References

- Abdou, I.E., Pratt, W.K., 1979. Quantitative design and evaluation of enhancement/thresholding edge detectors. Proc. IEEE 67, 753–763.
- Abolghasemi, V., Ahmadyfard, A., 2009. An edge-based color-aided method for license plate detection. Image Vision Comput. 27, 1134–1142.
- Abutaleb, A.S., 1989. Automatic thresholding of gray-level pictures using two-dimensional entropy. Comput. Vision Graph. Image Process 47, 22–32.
- Ade, F., 1983. Characterization of texture by "eigenfilters". Signal Process. 5 (5), 451–457.
- Aggarwal, J.K., Cai, Q., 1999. Human motion analysis: a review. Comput. Vision Image Understanding 73 (3), 428–440.
- Agin, G.J., Binford, T.O., 1973. Computer description of curved objects. In: Proc. Third Int. Joint Conf. on Artif. Intell., Stanford, California, pp. 629–640.
- Agin, G.J., Binford, T.O., 1976. Computer description of curved objects. IEEE Trans. Comput. 25, 439–449.
- Aguado, A.S., Montiel, M.E., Nixon, M.S., 2000. On the intimate relationship between the principle of duality and the Hough transform. Proc. Royal Soc. London, Ser. A 456 (1995), 503–526.
- Aguilar, W., Frauel, Y., Escolano, F., Martinez-Perez, M.E., Espinosa-Romero, A., Lozano, M.A., 2009. A robust Graph Transformation Matching for non-rigid registration. Image Vision Comput. 27, 897–910.
- Aleksander, I., Thomas, W.V., Bowden, P.A., 1984. WISARD: a radical step forward in image recognition. Sens. Rev. 4, 120–124.
- Ali, S.M., Burge, R.E., 1988. A new algorithm for extracting the interior of bounded regions based on chain coding. Comput. Vision Graph. Image Process 43, 256–264.
- Almansa, A., Desolneux, A., Vamech, S., 2003. Vanishing point detection without any a priori information. IEEE Trans. Pattern Anal. Mach. Intell. 25 (4), 502–507.
- Alter, T.D., 1994. 3-D pose from 3 points using weak-perspective. IEEE Trans. Pattern Anal. Mach. Intell. 16 (8), 802–808.
- Ambler, A.P., Barrow, H.G., Brown, C.M., Burstall, R.M., Popplestone, R.J., 1975. A versatile system for computer-controlled assembly. Artif. Intell. 6, 129–156.
- Amit, Y., 2002. 2D Object Detection and Recognition: Models, Algorithms and Networks. MIT Press, Cambridge, MA.
- An, G., Wu, J., Ruan, Q., 2010. An illumination normalization model for face recognition under varied lighting conditions. Pattern Recognit. Lett. 31 (9), 1056–1067.
- Ansar, A., Daniilidis, K., 2003. Linear pose estimation from points or lines. IEEE Trans. Pattern Anal. Mach. Intell. 25 (5), 578–589.
- Aragon-Camarasa, G., Siebert, J.P., 2010. Unsupervised clustering in Hough space for recognition of multiple instances of the same object in a cluttered scene. Pattern Recognit. Lett. 31, 1274–1284.
- Arcelli, C., di Baja, G.S., 1985. A width-independent fast-thinning algorithm. IEEE Trans. Pattern Anal. Mach. Intell. 7, 463–474.
- Arcelli, C., Ramella, G., 1995. Finding grey-skeletons by iterated pixel removal. Image Vision Comput. 13 (3), 159–167.

- Arcelli, C., Cordella, L.P., Levialdi, S., 1975. Parallel thinning of binary pictures. Electron. Lett. 11, 148–149.
- Arcelli, C., Cordella, L.P., Levialdi, S., 1981. From local maxima to connected skeletons. IEEE Trans. Pattern Anal. Mach. Intell. 3, 134–143.
- Arnold, R.D., 1978. Local context in matching edges for stereo vision. Proc. Image Understanding Workshop, Cambridge, Massachusetts. 65–72.
- Arulampalam, M.S., Maskell, S., Gordon, N., Clapp, T., 2002. A tutorial on particle filters for online nonlinear/non-Gaussian Bayesian tracking. IEEE Trans. Signal Process. 50 (2), 174–188.
- Assheton, P., Hunter, A., 2011. A shape-based voting algorithm for pedestrian detection and tracking. Pattern Recognit. 44, 1106–1120.
- Åström, K., 1995. Fundamental limitations on projective invariants of planar curves. IEEE Trans. Pattern Anal. Mach. Intell. 17 (1), 77–81.
- Atherton, T.J., Kerbyson, D.J., 1999. Size invariant circle detection. Image Vision Comput. 17 (11), 795–803.
- Atiquzzaman, M., Akhtar, M.W., 1994. Complete line segment description using the Hough transform. Image Vision Comput. 12 (5), 267–273.
- Babaud, J., Witkin, A.P., Baudin, M., Duda, R.O., 1986. Uniqueness of the Gaussian kernel for scale-space filtering. IEEE Trans. Pattern Anal. Mach. Intell. 8, 26–33.
- Badrinarayanan, V., Kendall, A., Cipolla, R., 2015. SegNet: A Deep Convolutional Encoder-Decoder Architecture for Image Segmentation. arXiv:1511.00561v2 [cs.CV] 8 Dec.
- Bai, X., Latecki, L.J., 2008. Path similarity skeleton graph matching. IEEE Trans. Pattern Anal. Mach. Intell. 30 (7), 1282–1292.
- Bai, X.Z., Zhou, F.G., 2010. Top-hat selection transformation for infrared dim small target enhancement. Imag. Sci. 58 (2), 112–117.
- Bai, Y., Ma, W., Li, Y., Cao, L., Guo, W., Yang, L., 2016. Multi-scale fully convolutional network for fast face detection. In: Proc. British Machine Vision Association Conference. 19—22 September, York. http://www.bmva.org/bmvc/2016/papers/paper051/paper051.pdf.
- Bailey, D.G., 2011. Design for Embedded Image processing on FPGAs. Wiley IEEE Press, Singapore.
- Bajcsy, R., 1973. Computer identification of visual surface. Comput. Graph. Image Process. 2, 118–130.
- Bajcsy, R., Liebermann, L., 1976. Texture gradient as a depth cue. Comput. Graph. Image Process. 5 (1), 52–67.
- Baker, S., Sim, T., Kanade, T., 2003. When is the shape of a scene unique given its light-field: a fundamental theorem of 3D vision? IEEE Trans. Pattern Anal. Mach. Intell. 25 (1), 100–109.
- Ball, G.H. and Hall, D.J., 1966. ISODATA, an iterative method of multivariate data analysis and pattern classification. In: IEEE Int. Communications Conf., Philadelphia, Digest of Techn. Papers II, pp. 116–117.
- Ballard, D.H., 1981. Generalizing the Hough transform to detect arbitrary shapes. Pattern Recognit. 13, 111–122.
- Ballard, D.H., Brown, C.M., 1982. Computer Vision. Prentice-Hall, Englewood Cliffs, NJ.
- Ballard, D.H., Sabbah, D., 1983. Viewer independent shape recognition. IEEE Trans. Pattern Anal. Mach. Intell. 5, 653–660.

- Bangham, J.A., Marshall, S., 1998. Image and signal processing with mathematical morphology. IEE Electron. Commun. Eng. J. 10 (3), 117–128.
- Barnard, S., 1983. Interpreting perspective images. Artif. Intell. 21, 435–462.
- Barnard, S.T., Thompson, W.B., 1980. Disparity analysis of images. IEEE Trans. Pattern Anal. Mach. Intell. 2 (4), 333–340.
- Barnea, D.I., Silverman, H.F., 1972. A class of algorithms for fast digital image registration. IEEE Trans. Comput. 21, 179–186.
- Barrett, E.B., Payton, P.M., Haag, N.N., Brill, M.H., 1991. General methods for determining projective invariants in imagery. Comput. Vision Graph. Image Process 53 (1), 46–65.
- Barrow, H.G., Popplestone, R.J., 1971. Relational descriptions in picture processing. In: Meltzer, B., Michie, D. (Eds.), Machine Intelligence 6. Edinburgh University Press, Edinburgh, pp. 377–396.
- Barrow, H.G., Tenenbaum, J.M., 1981. Computational vision. Proc. IEEE 69, 572-595.
- Barrow, H.G., Ambler, A.P., Burstall, R.M., 1972. Some techniques for recognising structures in pictures. In: Watanabe, S. (Ed.), Frontiers of Pattern Recognition. Academic Press, New York, pp. 1–29.
- Barsky, S., Petrou, M., 2003. The 4-source photometric stereo technique for threedimensional surfaces in the presence of highlights and shadows. IEEE Trans. Pattern Anal. Mach. Intell. 25 (10), 1239–1252.
- Bartoli, A., Sturm, P., 2004. Nonlinear estimation of the fundamental matrix with minimal parameters. IEEE Trans. Pattern Anal. Mach. Intell. 26 (3), 426–432.
- Bartz, M.R., 1968. The IBM 1975 optical page reader. IBM J. Res. Dev. 12, 354–363.
- Bascle, B., Bouthemy, P., Deriche, R. and Meyer, F., 1994. Tracking complex primitives in an image sequence. In: Proc. 12th Int. Conf. on Pattern Recognition. 9–13 Oct., Jerusalem, Israel, Vol. A, pp. 426–431.
- Batchelor, B.G., 1979. Using concavity trees for shape description. Comput. Digital Tech. 2, 157–165.
- Batlle, J., Marti, J., Ridao, P., Amat, J., 2002. A new FPGA/DSP-based parallel architecture for real-time image processing. Real-Time Imaging 8 (5), 345–356.
- Bay, H., Ess, A., Tuytelaars, T., Van Gool, L., 2008. Speeded-up robust features (SURF). Comput. Vision Image Understanding 110 (3), 346–359.
- Bay, H., Tuytelaars, T. and Van Gool, L., 2006. SURF: speeded up robust features. In: Proc. Ninth European Conf. on Computer Vision (ECCV). Springer LNCS Vol. 3951, part 1, pp. 404–417.
- Beaton, A.E., Tukey, J.W., 1974. The fitting of power series, meaning polynomials, illustrated on band-spectroscopic data. Technometrics 16 (2), 147–185.
- Beaudet, P.R., 1978. Rotationally invariant image operators. In: Proc. Fourth Int. Conf. on Pattern Recognition. Kyoto, pp. 579–583.
- Beckers, A.L.D., Smeulders, A.W.M., 1989. A comment on "a note on 'distance transformations in digital images". Comput. Vision Graph. Image Process 47, 89–91.
- Beiden, S.V., Maloof, M.A., Wagner, R.F., 2003. A general model for finite-sample effects in training and testing of competing classifiers. IEEE Trans. Pattern Anal. Mach. Intell. 25 (12), 1561–1569.
- Bejiga, M.B., Zeggada, A., Nouffidj, A., Melgani, F., 2017. A convolutional neural network approach for assisting avalanche search and rescue operations with UAV imagery. Remote Sens. 9 (100), 1–22.

