimation: An error analysis of gradient-based methods with local optimization. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 9(2):229–244, March 1987.

[142] B. W. Kernighan and D. M. Ritchie. *The C Programming Language*. Prentice-Hall, Englewood Cliffs, New Jersey, second edition, 1988.

[143] T. F. Knoll and R. C. Jain. Recognizing partially visible objects using feature indexed hypotheses. *IEEE J. Robotics and Automation*, 2(1):3–13, March 1986.

[144] J. J. Koenderink and A. J. van Doorn. The singularities of the visual mapping. *Biological Cybernetics*, 24:51–59, 1976.

[145] J. J. Koenderink and A. J. van Doorn. The internal representation of solid shape with respect to vision. *Biological Cybernetics*, 32:211–216, 1979.

[146] T. R. Kohl. *VisionTutor^{TM} Lab Guide*. Amerinex Artificial Intelligence, Inc., Amherst, Massachusetts, 1992.

[147] T. Kohonen. *Content-Addressable Memories*. Springer-Verlag, New York, 1987.

[148] B. Kosko. *Neural Networks and Fuzzy Systems*. Prentice-Hall, Englewood Cliffs, New Jersey, 1992.

[149] D. J. Kriegman and J. Ponce. Computing exact aspect graphs of curved objects: Solids of revolution. *Proc. IEEE Workshop on Interpretation of 3-D Scenes*, pages 116–122, 1989.

[150] E. P. Krotkov. *Exploratory Visual Sensing for Determining Spatial Layout with an Agile Stereo Camera System.* PhD thesis, University of Pennsylvania, 1987.

[151] Y. Lamdan, J. T. Schwartz, and H. J. Wolfson. Object recognition by affine invariant matching. *Proc. Conf. Computer Vision and Pattern Recognition*, pages 335–344, 1988.

[152] P. Lancaster and K. Šalkauskas. *Curve and Surface Fitting.* Academic Press, New York, 1986.

[153] S. Lang. *Linear Algebra.* Addison-Wesley, second edition, 1971.

[154] R. K. Lenz and R. Y. Tsai. Techniques for calibration of the scale factor and image center for high accuracy 3-d machine vision metrology. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 10(5):713–720, September 1988.

[155] M. Levine. *Vision in Man and Machine.* McGraw-Hill, New York, 1985.

[156] S.-P. Liou and R. C. Jain. Motion detection in spatio-temporal space. *Computer Vision, Graphics and Image Processing*, 45:227–250, 1989.

[157] H. C. Longuet-Higgins and K. Prazdny. The interpretation of a moving retinal image. *Proc. R. Soc. Lond. B*, 208:385–397, 1980.

[158] D. G. Lowe. Three-dimensional object recognition from single two-dimensional images. *Artificial Intelligence*, 31(3):355–395, 1987.

[159] Y. Lu and R. C. Jain. Behavior of edges in scale space. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 11(3):337–356, 1989.

[160] Y. Lu and R. C. Jain. Reasoning about edges in scale space. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 14(4):450–468, 1992.

[161] S. B. Marapane and M. M. Trivedi. Region-based stereo analysis for robotic applications. *IEEE Trans. Systems, Man, and Cybernetics*, 19(6):1447–1464, 1989.

[162] S. B. Marapane and M. M. Trivedi. Multi-primitive hierarchical (mph) stereo analysis. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 16(3):227–240, 1994.

[163] D. Marr. *Vision: A Computational Investigation into the Human Representation and Processing of Visual Information.* W. H. Freeman and Company, San Francisco, 1982.

[164] D. Marr and E. C. Hildreth. Theory of edge detection. *Proc. R. Soc. Lond. B*, 207:187–217, 1980.

[165] T. Matsuyama. Expert systems for image processing: Knowledge-based composition of image analysis processes. *Computer Vision, Graphics and Image Processing*, 48:22–49, 1989.

[166] J. E. W. Mayhew and J. P. Frisby. Psychophysical and computational studies towards a theory of human stereopsis. *Artificial Intelligence*, 17:349–385, 1981.

[167] G. Medioni and R. Nevatia. Segment-based stereo matching. *Computer Vision, Graphics and Image Processing*, 31:2–18, 1985.

[168] B. T. Mitchell and A. M. Gillies. A model-based computer vision system for recognizing handwritten ZIP codes. *Machine Vision and Applications*, 2(4):231–243, 1989.

[169] A. Mitiche, S. Seida, and J. K. Aggarwal. Using constancy of distance to estimate position and displacement in space. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 10(4):594–599, July 1988.

[170] F. H. Moffitt and E. M. Mikhail. *Photogrammetry.* Harper & Row, Cambridge, third edition, 1980.