- Belhumeur, P.N., Hespanha, J.P., Kriegman, D.J., 1997. Eigenfaces vs. Fisherfaces: recognition using class specific linear projection. IEEE Trans. Pattern Anal. Mach. Intell. 19 (7), 711–720.
- Belhumeur, P.N., Jacobs, D.W., Kriegman, D., and Kumar, N., 2011. Localizing parts of faces using a consensus of exemplars. In: Proc. IEEE Conf. on Computer Vision and Pattern Recognition. 20–25 June, Colorado Springs, CO, pp. 545–552.
- Bergholm, F., 1986. Edge focusing. In: Proc. Eighth Int. Conf. on Pattern Recognition. 27–31 October, Paris, pp. 597–600.
- Berman, S., Parikh, P., Lee, C.S.G., 1985. Computer recognition of two overlapping parts using a single camera. IEEE Computer 18 (3), 70–80.
- Bertozzi, M., Broggi, A., 1998. GOLD: a parallel real-time stereo vision system for generic obstacle and lane detection. IEEE Trans. Image Process. 7 (1), 62–81.
- Besl, P.J., Birch, J.B., Watson, L.T., 1989. Robust window operators. Mach. Vision Appl. 2, 179–191.
- Beun, M., 1973. A flexible method for automatic reading of handwritten numerals. Philips Tech. Rev. 33, 89–101; 130–137.
- Billingsley, J., Schoenfisch, M., 1995. Vision-guidance of agricultural vehicles. Auton. Robots 2 (1), 65–76.
- Birchfield, S., 1998. Elliptical head tracking using intensity gradients and color histograms. In: Proc. IEEE Conf. on Computer Vision and Pattern Recognition. Santa Barbara, CA, pp. 232–237.
- Bishop, C., 1995. Neural Networks for Pattern Recognition. Oxford University Press, Oxford, UK.
- Bishop, C.M., 2006. Pattern Recognition and Machine Learning. Springer-Verlag, Berlin, Heidelberg.
- Blake, A., Zisserman, A., Knowles, G., 1985. Surface descriptions from stereo and shading. Image Vision Comput. 3, 183–191.
- Blanz, V., Vetter, T., 2003. Face recognition based on fitting a 3D morphable model. IEEE Trans. Pattern Anal. Mach. Intell. 25 (9), 1063–1073.
- Bledsoe, W.W., Browning, I., 1959. Pattern recognition and reading by machine. Proc. East. Joint Comput. Conf. 225–232.
- Blum, H., 1967. A transformation for extracting new descriptors of shape. In: Wathen-Dunn, W. (Ed.), Models for the Perception of Speech and Visual Form. MIT Press, Cambridge, MA, pp. 362–380.
- Blum, H., Nagel, R.N., 1978. Shape description using weighted symmetric axis features. Pattern Recognit. 10, 167–180.
- Bober, M. and Kittler, J., 1993. Estimation of complex multimodal motion: an approach based on robust statistics and Hough transform. In: Proc. Fourth British Machine Vision Assoc. Conf., Univ. of Surrey. 21–23 Sept., Vol. 1, pp. 239–248.
- Bolles, R.C., 1979. Robust feature matching via maximal cliques. In: SPIE, 182. Proc. Technical Symposium on Imaging Applications for Automated Industrial Inspection and Assembly. April, Washington D.C., pp. 140–149.
- Bolles, R.C., Cain, R.A., 1982. Recognizing and locating partially visible objects: the local-feature-focus method. Int. J. Robot. Res. 1 (3), 57–82.
- Bolles, R.C., Horaud, R., 1986. 3DPO: a three-dimensional part orientation system. Int. J. Robot. Res. 5 (3), 3–26.
- Borkar, A., Hayes, M. and Smith, M.T., 2009. Robust lane detection and tracking with RANSAC and Kalman filter. In: IEEE Int. Conf. on Image Processing. 7–10 November, Cairo, Egypt, pp. 3261–3264.

- Bors, A.G., Hancock, E.R., Wilson, R.C., 2003. Terrain analysis using Radar shape-from-shading. IEEE Trans. Pattern Anal. Mach. Intell. 25 (8), 974–992.
- Boufama, B., Mohr, R., Morin, L., 1998. Using geometric properties for automatic object positioning. Image Vision Comput. 16 (1), 27–33.
- Bovik, A.C., Huang, T.S., Munson, D.C., 1983. A generalization of median filtering using linear combinations of order statistics. IEEE Trans. Acoust. Speech Signal Process. 31 (6), 1342–1349.
- Bovik, A.C., Huang, T.S., Munson, D.C., 1987. The effect of median filtering on edge estimation and detection. IEEE Trans. Pattern Anal. Mach. Intell. 9, 181–194.
- Box, G.E.P., Muller, M.E., 1958. A note on the generation of random normal deviates. Ann. Math. Stat. 29 (2), 610–611.
- Boykov, Y., Funka-Lea, G., 2006. Graph cuts and efficient N-D image segmentation. Int. J. Comput. Vision 70 (2), 109–131.
- Boykov, Y. and Jolly, M.-P., 2001. Interactive graph cuts for optimal boundary and region segmentation of objects in N-D images. In: Proc. Int. Conf. on Computer Vision. July, Vol. I, pp. 105–112.
- Boykov, Y., Kolmogorov, V., 2004. An experimental comparison of min-cut/max-flow algorithms for energy minimization in vision. IEEE Trans. Pattern Anal. Mach. Intell. 26 (9), 1124–1137.
- Brady, J.M., Wang, H., 1992. Vision for mobile robots. Philos. Trans. Royal Soc. London, Ser. B 337, 341–350.
- Brady, J.M., Yuille, A., 1984. An extremum principle for shape from contour. IEEE Trans. Pattern Anal. Mach. Intell. 6, 288–301.
- Brady, M., 1982. Computational approaches to image understanding. Comput. Surv. 14, 3–71.
- Breiman, L., 1996. Bagging predictors. Mach. Learn. 24 (2), 123-140.
- Bretschi, J., 1981. Automated Inspection Systems for Industry. IFS Publications Ltd, Bedford, UK.
- Brink, A.D., 1992. Thresholding of digital images using two-dimensional entropies. Pattern Recognit. 25, 803–808.
- Brivot, R., Marchant, J.A., 1996. Segmentation of plants and weeds for a precision crop protection robot using infrared images. IEE Proc. Vision Image Signal Process. 143 (2), 118–124.
- Broggi, A., Bertozzi, M., Fascioli, A., 2000. Architectural issues on vision-based automatic vehicle guidance: the experience of the ARGO project. Real-Time Imaging 6 (4), 313–324.
- Bron, C., Kerbosch, J., 1973. Algorithm 457: finding all cliques in an undirected graph [H]. Commun. ACM 16, 575–577.
- Brooks, M.J., 1976. Locating Intensity Changes in Digitised Visual Scenes. Computer Science Memo-15 (from MSc Thesis), University of Essex, Colchester, Essex, UK.
- Brooks, M.J., 1978. Rationalising edge detectors. Comput. Graph. Image Process. 8, 277–285.
- Brostow, G., Fauqueur, J., Cipolla, R., 2009. Semantic object classes in video: a high-definition ground truth database. Pattern Recognit. Lett. 30 (2), 88–97.
- Brown, C.M., 1984. Peak-finding with limited hierarchical memory. In: Proc. Seventh Int. Conf. on Pattern Recognition. 30 July—2 August, Montreal, pp. 246—249.
- Brown, J., Glazier, E.V.D., 1974. Telecommunications, second ed. Chapman and Hall, London.

- Brown, M.Z., Burschka, D., Hager, G.D., 2003. Advances in computational stereo. IEEE Trans. Pattern Anal. Mach. Intell. 25 (8), 993–1008.
- Bruckstein, A.M., 1988. On shape from shading. Comput. Vision Graph. Image Process 44, 139–154.
- Buch, N., Orwell, J., Velastin, S.A., 2010. Urban road user detection and classification using 3D wire frame models. IET Comput. Vision 4 (2), 105–116.
- Bunke, H., 1999. Error correcting graph matching: on the influence of the underlying cost function. IEEE Trans. Pattern Anal. Mach. Intell. 21 (9), 917–922.
- Bunke, H., Shearer, K., 1998. A graph distance metric based on the maximal common subgraph. Pattern Recognit. Lett. 19, 255–259.
- Burr, D.J. and Chien, R.T., 1977. A system for stereo computer vision with geometric models. In: Proc. Fifth Int. Joint Conf. on Artif. Intell. Boston, p. 583.
- Cai, H., Mikolajczyk, K., Matas, J., 2011. Learning linear discriminant projections for dimensionality reduction of image descriptors. IEEE Trans. Pattern Anal. Mach. Intell. 33 (2), 338–352.
- Calderara, S., Prati, A., Cucchiara, R., 2008. HECOL: homography and epipolar-based consistent labeling for outdoor park surveillance. Comput. Vision Image Understanding 111 (1), 21–42.
- Califano, A., Mohan, R., 1994. Multidimensional indexing for recognizing visual shapes. IEEE Trans. Pattern Anal. Mach. Intell. 16 (4), 373–392.
- Canny, J., 1986. A computational approach to edge detection. IEEE Trans. Pattern Anal. Mach. Intell. 8, 679–698.
- Cao, Q., Ying, Y., and Li., P., 2013. Similarity metric learning for face recognition. In: Proc. IEEE Int. Conf. on Computer Vision. 1—8 December, Darling Harbour, Sydney, pp. 2408–2415.
- Cao, X., Wei, Y., Wen, F., and Sun, J., 2012. Face alignment by explicit shape regression. In: Proc. IEEE Conf. on Computer Vision and Pattern Recognition. 16–21 June, Providence, RI.
- Caselles, V., Kimmel, R., Sapiro, G., 1997. Geodesic active contours. Int. J. Comput. Vision 21 (1), 61–79.
- Cauchie, J., Fiolet, V., Villers, D., 2008. Optimization of an Hough transform algorithm for the search of a center. Pattern Recognit. 41, 567–574.
- Celebi, M.E., 2009. Real-time implementation of order-statistics-based directional filters. IET Image Process. 3 (1), 1–9.
- Chakravarty, I., Freeman, H., 1982. Characteristic views as a basis for three-dimensional object recognition. Proc. Soc. Photo-opt. Instrum. Eng. Conf. Robot Vision 336, 37–45.
- Chakravarty, V.S., Kompella, B., 2003. The shape of handwritten characters. Pattern Recognit. Lett. 24 (12), 1901–1913.
- Chandra, B., Kothari, R., Paul, P., 2010. A new node splitting measure for decision tree construction. Pattern Recognit. 43, 2725–2731.
- Chang, I.-C., Lin, S.-Y., 2010. 3D human motion tracking based on a progressive particle filter. Pattern Recognit. 43, 3621–3635.
- Chang, S.-L., Chen, L.-S., Chung, Y.-C., Chen, S.-W., 2004. Automatic license plate recognition. IEEE Trans. Intell. Transp. Syst. 5 (1), 42–53.
- Charles, D. and Davies, E.R., 2003a. Properties of the mode filter when applied to colour images. In: Proc. IEE Int. Conf. on Visual Information Engineering, VIE 2003. 7–9 July, Surrey, IEE Conference Publication 495, pp. 101–104.

- Charles, D. and Davies, E.R., 2003b. Distance-weighted median filters and their application to colour images. In: Proc. IEE Int. Conf. on Visual Information Engineering, VIE 2003. 7–9 July, Surrey, IEE Conference Publication 495, pp. 117–120.
- Charles, D., Davies, E.R., 2004. Mode filters and their effectiveness for processing colour images. Imag. Sci. 52 (1), 3–25.
- Chasles, M., 1855. Question no. 296. Nouv. Ann. Math. 14, 50.
- Chauduri, B.B., 1994. Dynamic clustering for time incremental data. Pattern Recognit. Lett. 15 (1), 27–34.
- Chen, S., Yang, X., Cao, G., 2009. Impulse noise suppression with an augmentation of ordered difference noise detector and an adaptive variational method. Pattern Recognit. Lett. 30 (4), 460–467.
- Chen, W., Zhang, M.-J., Xiong, Z.-H., 2011. Fast semi-global stereo matching via extracting disparity candidates from region boundaries. IET Comput. Vision 5 (2), 143–150.
- Chen, Y., Adjouadi, M., Han, C., Wang, J., Barreto, A., Rishe, N., Andrian, J., 2010. A highly accurate and computationally efficient approach for unconstrained iris segmentation. Image Vision Comput. 28, 261–269.
- Cheng, H.-Y., Yu, C.-C., Tseng, C.-C., Fan, K.-C., Hwang, J.-N., Jeng, B.-S., 2010. Environment classification and hierarchical lane detection for structured and unstructured roads. IET Comput. Vision 4 (1), 37–49.
- Cheng, S.Y., Trivedi, M.M., 2007. Lane tracking with omnidirectional cameras: algorithms and evaluation. EURASIP J. Embedded Syst. 2007, Article 46972, 1–8.
- Cherng, S., Fang, C.Y., Chen, C.P., Chen, S.W., 2009. Critical motion detection of nearby moving vehicles in a vision-based driver-assistance system. IEEE Trans. Intell. Transp. Syst. 10 (1), 70–82.
- Chiang, Y.P. and Fu, K.-S., 1983. Matching parallel algorithm and architecture. In: Proceedings of the International Conference on Parallel Processing. Computer Society Press, Columbus, Ohio, USA, pp. 374–380.
- Chittineni, C.B., 1980. Efficient feature subset selection with probabilistic distance criteria. Inf. Sci. 22, 19–35.
- Chiverton, J., Mirmehdi, M. and Xie, X., 2008. Variational logistic maximum a posteriori model similarity and dissimilarity matching. In: Proc. Int. Conf. on Pattern Recognition. 8–11 December, Tampa, FL.
- Chojnacki, W., Brooks, M.J., van den Hengel, A., Gawley, D., 2003. Revisiting Hartley's normalized eight-point algorithm. IEEE Trans. Pattern Anal. Mach. Intell. 25 (9), 1172–1177.
- Choudhary, R., Paliwal, J., Jayas, D.S., 2008. Classification of cereal grains using wavelet, morphological, colour, and textural features of non-touching kernel images. Biosyst. Eng. 99, 330–337.
- Chow, C.K., Kaneko, T., 1972. Automatic boundary detection of the left ventricle from cineangiograms. Comput. Biomed. Res. 5, 388–410.
- Choy, S.S.O., Choy, C.S.-T., Siu, W.-C., 1995. New single-pass algorithm for parallel thinning. Comput. Vision Image Understanding 62 (1), 69–77.
- Chum, O., Matas, J., 2005. Matching with PROSAC progressive sample consensus. Proc. IEEE Conf. Comput. Vision Pattern Recognit. Vol. 1, 220–226.
- Chung, C.-H., Cheng, S.-C., Chang, C.-C., 2010. Adaptive image segmentation for region-based object retrieval using generalized Hough transform. Pattern Recognit. 43, 3219–3232.