[171] J. L. Mohammed, R. A. Hummel, and S. W. Zucker. A gradient projection algorithm for relaxation methods. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 5(3):330–332, May 1983.

[172] H. P. Moravec. Towards automatic visual obstacle avoidance. *Proc. 5th Int. Joint Conf. Artificial Intell.*, 2:584, August 1977.

[173] D. W. Murray and B. F. Buxton. Scene segmentation from visual motion using global optimization. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 9(2):220–228, March 1987.

[174] H.-H. Nagel. Formation of an object concept by analysis of systematic time variations in the optically perceptible environment. *Comp. Graph. and Image Proc.*, 7:149–194, 1978.

[175] H.-H. Nagel. On the estimation of optical flow: Relations between different approaches and some new results. *Artificial Intelligence*, 33:299–324, 1987.

[176] H.-H. Nagel and W. Enkelmann. An investigation of smoothness constraints for the estimation of displacement vector fields from image sequences. *IEEE Trans. Pattern Analysis and Machine Intelligence*, (5):565–593, September 1986.

[177] V. S. Nalwa. *A Guided Tour of Computer Vision*. Addison-Wesley, Reading, Massachusetts, 1993.

[178] N. Narasimhamurthi and R. C. Jain. Computer-aided, design-based object recognition: Incorporating metric and topological information. *Proc. SPIE Digital and Optical Shape Representation and Pattern Recognition*, 938:436–443, 1988.

[179] S. K. Nayar, K. Ikeuchi, and T. Kanade. Shape from interreflections. *Proc. 3rd Intl. Conf. Computer Vision*, pages 2–11, 1990.

[180] S. K. Nayar and Y. Nakagawa. Shape from focus. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 16(8):824–831, 1994.

[181] S. K. Nayar and K. Ikeuchi. Photometric sampling: A method for determining shape and reflectance of surfaces. In H. Freeman, editor, *Machine Vision for Inspection and Measurement*. Academic Press, New York, 1989.

[182] A. W. Naylor and G. R. Sell. *Linear Operator Theory in Engineering and Science*. Springer-Verlag, New York, 1982.

[183] A. M. Nazif and M. D. Levine. Low level image segmentation: An expert system. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 6(5):555–577, 1984.

[184] S. Negahdaripour and B. K. P. Horn. Direct passive navigation. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 9(1):168–176, January 1987.

[185] R. Nevatia. Depth measurement by motion stereo. *Comp. Graph. and Image Proc.*, 5:203–214, 1976.

[186] R. Nevatia. *Machine Perception*. Prentice-Hall, Englewood Cliffs, New Jersey, 1982.

[187] B. Noble and J. W. Daniel. *Applied Linear Algebra*. Prentice-Hall, Englewood Cliffs, New Jersey, second edition, 1977.

[188] L. O'Gorman and R. Kasturi. *Document Image Analysis*. IEEE Computer Society Press, Los Alamitos, California, 1995.

[189] R. Ohlander, K. Price, and D. R. Reddy. Picture segmentation using a recursive region splitting method. *Comp. Graph. and Image Proc.*, 8(3):313–355, 1978.

[190] A. V. Oppenheim and R. W. Schafer. *Digital Signal Processing*. Prentice-Hall, Englewood Cliffs, New Jersey, 1975.

[191] J. K. Ousterhout. *Tcl and the Tk Toolkit*. Addison-Wesley, 1994.

[192] A. Papoulis. *Probability, Random Variables, and Stochastic Processes*. McGraw-Hill, New York, 1965.

[193] T. Pavlidis. Curve fitting as a pattern recognition problem. In *Proc. Int. Conf. on Pattern Recognition*, pages 853–859, 1982.

[194] A. Pentland. Fractal-based description of natural scenes. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 6(6):661–674, November 1984.

[195] W. K. Pratt. *Digital Image Processing*. Wiley, New York, 1978.

[196] W. K. Pratt. *Digital Image Processing.* Wiley, New York, second edition, 1991.

[197] W. H. Press, B. P. Flannery, S. A. Teukolsky, and W. T. Vetterling. *Numerical Recipes in C: The Art of Scientific Computing.* Cambridge University Press, 1988.

[198] J. M. S. Prewitt. Object enhancement and extraction. In B. S. Lipkin and A. Rosenfeld, editors, *Picture Processing and Psychopictorics.* Academic Press, New York, 1970.

[199] L. R. Rabiner and B. Gold. *Theory and Application of Digital Signal Processing.* Prentice-Hall, Englewood Cliffs, New Jersey, 1975.

[200] A. Ravishankar Rao. *Taxonomy for Texture Description and Identification.* Springer-Verlag, New York, 1990.

[201] E. Rich. *Artificial Intelligence.* McGraw-Hill, New York, 1983.