- Chung, K.-L., Lin, Z.-W., Huang, S.-T., Huang, Y.-H., Liao, H.-Y.M., 2010. New orientation-based elimination approach for accurate line-detection. Pattern Recognit. Lett. 31 (1), 11–19.
- Clarifai, 2013. Average of multiple models on original training data. 0.11743. ImageNet Large Scale Visual Recognition Challenge 2013 (ILSVRC2013), Results of ILSVRC2013, http://www.image-net.org/challenges/LSVRC/2013/results.php.
- Clark, P. and Mirmehdi, M., 2002. On the recovery of oriented documents from single images. In: Proc. Advanced Concepts for Intelligent Vision Systems (ACIVS). 9–11 Sept., Ghent, Belgium, 190–197.
- Clark, P., Mirmehdi, M., 2003. Rectifying perspective views of text in 3D scenes using vanishing points. Pattern Recognit. 36, 2673–2686.
- Clarke, J.C., Carlsson, S. and Zisserman, A., 1996. Detecting and tracking linear features efficiently. In: Proc. British Machine Vision Assoc. Conf.
- Clerc, M., Mallat, S., 2002. The texture gradient equation for recovering shape from texture. IEEE Trans. Pattern Anal. Mach. Intell. 24 (4), 536–549.
- Coeurjolly, D., Klette, R., 2004. A comparative evaluation of length estimators of digital curves. IEEE Trans. Pattern Anal. Mach. Intell. 26 (2), 252–258.
- Coifman, B., Beymer, D., McLauchlan, P., Malik, J., 1998. A real-time computer vision system for vehicle tracking and traffic surveillance. Transp. Res., 6 (C), 271–288.
- Coleman, G.B., Andrews, H.C., 1979. Image segmentation by clustering. Proc. IEEE 67, 773-785.
- Collins, R.T., Lipton, A.J. and Kanade, T. (eds.), 2000. Special section on video surveil-lance. In: IEEE Trans. Pattern Anal. Machine Intell. Vol. 22, no. 8.
- Comaniciu, D., Meer, P., 2002. Mean shift: a robust approach toward feature space analysis. IEEE Trans. Pattern Anal. Mach. Intell. 24 (5), 603–619.
- Comaniciu, D., Ramesh, V., Meer, P., 2003. Kernel-based object tracking. IEEE Trans. Pattern Anal. Mach. Intell. 25 (5), 564–577.
- Conners, R.W., Harlow, C.A., 1980a. A theoretical comparison of texture algorithms. IEEE Trans. Pattern Anal. Mach. Intell. 2 (3), 204–222.
- Conners, R.W., Harlow, C.A., 1980b. Toward a structural textural analyzer based on statistical methods. Comput. Graph. Image Process. 12, 224–256.
- Connolly, C., 2009. Driver assistance systems aim to halve traffic accidents. Sens. Rev. 29 (1), 13–19.
- Cook, R.L., Torrance, K.E., 1982. A reflectance model for computer graphics. ACM Trans. Graphics 1, 7–24.
- Cootes, T.F., Taylor, C.J., 1996. Data driven refinement of active shape model search. In: Fisher, R.B., Trucco, E. (Eds.), Proc. British Machine Vision Conference. BMVA Press, pp. 383–392.
- Cootes, T.F. and Taylor, C J., 2001. Statistical models of appearance for medical image analysis and computer vision. In: Sonka, M., and Hanson, K.M. (Eds.), Proc. SPIE, Int. Soc. Opt. Eng. USA, Vol. 4322, pp. 236–248.
- Cootes, T.F., Taylor, C.J., Cooper, D.H. and Graham, J., 1992. Training models of shape from sets of examples. In: Proc. Third British Machine Vision Assoc. Conf. 22–24 Sept., Leeds, pp. 9–18.
- Cootes, T.F., Edwards, G.J., Taylor, C.J., 2001. Active Appearance Models. IEEE Trans. Pattern Anal. Mach. Intell. 23 (6), 681–685.
- Corneil, D.G., Gottlieb, C.C., 1970. An efficient algorithm for graph isomorphism. J. ACM 17, 51–64.

- Cosío, F.A., Flores, J.A.M., Castañeda, M.A.P., 2010. Use of simplex search in active shape models for improved boundary segmentation. Pattern Recognit. Lett. 31 (9), 806–817.
- Costa, LdaF., Cesar, R.M., 2000. Shape Analysis and Classification: Theory and Practice. CRC Press, Boca Raton.
- Coudray, N., Buessler, J.-L., Urban, J.-P., 2010. Robust threshold estimation for images with unimodal histograms. Pattern Recognit. Lett. 31 (9), 1010–1019.
- Cowan, G., 1998. Statistical Data Analysis. Oxford University Press, Oxford.
- Cremers, D., Rousson, M., Deriche, R., 2007. A review of statistical approaches to level set segmentation: integrating color, texture, motion and shape. Int. J. Comput. Vision 72 (2), 195–215.
- Crimmins, T.R., Brown, W.R., 1985. Image algebra and automatic shape recognition. IEEE Trans. Aerosp. Electron. Syst. 21, 60–69.
- Cristianini, N., Shawe-Taylor, J., 2000. An Introduction to Support Vector Machines. Cambridge University Press, Cambridge, UK.
- Cross, A.D.J., Wilson, R.C., Hancock, E.R., 1997. Inexact graph matching with genetic search. Pattern Recognit. 30 (6), 953–970.
- Crowley, J.L., Bobet, P., Schmid, C., 1993. Auto-calibration by direct observation of objects. Image Vision Comput. 11 (2), 67–81.
- Cumani, A., Guiducci, A., 1995. Geometric camera calibration: the virtual camera approach. Mach. Vision Appl. 8 (6), 375–384.
- Curio, C., Edelbrunner, J., Kalinke, T., Tzomakas, C., von Seelen, W., 2000. Walking pedestrian recognition. IEEE Trans. Intell. Transp. Syst. 1 (3), 155–163.
- Cybenko, G., 1988. Continuous valued neural networks with two hidden layers are sufficient. Techn. Report, Dept. of Comput. Sci., Tufts Univ., Medford, MA.
- Cybenko, G., 1989. Approximation by superpositions of a sigmoidal function. Math. Control, Signals Syst. 2 (4), 303–314.
- da Gama Leitão, H.C., Stolfi, J., 2002. A multiscale method for the reassembly of twodimensional fragmented objects. IEEE Trans. Pattern Anal. Mach. Intell. 24 (9), 1239–1251.
- Dalal, N. and Triggs, B., 2005. Histograms of oriented gradients for human detection. In: Proc. Conf. on Computer Vision and Pattern Recognition. San Diego, California, USA, pp. 886–893.
- Dalal, N., Triggs, B., Schmid, C., 2006. Human detection using oriented histograms of flow and appearance. In: Leonardis, A., Bischof, H., Prinz, A. (Eds.), Proc. European Conf. on Computer Vision. Springer-Verlag, Berlin, Heidelberg, pp. 428–441. Part II, LNCS 3952.
- Dance, C., Willamowski, J., Fan, L., Bray, C. and Csurka, G., 2004. Visual categorization with bags of keypoints. In: Proc. ECCV International Workshop on Statistical Learning in Computer Vision. Prague.
- Danielsson, P.-E., 1981. Getting the median faster. Comput. Graph. Image Process. 17, 71–78.
- Daugman, J.G., 1993. High confidence visual recognition of persons by a test of statistical independence. IEEE Trans. Pattern Anal. Mach. Intell. 15, 1148–1161.
- Daugman, J.G., 2003. Demodulation by complex-valued wavelets for stochastic pattern recognition. Int. J. Wavelets Multiresolution Inf. Process. 1 (1), 1–17.
- Davies, E.R., 1984aThe median filter: an appraisal and a new truncated version. In: Proc. Seventh Int. Conf. on Pattern Recognition. 30 July-2 August, Montreal, pp. 590-592.

- Davies, E.R., 1984b. Circularity a new principle underlying the design of accurate edge orientation operators. Image Vision Comput. 2, 134–142.
- Davies, E.R., 1984c. Design of cost-effective systems for the inspection of certain food products during manufacture. In: Pugh, A. (Ed.), Proceedings of the Fourth International Conference on Robot Vision and Sensory Controls, London (9–11 October). IFS (Publications) Ltd, Bedford and North-Holland, Amsterdam, pp. 437–446.
- Davies, E.R., 1986. Image space transforms for detecting straight edges in industrial images. Pattern Recognit. Lett. 4, 185–192.
- Davies, E.R., 1987a. A new framework for analysing the properties of the generalised Hough transform. Pattern Recognit. Lett. 6, 1–7.
- Davies, E.R., 1987b. Design of optimal Gaussian operators in small neighbourhoods. Image Vision Comput. 5, 199–205.
- Davies, E.R., 1987c. The effect of noise on edge orientation computations. Pattern Recognit. Lett. 6, 315–322.
- Davies, E.R., 1987d. A high speed algorithm for circular object location. Pattern Recognit. Lett. 6, 323–333.
- Davies, E.R., 1988a. Application of the generalised Hough transform to corner detection. IEE Proc. E 135, 49–54.
- Davies, E.R., 1988b. A modified Hough scheme for general circle location. Pattern Recognit. Lett. 7, 37–43.
- Davies, E.R., 1988c. On the noise suppression and image enhancement characteristics of the median, truncated median and mode filters. Pattern Recognit. Lett. 7, 87–97.
- Davies, E.R., 1988d. Median-based methods of corner detection. In: Kittler, J. (Ed.), Proceedings of the Fourth BPRA International Conference on Pattern Recognition, Cambridge (28–30 March). Lecture Notes in Computer Science, Vol. 301. Springer-Verlag, Heidelberg, pp. 360–369.
- Davies, E.R., 1988e. Training sets and *a priori* probabilities with the nearest neighbour method of pattern recognition. Pattern Recognit. Lett. 8, 11–13.
- Davies, E.R., 1988f. Tradeoffs between speed and accuracy in two-stage template matching. Signal Process. 15, 351–363.
- Davies, E.R., 1989a. Finding ellipses using the generalised Hough transform. Pattern Recognit. Lett. 9, 87–96.
- Davies, E.R., 1989b. Edge location shifts produced by median filters: theoretical bounds and experimental results. Signal Process. 16, 83–96.
- Davies, E.R., 1991a. The minimal match graph and its use to speed identification of maximal cliques. Signal Process. 22 (3), 329–343.
- Davies, E.R., 1991b. Median and mean filters produce similar shifts on curved boundaries. Electron. Lett. 27 (10), 826–828.
- Davies, E.R., 1991c. Insight into operation of Kulpa boundary distance measure. Electron. Lett. 27 (13), 1178–1180.
- Davies, E.R., 1992a. Simple fast median filtering algorithm, with application to corner detection. Electron. Lett. 28 (2), 199–201.
- Davies, E.R., 1992b. Modelling peak shapes obtained by Hough transform. IEE Proc. E 139 (1), 9–12.
- Davies, E.R., 1992c. Locating objects from their point features using an optimised Hough-like accumulation technique. Pattern Recognit. Lett. 13 (2), 113–121.
- Davies, E.R., 1992d. Procedure for generating template masks for detecting variable signals. Image Vision Comput. 10 (4), 241–249.

- Davies, E.R., 1992e. Accurate filter for removing impulse noise from one- or two-dimensional signals. IEE Proc. E 139 (2), 111–116.
- Davies, E.R., 1992f. Simple two-stage method for the accurate location of Hough transform peaks. IEE Proc. E 139 (3), 242–248.
- Davies, E.R., 1992g. A framework for designing optimal Hough transform implementations. In: Proc. 11th IAPR Int. Conf. on Pattern Recognition. 30 Aug.—3 Sept., The Hague, Vol. III, pp. 509—512.
- Davies, E.R., 1999a. Chord bisection strategy for fast ellipse location. Electron. Lett. 35 (9), 703–705.
- Davies, E.R., 1999b. Algorithms for ultra-fast location of ellipses in digital images. In: Proc. Seventh IEE Int. Conf. on Image Processing and its Applications. 13–15 July, Manchester, IEE Conf. Publication no. 465, pp. 542–546.
- Davies, E.R., 1999c. Image distortions produced by mean, median and mode filters. IEE Proc. Vision Image Signal Process. 146 (5), 279–285.
- Davies, E.R., 2000a. Resolution of problem with use of closing for texture segmentation. Electron. Lett. 36 (20), 1694–1696.
- Davies, E.R., 2000b. Accuracy of multichannel median filter. Electron. Lett. 36 (25), 2068–2069.
- Davies, E.R., 2000c. A generalized model of the geometric distortions produced by rank-order filters. Imag. Sci. 48 (3), 121–130.
- Davies, E.R., 2003a. Formulation of an accurate discrete theory of median shifts. Signal Process. 83, 531–544.
- Davies, E.R., 2003b. Design of real-time algorithms for food and cereals inspection. Imag. Sci. 51 (2), 63–78.
- Davies, E.R., 2003c. An analysis of the geometric distortions produced by median and related image processing filters. Adv. Imaging Electron Phys. 126, 93–193.
- Davies, E.R., 2005. Using an edge-based model of the Plessey operator to determine localisation properties. Proc. IET Int. Conf. on Visual Information Engineering. University of Glasgow, Glasgow, pp. 385–391. (4–6 April).
- Davies, E.R., 2007a. Efficient transformation for identifying global valley locations in 1D data. Electron. Lett. 43 (6), 332–333.
- Davies, E.R., 2007b. Fast implementation of generalised median filter. Electron. Lett. 43 (9), 505–507.
- Davies, E.R., 2008. Stable bi-level and multi-level thresholding of images using a new global transformation. In: Valestin, S. (Ed.), IET Computer Vision 2, no. 2, Special Issue on Visual Information Engineering, pp. 60–74.
- Davies, E.R., Celano, D., 1993. Analysis of skeleton junctions in 3×3 windows. Electron. Lett. 29 (16), 1440-1441.
- Davies, E.R., Plummer, A.P.N., 1981. Thinning algorithms: a critique and a new methodology. Pattern Recognit. 14, 53–63.
- Davies, E.R., Bateman, M., Chambers, J. and Ridgway, C., 1998. Hybrid non-linear filters for locating speckled contaminants in grain. In: IEE Digest no. 1998/284, Colloquium on Non-Linear Signal and Image Processing. 22 May, IEE, pp. 12/1–5.
- Davies, E.R., Ridgway, C. and Chambers, J., 2003NIR detection of grain weevils inside wheat kernels. In: Proc. IEE Int. Conf. on Visual Information Engineering, VIE 2003. 7–9 July, Surrey, IEE Conference Publication 495, pp. 173–176.
- Davis, J.W., Sharma, V., 2007. Background-subtraction using contour-based fusion of thermal and visible imagery. Comput. Vision Image Understanding 106 (2–3), 162–182.

- Davison, A.J., Murray, D.W., 2002. Simultaneous localization and map-building using active vision. IEEE Trans. Pattern Anal. Mach. Intell. 24 (7), 865–880.
- de la Escalara, A., Armingol, J.Ma, Mata, M., 2003. Traffic sign recognition and analysis for intelligent vehicles. Image Vision Comput. 21 (3), 247–258.
- Deans, S.R., 1981. Hough transform from the Radon transform. IEEE Trans. Pattern Anal. Mach. Intell. 3, 185–188.
- Delagnes, P., Benois, J., Barba, D., 1995. Active contours approach to object tracking in image sequences with complex background. Pattern Recognit. Lett. 16 (2), 171–178.
- Dempster, A.P., Laird, N.M., Rubin, D.B., 1977. Maximum likelihood from incomplete data via the EM algorithm. J. R. Stat. Soc. 39 (1), 1–38.
- DeSouza, G.N., Kak, A.C., 2002. Vision for mobile robot navigation: a survey. IEEE Trans. Pattern Anal. Mach. Intell. 24 (2), 237–267.
- Devijver, P.A. and Kittler, J., 1980. On the edited nearest neighbour rule. In: Proc. Fifth Int. Conf. on Pattern Recognition. Miami Beach, Florida (IEEE Computer Soc.), pp. 72–80.
- Devijver, P.A., Kittler, J., 1982. Pattern Recognition: a Statistical Approach. Prentice-Hall, Englewood Cliffs, NJ.
- Dewaele, P., Van Gool, L., Wambacq, P. and Oosterlinck, A., 1988. Texture inspection with self-adaptive convolution filters. In: Proc. Ninth Int. Conf. on Pattern Recognition. pp. 56–60.
- Dickinson, S., Pelillo, M. and Zabih, R. (Eds.), 2001. Special Section on Graph Algorithms and Computer Vision. IEEE Trans. Pattern Anal. Mach. Intell. Vol. 23, no. 10, pp. 1049–1151.
- Dickmanns, E.D., Mysliwetz, B.D., 1992. Recursive 3-D road and relative ego-state recognition. IEEE Trans. Pattern Anal. Mach. Intell. 14 (2), 199–213.
- Dinic, E.A., 1970. Algorithm for solution of a problem of maximum flow in networks with power estimation. Sov. Math. Dokl. 11, 1277–1280.
- Dockstader, S.L., Tekalp, A.M., 2001. On the tracking of articulated and occluded video object motion. Real-Time Imaging 7 (5), 415–432.
- Dockstader, S.L. and Tekalp, A.M., 2002. A kinematic model for human motion and gait analysis. In: Proc. Workshop on Statistical Methods in Video Processing (ECCV). 1–2 June, Copenhagen, Denmark, pp. 49–54. http://dx.doi.org/10.1049/el.2012.2816.
- Dorst, L., Smeulders, A.W.M., 1987. Length estimators for digitized contours. Comput. Vision Graph. Image Process 40, 311–333.
- Doucet, A., Johansen, A.M., 2011. A tutorial on particle filtering and smoothing: fifteen years later. In: Crisan, D., Rozovsky, B. (Eds.), Oxford Handbook of Nonlinear Filtering. Oxford University Press, Oxford, UK.
- Dougherty, E.R., Giardina, C.R., 1988. Morphology on umbra matrices. Int. J. Pattern Recognit. Artif. Intell. 2, 367–385.
- Dougherty, E.R., Sinha, D., 1995a. Computational gray-scale mathematical morphology on lattices (a comparator-based image algebra) Part I: architecture. Real-Time Imaging 1 (1), 69–85.
- Dougherty, E.R., Sinha, D., 1995b. Computational gray-scale mathematical morphology on lattices (a comparator-based image algebra) Part II: image operators. Real-Time Imaging 1 (4), 283–295.
- Doyle, W., 1962. Operations useful for similarity-invariant pattern recognition. J. ACM 9, 259–267.