[202] L. G. Roberts. Machine perception of three-dimensional solids. In J. K. Aggarwal, R. O. Duda, and A. Rosenfeld, editors, *Computer Methods in Image Analysis.* IEEE Computer Society, Las Alamitos, California, 1977.

[203] I. Rock. *The Logic of Perception.* MIT Press, Cambridge, 1983.

[204] D. F. Rogers and J. A. Adams. *Mathematical Elements for Computer Graphics.* McGraw-Hill, New York, 1976.

[205] A. Rosenfeld and A. C. Kak. *Digital Picture Processing.* Academic Press, New York, 1976.

[206] A. Rosenfeld and A. C. Kak. *Digital Picture Processing.* Academic Press, New York, second edition, 1982. Two volumes.

[207] P. J. Rousseeuw and A. M. Leroy. *Robust Regression and Outlier Detection.* Wiley, New York, 1987.

[208] F. F. Sabins. *Remote Sensing: Principles and Interpretation.* W. H. Freeman, New York, second edition, 1987.

[209] V. Salari and I. K. Sethi. Feature point correspondence in the presence of occlusion. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 12(1):87–91, 1990.

[210] H. Samet. *The Design and Analysis of Spatial Data Structures.* Addison-Wesley, Reading, Massachusetts, 1990.

[211] R. J. Schalkoff. *Digital Image Processing and Computer Vision.* Wiley, New York, 1989.

[212] B. G. Schunck. Robust estimation of image flow. In *Proceedings SPIE Sensor Fusion II, Human and Machine Strategies*, vol. 1198, pp. 116–127, 1989.

[213] E. L. Schwartz. Computational anatomy and functional architecture of striate cortex: A spatial mapping approach to perceptual coding. *Vision Research*, 20:645–669, 1980.

[214] E. L. Schwartz. A quantitative model of the functional architecture of human striate cortex with application to vision illusion and cortical texture analysis. *Biological Cybernetics*, 37:63–76, 1980.

[215] E. L. Schwartz. Cortical anatomy, size invariance, and spatial frequency analysis. *Perception*, 10:455–468, 1981.

[216] E. L. Schwartz. Columnar architecture and computational anatomy in primatevisual cortex: Segmentation and feature extraction via spatial frequency coded difference mapping. *Biological Cybernetics*, 42:157–168, 1982.

[217] G. A. F. Seber and C. J. Wild. *Nonlinear Regression.* Wiley, New York, 1989.

[218] R. Sedgewick. *Algorithms.* Addison-Wesley, second edition, 1988.

[219] I. K. Sethi and R. C. Jain. Finding trajectories of feature points in a monocular image sequence. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 9(1):56–73, 1987.

[220] M. Shah, A. Sood, and R. C. Jain. Pulse and staircase edge models. *Computer Vision, Graphics and Image Processing*, 34:321–343, 1986.

[221] L. G. Shapiro. A CAD-model-based system for object localization. *Proc. SPIE Digital and Optical Shape Representation and Pattern Recognition*, 938:408–418, 1988.

[222] A. Singh. An estimation-theoretic framework of image-flow computation. *Proc. Third Int. Conf. Computer Vision*, pages 168–177, 1990.

[223] S. S. Sinha and B. G. Schunck. A two stage algorithm for discontinuity-preserving surface reconstruction. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 14(1):36–55, January 1992.

[224] C. C. Slama, editor. *Manual of Photogrammetry*. American Society of Photogrammetry, Falls Church, Virginia, fourth edition, 1980.

[225] I. Sobel. Camera models and machine perception. *Stanford AI Memo 121*, May 1970.

[226] T. Sripradisvarakul and R. C. Jain. Generating aspect graphs for curved objects. *Proc. IEEE Workshop on Interpretation of 3-D Scenes*, pages 109–115, 1989.

[227] L. H. Staib and J. S. Duncan. Boundary finding with parametrically deformable models. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 14(11):1061–1075, 1992.

[228] G. Stockman. Object recognition and localization via pose clustering. *Computer Vision, Graphics, and Image Processing*, 40:361–387, 1987.

[229] M. Subbarao. Interpretation of image flow: Rigid curved surfaces in motion. *Int. J. Computer Vision*, 2(1):77–96, 1988.

[230] S. L. Tanimoto and A. Klinger. *Structured Computer Vision, Machine Perception through Hierarchical Computational Structures*. Academic Press, New York, 1980.

[231] S. Tehrani, T. E. Weymouth, and B. G. Schunck. Interpolating cubic spline contours by minimizing second derivative discontinuity. In *International Conference on Computer Vision*, pages 713–716, 1990.

[232] D. Terzopoulos. Multilevel computational processes for visual surface reconstruction. *Computer Vision, Graphics and Image Processing*, 24:52–96, 1983.

[233] D. Terzopoulos. Image analysis using multigrid relaxation methods. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 8(2):129–139, March 1986.

[234] R. Y. Tsai. A versatile camera calibration technique for high-accuracy 3d machine vision metrology using off-the-shelf cameras and lenses. *IEEE Trans. Robotics and Automation*, 3(4), August 1987.

[235] R. Y. Tsai and T. S. Huang. Uniqueness and estimation of three-dimensional motion parameters of rigid objects with curved surfaces. In *Proc. Conf. Pattern Recognition and Image Processing*, pages 112–118, 1982.

[236] R. Y. Tsai and T. S. Huang. Uniqueness and estimation of 3-d motion parameters and surface structures of rigid objects. In S. Ullman and W. Richards, editors, *Image Understanding 1984*. Ablex Publishing, Norwood, New Jersey, 1984.

[237] R. Y. Tsai and T. S. Huang. Uniqueness and estimation of three-dimensional motion parameters of rigid objects with curved surfaces. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 6(1):13–27, January 1984.

[238] J. K. Tsotsos et al. A framework for visual motion understanding. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 2(6):563–573, 1980.

[239] M. Tuceryan and A. K. Jain. Texture analysis. In C. H. Chen, L. F. Pau, and P. S. P. Wang, editors, *Handbook of Pattern Recognition and Computer Vision*, pages 235–276. World Scientific Publishing Company, 1993.

[240] J. R. Ullman. Discrete optimization by relational constraint satisfaction. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 4(5):544–551, September 1982.

[241] S. Ullman. *The Interpretation of Visual Motion.* MIT Press, Cambridge, 1979.

[242] S. Ullman. Maximizing rigidity: The incremental recovery of 3-d structure from rigid and nonrigid motion. *Perception*, 13:255–274, 1984.

[243] L. Van-Ban and D. T. Lee. Out-of-roundness problem revisited. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 13(3):217–223, March 1991.

[244] E. Vanmarke. *Random Fields: Analysis and Synthesis.* MIT Press, Cambridge, 1983.

[245] G. Wahba. *Spline Models for Observational Data.* Society for Industrial and Applied Mathematics, Philadelphia, Pennsylvania, 1990.

[246] B. A. Wandell. The synthesis and analysis of color images. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 9(1):2–13, January 1987.

[247] A. B. Watson and A. J. Ahumada, Jr. Model of human visual-motion sensing. *J. Opt. Soc. Am. A*, 2(2):322–342, 1985.

[248] H. Wechsler. *Computational Vision.* Academic Press, Boston, 1990.

[249] J. Weng, T. S. Huang, and N. Ahuja. Motion and structure from line correspondences: Closed-form solution, uniqueness, and optimization. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 14(3):318–336, March 1992.

[250] P. M. Will and K. S. Pennington. Grid coding: A novel technique for image processing. *Proc. IEEE*, 60(6):669–680, 1972.

[251] P. Winston. *Artificial Intelligence.* Addison-Wesley, Reading, Massachussetts, third edition, 1992.

[252] A. P. Witkin. Recovering surface shape and orientation from texture. *Artificial Intelligence*, 17:17–45, 1981.

[253] A. P. Witkin. Scale-space filtering. In *Int. Joint. Conf. Artificial Intelligence*, pages 1019–1022, August 1983.

[254] P. R. Wolf. *Elements of Photogrammetry*. McGraw-Hill, New York, second edition, 1983.

[255] L. B. Wolff. Accurate measurement of orientation from stereo using line correspondence. *Proc. Conf. Computer Vision and Pattern Recognition*, pages 410–415, 1989.

[256] R. J. Woodham. Analysing images of curved surfaces. *Artificial Intelligence*, 17:117–140, 1981.

[257] J. M. Wozencraft and I. M. Jacobs. *Principles of Communication Engineering*. Wiley, New York, 1965.

[258] Y. Yakimovsky. Boundary and object detection in real world images. *Journal of the Association of Computing Machinery*, 23:599–618, 1976.

[259] M. Young. *Optics and Lasers Including Fibers and Integrated Optics*. Springer-Verlag, Berlin, second revised edition, 1984.

[260] A. L. Yuille and T. Poggio. Fingerprint theorems for zero crossings. *J. Opt. Soc. Am. A*, 2:683–692, May 1985.

[261] A. L. Yuille and T. Poggio. Scaling theorems for zero-crossings. *IEEE Trans. Pattern Analysis and Machine Intelligence*, 8:15–25, January 1986.

[262] Z. Zhang, O. D. Faugeras, and N. Ayache. Analysis of a sequence of stereo scenes containing multiple moving objects using rigidity constraints. *Proc. Second Int. Conference on Computer Vision*, pages 177–186, 1988.