- Dreschler, L., Nagel, H.-H., 1981. Volumetric model and 3D-trajectory of a moving car derived from monocular TV-frame sequences of a street scene. Proc. Int. Joint Conf. Artif. Intell. 692–697.
- Du Buf, J.M.H., Kardan, M., Spann, M., 1990. Texture feature performance for image segmentation. Pattern Recognit. 23, 291–309.
- Duda, R.O., Hart, P.E., 1972. Use of the Hough transformation to detect lines and curves in pictures. Commun. ACM 15, 11–15.
- Duda, R.O., Hart, P.E., 1973. Pattern Classification and Scene Analysis. Wiley, New York. Duda, R.O., Hart, P.E., Stork, D.G., 2001. Pattern Classification. Wiley, New York.
- Dudani, S.A., Luk, A.L., 1978. Locating straight-line edge segments on outdoor scenes. Pattern Recognit. 10, 145–157.
- Dudani, S.A., Breeding, K.J., McGhee, R.B., 1977. Aircraft identification by moment invariants. IEEE Trans. Comput. 26, 39–46.
- Duin, R.P.W., 2002. The combining classifier: to train or not to train? In: Proc. 16th Int. Conf. on Pattern Recognition. 11–15 Aug., Québec, Canada, Vol. II, pp. 765–770.
- Duin, R.P.W., Haringa, H., Zeelen, R., 1986. Fast percentile filtering. Pattern Recognit. Lett. 4, 269–272.
- Ehsan, S., Kanwal, N., Clark, A.F., McDonald-Maier, K.D., 2010. Improved repeatability measures for evaluating performance of feature detectors. Electron. Lett. 46 (14), 998–1000.
- Ehsan, S., Kanwal, N., Clark, A.F. and McDonald-Maier, K.D., 2011. Measuring the coverage of interest point detectors. In: Proc. Eighth Int. Conf. on Image Analysis and Recognition (ICIAR). 22–24 June, British Columbia, Canada, Vol. 6753, pp. 253–261.
- Elgammal, A., Harwood, D., Davis, L., 2000. Non-parametric model for background subtraction. Proc. Eur. Conf. Comput. Vision LNCS Vol. 1843, 751–767.
- Ellis, T.J., Abbood, A., Brillault, B., 1992. Ellipse detection and matching with uncertainty. Image Vision Comput. 10 (5), 271–276.
- Eng, H.-L., Ma, K.-K., 2001. Noise adaptive soft-switching median filter. IEEE Trans. Image Process. 10 (2), 242–251.
- Enzweiler, M., Gavrila, D.M., 2009. Monocular pedestrian detection: survey and experiments. IEEE Trans. Pattern Anal. Mach. Intell. 31 (12), 2179–2195.
- Eshel, R. and Moses, Y., 2008. Homography based multiple camera detection and tracking of people in a dense crowd. In: Proc. IEEE Conf. on Computer Vision and Pattern Recognition. 23–28 June, pp. 1–8.
- Eshel, R., Moses, Y., 2010. Tracking in a Dense Crowd Using Multiple Cameras. Int. J. Comput. Vision 88 (1), 129–143.
- Evans, A.N., Nixon, M.S., 1995. Mode filtering to reduce ultrasound speckle for feature extraction. IEE Pro.—Vision Image Signal Process. 142 (2), 87–94.
- Everingham, M., Van Gool, L., Williams, C.K.I., Winn, J., and Zisserman, A., 2007. The PASCAL Visual Object Classes Challenge 2007. (VOC2007) Results. http://www.pascalnetwork.org/challenges/VOC/voc2007/.
- Everingham, M., Zisserman, A., Williams, C.K.I., and Van Gool, L., 2006. The PASCAL Visual Object Classes Challenge 2006. (VOC2006) Results. http://www.pascalnetwork.org/challenges/VOC/voc2006/.
- Everingham, M., Van Gool, L., Williams, C.K.I., Winn, J., and Zisserman, A., 2008. The PASCAL Visual Object Classes Challenge 2008. (VOC2008) Results. http://www.pascalnetwork.org/challenges/VOC/voc2008/.

- Fang, C.Y., Chen, S.W., Fuh, C.S., 2003. Road-sign detection and tracking. IEEE Trans. Veh. Technol. 52 (5), 1329–1341.
- Fang, C.Y., Fuh, C.S., Yen, P.S., Cherng, S., Chen, S.W., 2004. An automatic road sign recognition system based on a computational model of human recognition processing. Comput. Vision Image Understanding 96, 237–268.
- Fang, X., Luo, B., Zhao, H., Tang, J., Zhai, S., 2010. New multi-resolution image stitching with local and global alignment. IET Comput. Vision 4 (4), 231–246.
- Fasel, B., 2002. Robust face analysis using convolutional neural networks. In: Proc. 16th Int. Conf. on Pattern Recognition, 11–15 Aug., Québec, Canada, Vol. II, pp. 40–43.
- Fathy, M., Siyal, M.Y., 1995. Real-time image processing approach to measure traffic queue parameters. IEE Proc. Vision Image Signal Process. 142 (5), 297–303.
- Fathy, M.E., Hussein, A.S., Tolba, M.F., 2011. Fundamental matrix estimation: a study of error criteria. Pattern Recognit. Lett. 32 (2), 383–391.
- Faugeras, O., 1992. What can be seen in three dimensions with an uncalibrated stereo rig? Proc. Second European Conf. on Computer Vision. In: Sandini, G. (Ed.), Lecture Notes in Computer Science, vol. 588. Springer-Verlag, Berlin Heidelberg, pp. 563–578.
- Faugeras, O., 1993. Three-Dimensional Computer Vision a Geometric Viewpoint. MIT Press, Cambridge, MA.
- Faugeras, O., Luong, Q.-T., 2001. The Geometry of Multiple Images. The MIT press, Cambridge, Mass.
- Faugeras, O., Luong, Q.-T., Maybank, S.J., 1992. Camera self-calibration: theory and experiments. Proc. Second European Conf. on Computer Vision. In: Sandini, G. (Ed.), Lecture Notes in Computer Science, vol. 588. Springer-Verlag, Berlin Heidelberg, pp. 321–334.
- Faugeras, O., Quan, L., Sturm, P., 2000. Self-calibration of a 1D projective camera and its application to the self-calibration of a 2D projective camera. IEEE Trans. Pattern Anal. Mach. Intell. 22 (10), 1179–1185.
- Faugeras, O.D., 1978. Texture analysis and classification using a human visual model. In: Proc. Fourth Int. Joint Conf. on Pattern Recognition. 7–10 Nov., Kyoto, pp. 549–552.
- Faugeras, O.D. and Hebert, M., 1983. A 3-D recognition and positioning algorithm using geometrical matching between primitive surfaces. In: Proc. Eighth Int. Joint Conf. on Artif. Intell. pp. 996–1002.
- Fawcett, T., 2006. An introduction to ROC analysis. Pattern Recognit. Lett. 27, 861–874.
- Fei-Fei, L., Fergus, R., Perona, P., 2003. A Bayesian approach to unsupervised one-shot learning of object categories. In: Proc. Ninth IEEE Int. Conf. on Computer Vision. 14–17 October, Nice, France, Vol. 2, pp. 1134–1141.
- Felzenszwalb, P.F., Girshick, R.B., McAllester, D., Ramanan, D., 2010. Object detection with discriminatively trained part based models. IEEE Trans. Pattern Anal. Mach. Intell. 32 (9), 1627–1645.
- Ferrie, F.P., Levine, M.D., 1989. Where and why local shading analysis works. IEEE Trans. Pattern Anal. Mach. Intell. 11, 198–206.
- Fesenkov, V.P., 1929. Photometric investigations of the lunar surface. Astronomochhesk. Zh 5, 219–234.
- Fieguth, P., Terzopoulos, D., 1997. Color_based tracking of heads and other mobile objects at video frame rates. Proc. IEEE Conf. Comput. Vision Pattern Recognit, San Juan, PR, USA, 17–19 June, pp. 21–27.

- Finlayson, G.D., Hordley, S.D., Hubel, P.M., 2001. Color by correlation: a simple, unifying framework for color constancy. IEEE Trans. Pattern Anal. Mach. Intell. 23 (11), 1209–1221.
- Fischer, B., Buhmann, J.M., 2003. Bagging for path-based clustering. IEEE Trans. Pattern Anal. Mach. Intell. 25 (11), 1411–1415.
- Fischler, M.A., Bolles, R.C., 1981. Random sample consensus: a paradigm for model fitting with applications to image analysis and automated cartography. Commun. ACM 24 (6), 381–395.
- Fitch, J.P., Coyle, E.J., Gallagher, N.C., 1985. Root properties and convergence rates of median filters. IEEE Trans. Acoust. Speech Signal Process 33, 230–239.
- Föglein, J., 1983. On edge gradient approximations. Pattern Recognit. Lett. 1, 429–434.
- Ford, L., Fulkerson, D., 1962. Flows in Networks. Princeton University Press, Princeton, NJ, USA.
- Forgy, E.W., 1965. Cluster analysis of multivariate data: efficiency versus interpretability of classification. Biometrics 21, 768–769.
- Förstner, W., Dickscheid, T. and Schindler, F., 2009. Detecting interpretable and accurate scale-invariant keypoints. In: Proc. Int. Conf. on Computer Vision (ICCV). Kyoto, Japan, pp. 2256–2263.
- Forsyth, D.A., 1990. A novel algorithm for colour constancy. Int. J. Comput. Vision 5 (1), 5–36.
- Forsyth, D.A., Ponce, J., 2003. Computer Vision: A Modern Approach. Pearson Education International, Upper Saddle River, NJ.
- Forsyth, D.A., Mundy, J.L., Zisserman, A., Coelho, C., Heller, A., Rothwell, C.A., 1991. Invariant descriptors for 3-D object recognition and pose. IEEE Trans. Pattern Anal. Mach. Intell. 13 (10), 971–991.
- Foster, J.P., Nixon, M.S. and Prugel-Bennett, A., 2001. New area based metrics for automatic gait recognition. In: Proc. British Machine Vision Assoc. Conf. pp. 233–242.
- Frankot, R.T., Chellappa, R., 1990. Estimation of surface topography form SAR imagery using shape from shading techniques. Artif. Intell. 43, 271–310.
- Freeman, H., 1961. On the encoding of arbitrary geometric configurations. IEEE Trans. Electron. Comput. 10, 260–268.
- Freeman, H., 1974. Computer processing of line drawing images. Comput. Surv. 6, 57–97.
- Freeman, H., 1978. Shape description via the use of critical points. Pattern Recognit. 10, 159–166.
- Frei, W., Chen., C.-C., 1977. Fast boundary detection: a generalization and a new algorithm. IEEE Trans. Comput. 26, 988–998.
- Freund, Y. and Schapire, R., 1996. Experiments with a new boosting algorithm. In: Proc. 13th Int. Conf. on Machine Learning, pp. 148–156.
- Friedman, J., Hastie, T., Tibshirani, R., 2000. Special invited paper additive logistic regression: a statistical view of boosting. Ann. Stat. 28 (2), 337–407.
- Fu, K.-S., Mui, J.K., 1981. A survey on image segmentation. Pattern Recognit. 13, 3–16.
- Fumera, G., Fabio, R., Alessandra, S., 2008. A theoretical analysis of bagging as a linear combination of classifiers. IEEE Trans. Pattern Anal. Mach. Intell. 30 (7), 1293–1299.
- Gallagher, N.C., Wise, G.L., 1981. A theoretical analysis of the properties of median filters. IEEE Trans. Acoust. Speech Signal Process 29, 1136–1141.
- Gallo, O., Manduchi, R., Rafii, A., 2011. CC-RANSAC: fitting planes in the presence of multiple surfaces in range data. Pattern Recognit. Lett. 32 (3), 403–410.

- Gao, C., Sang, N., Tang, Q., 2010. On selection and combination of weak learners in AdaBoost. Pattern Recognit. Lett. 31 (9), 991–1001.
- Garcia, C. and Delakis, M., 2002. A neural architecture for fast and robust face detection. In: Proc. 16th Int. Conf. on Pattern Recognition. 11–15 Aug., Québec, Canada, Vol. II, pp. 44–47.
- Gavrila, D., 1999. The visual analysis of human movement: a survey. Comput. Vision Image Understanding 73 (1), 82–98.
- Gavrila, D., 2000. Pedestrian detection from a moving vehicle. In: Vernon, D. (Ed.), Proc. European Conf. on Computer Vision. June, Dublin, Ireland, pp. 37–49.
- Gavrila, D.M., 1998. Multi-feature hierarchical template matching using distance transforms. In: Proc. IEEE Int. Conf. on Pattern Recognition. Brisbane, Australia.
- Gavrila, D.M., Groen, F.C.A., 1992. 3D object recognition from 2D images using geometric hashing. Pattern Recognit. Lett. 13 (4), 263–278.
- Gavrila, D.M., Munder, S., 2007. Multi-cue pedestrian detection and tracking from a moving vehicle. Int. J. Comput. Vision 73 (1), 41–59.
- Gavrila, D.M., Giebel, J., and Munder, S., 2004. Vision-based pedestrian detection: the PROTECTOR + system. In: Proc. IEEE Intelligent Vehicle Symposium. Parma, Italy.
- Geiger, D., Liu, T.-L., Kohn, R.V., 2003. Representation and self-similarity of shapes. IEEE Trans. Pattern Anal. Mach. Intell. 25 (1), 86–99.
- Gerig, G. and Klein, F., 1986. Fast contour identification through efficient Hough transform and simplified interpretation strategy. In: Proc. Eighth Int. Conf. on Pattern Recognition. 27–31 October, Paris, pp. 498–500.
- Geronimo, D., Lopez, A.M., Sappa, A.D., Graf, T., 2010. Survey of pedestrian detection for advanced driver assistance systems. IEEE Trans. Pattern Anal. Mach. Intell. 32 (7), 1239–1258.
- Ghosh, A., Petkov, N., 2005. Robustness of shape descriptors to incomplete contour representations. IEEE Trans. Pattern Anal. Mach. Intell. 27 (11), 1793–1804.
- Gibbons, A., 1985. Algorithmic Graph Theory. Cambridge University Press, Cambridge.
- Giblin, P.J., Kimia, B.B., 2003. On the intrinsic reconstruction of shape from its symmetries. IEEE Trans. Pattern Anal. Mach. Intell. 25 (7), 895–911.
- Gibson, J.J., 1950. The Perception of the Visual World. Houghton Mifflin, Boston, MA.
- Girshick, R., Donahue, J., Darrell, T., and Malik. J., 2014. Rich feature hierarchies for accurate object detection and semantic segmentation. In: Proc. IEEE Conf. on Computer Vision and Pattern Recognition. 23–28 June, Columbus, OH, pp. 580–587. See also arXiv:1311.2524v5 [cs.CV] 22 Oct.
- Girshick, R.B., 2015. Fast R-CNN. In: Proc. IEEE Int. Conf. on Computer Vision. 13–16 Dec, Santiago, Chile, pp. 1440–1448.
- Goetcherian, V., 1980. From binary to grey tone image processing using fuzzy logic concepts. Pattern Recognit. 12, 7–15.
- Goldberg, A.V., Tarjan, R.E., 1988. A new approach to the maximum-flow problem. J. Assoc. Comput. Mach. 35 (4), 921–940.
- Goldman, D.B., Curless, B., Hertzmann, A., Seitz, S.M., 2010. Shape and spatially-varying BRDFs from photometric stereo. IEEE Trans. Pattern Anal. Mach. Intell. 32 (6), 1060–1071.
- Golightly, I., Jones, D., 2003. Corner detection and matching for visual tracking during power line inspection. Image Vision Comput. 21 (9), 827–840.
- Golub, G.H., van Loan, C.F., 1983. Matrix Computations. North Oxford, Oxford, UK.

- Gong, S., McKenna, S., Psarrou, A., 2000. Dynamic Vision: From Images to Face Recognition. Imperial College Press, London, UK.
- Gonnet, G.H., 1984. Handbook of Algorithms and Data Structures. Addison-Wesley, London.
- Gonzalez, R.C., Woods, R.E., 1992. Digital Image Processing. Addison Wesley, Reading, MA.
- Gonzalez, R.C., Woods, R.E., 2008. Digital Image Processing, third ed. Prentice Hall, Upper Saddle River, NJ.
- Gope, C., Kehtarnavaz, N., 2007. Affine invariant comparison of point-sets using convex hulls and Hausdorff distances. Pattern Recognit. 40, 309–320.
- Granlund, G.H., 1980. Description of texture using the general operator approach. In: Proc. Fifth Int. Conf. on Pattern Recognition. 1–4 Dec., Miami Beach, Florida, pp. 776–779.
- Greenhill, D. and Davies, E.R., 1993. Texture analysis using neural networks and mode filters. In: Proc. Fourth British Machine Vision Assoc. Conf., Univ. of Surrey, Guildford, Surrey, UK. 21–23 Sept., Vol. 2, pp. 509–518.
- Greenhill, D., Davies, E.R., 1994. Relative effectiveness of neural networks for image noise suppression. In: Gelsema, E.S., Kanal, L.N. (Eds.), Pattern Recognition in Practice IV. Elsevier Science B.V, pp. 367–378.
- Gregory, R.L., 1971. The Intelligent Eye. Weidenfeld and Nicolson, London.
- Gregory, R.L., 1972. Eye and Brain, second ed. Weidenfeld and Nicolson, London.
- Griffin, G., Holub, A., and Perona, P., 2006. The Caltech-256. Caltech Technical Report.
- Griffin, L.D., 2000. Mean, median and mode filtering of images. Proc. Royal Soc. London, Ser. A 456 (2004), 2995–3004.
- Grimson, W.E.L., Huttenlocher, D.P., 1990. On the sensitivity of the Hough transform for object recognition. IEEE Trans. Pattern Anal. Mach. Intell. 12 (3), 255–274.
- Grimson., W.E.L., Lozano-Perez, T., 1984. Model-based recognition and localisation from sparse range or tactile data. Int. J. Robot. Res. 3 (3), 3–35.
- Gross, R., Matthews, I., Baker, S., 2004. Appearance-based face recognition and light-fields. IEEE Trans. Pattern Anal. Mach. Intell. 26 (4), 449–465.
- Gruen, A., Huang, T.S. (Eds.), 2001. Calibration and Orientation of Cameras in Computer Vision. Springer-Verlag,, Berlin Heidelberg.
- Guan, Y.-P., 2010. Spatio-temporal motion-based foreground segmentation and shadow suppression. IET Comput. Vision 4 (1), 50–60.
- Guiducci, A., 1999. Parametric model of the perspective projection of a road with applications to lane keeping and 3d road reconstruction. Comput. Vision Image Understanding 73, 414–427.
- Guo, S., Pridmore, T., Kong, Y., Zhang, X., 2009. An improved Hough transform voting scheme utilizing surround suppression. Pattern Recognit. Lett. 30 (13), 1241–1252.
- Guru, D.S., Shekar, B.H., Nagabhushan, P., 2004. A simple and robust line detection algorithm based on small eigenvalue analysis. Pattern Recognit. Lett. 25 (1), 1–13.
- Hall, E.L., 1979. Computer Image Processing and Recognition. Academic Press, New York.
- Hall, E.L., Tio, J.B.K., McPherson, C.A., Sadjadi, F.A., 1982. Measuring curved surfaces for robot vision. IEEE Comput. 15 (12), 42–54.
- Hampel, F.R., Ronchetti, E.M., Rousseeuw, P.J., Stahel, W.A., 1986. Robust Statistics, The Approach Based on Influence Functions. Wiley, New York.

- Hannah, I., Patel, D., Davies, E.R., 1995. The use of variance and entropic thresholding methods for image segmentation. Pattern Recognit. 28 (8), 1135–1143.
- Hansen, D.W., Ji, Q., 2010. In the eye of the beholder: a survey of models for eyes and gaze. IEEE Trans. Pattern Anal. Mach. Intell. 32 (3), 478–500.
- Hansen, F.R., Elliott, H., 1982. Image segmentation using simple Markov field models. Comput. Graph. Image Process. 20, 101–132.
- Haralick, R.M., 1979. Statistical and structural approaches to texture. Proc. IEEE 67 (5), 786–804.
- Haralick, R.M., 1980. Edge and region analysis for digital image data. Comput. Graph. Image Process. 12, 60–73.
- Haralick, R.M., 1984. Digital step edges from zero crossing of second directional derivatives. IEEE Trans. Pattern Anal. Mach. Intell. 6, 58–68.
- Haralick, R.M., 1989. Determining camera parameters from the perspective projection of a rectangle. Pattern Recognit. 22, 225–230.
- Haralick, R.M., Chu, Y.H., 1984. Solving camera parameters from the perspective projection of a parameterized curve. Pattern Recognit. 17 (6), 637–645.
- Haralick, R.M. and Joo, H., 1988. 2D-3D pose estimation. In: Proc. Ninth Int. Conf. on Pattern Recognition. 14–17 Nov., Rome, Italy, pp. 385–391.
- Haralick, R.M., Shapiro, L.G., 1985. Image segmentation techniques. Comput. Vision Graph. Image Process 29, 100–132.
- Haralick, R.M., Shapiro, L.G., 1992. Computer and Robot Vision, Volume I. Addison Wesley, Reading, MA.
- Haralick, R.M., Shapiro, L.G., 1993. Computer and Robot Vision, Volume II. Addison Wesley, Reading, MA.
- Haralick, R.M., Shanmugam, K., Dinstein, I., 1973. Textural features for image classification. IEEE Trans. Syst. Man Cybern. 3 (6), 610–621.
- Haralick, R.M., Chu, Y.H., Watson, L.T., Shapiro, L.G., 1984. Matching wire frame objects from their two dimensional perspective projections. Pattern Recognit. 17 (6), 607–619.
- Haralick, R.M., Sternberg, S.R., Zhuang, X., 1987. Image analysis using mathematical morphology. IEEE Trans. Pattern Anal. Mach. Intell. 9 (4), 532–550.
- Haritaoglu, I., Harwood, D., Davis, L.S., 2000. W⁴: real-time surveillance of people and their activities. In Special Section on Video Surveillance. IEEE Trans. Pattern Anal. Mach. Intell. 22 (8), 809–830.
- Harris, C. and Stephens, M., 1988. A combined corner and edge detector. In: Proc. Fourth Alvey Vision Conf. pp. 147–151.
- Hart, P.E., 1968. The condensed nearest neighbour rule. IEEE Trans. Inf. Theory 14, 515-516.
- Hartley, R., Zisserman, A., 2000. Multiple View Geometry in Computer Vision. Cambridge University Press, Cambridge, UK.
- Hartley, R., Zisserman, A., 2003. Multiple View Geometry in Computer Vision, second ed. Cambridge University Press, Cambridge, UK.
- Hartley, R.I., 1992. Estimation of relative camera positions for uncalibrated cameras. Proc. Second European Conf. on Computer Vision. In: Sandini, G. (Ed.), Lecture Notes in Computer Science, vol. 588. Springer-Verlag, Berlin Heidelberg, pp. 579–587.
- Hartley, R.I., 1995A linear method for reconstruction from lines and points. In: Proc. Int. Conf. on Computer Vision, pp. 882–887.

- Hartley, R.I., 1997. In defense of the eight-point algorithm. IEEE Trans. Pattern Anal. Mach. Intell. 19 (6), 580–593.
- Harvey, N.R. and Marshall, S., 1994. Using genetic algorithms in the design of morphological filters. In: IEE Colloquium on Genetic Algorithms in Image Processing and Vision, IEE. 20 Oct., IEE Digest no. 1994/193, pp. 6/1-5.
- Harvey, N.R. and Marshall, S., 1995. Rank-order morphological filters: a new class of filters. In: Proc. IEEE Workshop on Nonlinear Signal and Image Processing. June, Halkidiki, Greece, pp. 975–978.
- Harwood, D., Subbarao, M., Davis, L.S., 1985. Texture classification by local rank correlation. Comput. Vision Graph. Image Process 32, 404–411.
- Hasler, D., Sbaiz, L., Süsstrunk, S., Vetterli, M., 2003. Outlier modelling in image matching. IEEE Trans. Pattern Anal. Mach. Intell. 25 (3), 301–315.
- Hassner, T., Harel, S., Paz, E., Enbar, R., 2015. Effective face frontalization in unconstrained images. In: Proc. IEEE Conf. on Computer Vision and Pattern Recognition. 7–12 June, Boston, MA, pp. 4295–4304.
- Haykin, S., 1999. Neural Networks: A Comprehensive Introduction. Prentice-Hall, New Jersey, USA.
- Heijmans, H., 1991. Theoretical aspects of gray-level morphology. IEEE Trans. Pattern Anal. Mach. Intell. 13, 568–582.
- Heikkilä, J., 2000. Geometric camera calibration using circular control points. IEEE Trans. Pattern Anal. Mach. Intell. 22 (10), 1066–1076.
- Heikkonen, J., 1995. Recovering 3-D motion parameters from optical flow field using randomized Hough transform. Pattern Recognit. Lett. 16 (9), 971–978.
- Heinemann, P.H., Varghese, Z.A., Morrow, C.T., Sommer III, H.J., Crassweller, R.M., 1995. Machine vision inspection of "Golden Delicious" apples. Appl. Eng. Agric 11 (6), 901–906.
- Heinonen, P., Neuvo, Y., 1987. FIR-median hybrid filters. IEEE Trans. Acoust. Speech Signal Process 35, 832-838.
- Herault, L., Horaud, R., Veillon, F., Niez, J.J., 1990. Symbolic image matching by simulated annealing. Proc. Br. Mach. Vision Assoc. Conf. 319–324.
- Hernandez, C., Vogiatzis, G., Cipolla, R., 2011. Overcoming shadows in 3-source photometric stereo. IEEE Trans. Pattern Anal. Mach. Intell. 33 (2), 419–426.
- Hilario, C., Collado, J.M., Armingol, J.M. and de la Escalera, A., 2006. Visual perception and tracking of vehicles for driver assistance systems. In: Proc. Intelligent Vehicles Symposium. June 13–15, Tokyo, Japan, pp. 94–99.
- Hildreth, E.C., 1984. Measurement of Visual Motion. MIT Press, Cambridge, MA.
- Hinton, G.E., 2002. Training products of experts by minimizing contrastive divergence. Neural Comput. 14 (8), 1771–1800.
- Hinton, G.E., Srivastava, N., Krizhevsky, A., Sutskever, I., and Salakhutdinov, R.R., 2012. Improving Neural Networks by Preventing Co-adaptation of Feature Detectors. arXiv:1207.0580v1 [cs.NE] 3 Jul.
- Hlaoui, A. and Wang, S., 2002. A new algorithm for inexact graph matching. In: Proc. 16th Int. Conf. on Pattern Recognition. 11–15 Aug., Québec, Canada, Vol. IV, pp. 180–183.
- Ho, T.K., Hull, J.J., Srihari, S.N., 1994. Decision combination in multiple classifier systems. IEEE Trans. Pattern Anal. Mach. Intell. 16 (1), 66–75.
- Hochreiter, S., Schmidhuber, J., 1997. Long short-term memory. Neural Comput. 9 (8), 1735–1780.

- Hodgson, R.M., Bailey, D.G., Naylor, M.J., Ng, A.L.M., McNeil, S.J., 1985. Properties, implementations, and applications of rank filters. Image Vision Comput. 3, 4–14.
- Hofmann, U., Rieder, A., Dickmanns, E.D., 2003. Radar and vision data fusion for hybrid adaptive cruise control on highways. Mach. Vision Appl. 14 (1), 42–49.
- Hogg, D., 1983. Model-based vision: a program to see a walking person. Image Vision Comput. 1 (1), 5–20.
- Horaud, R., 1987. New methods for matching 3-D objects with single perspective views. IEEE Trans. Pattern Anal. Mach. Intell. 9, 401–412.
- Horaud, R., Brady, M., 1988. On the geometric interpretation of image contours. Artif. Intell. 37, 333–353.
- Horaud, R., Sossa, H., 1995. Polyhedral object recognition by indexing. Pattern Recognit. 28 (12), 1855–1870.
- Horaud, R., Conio, B., Leboulleux, O., Lacolle, B., 1989. An analytic solution for the perspective 4-point problem. Comput. Vision Graph. Image Process 47, 33–44.
- Horn, B.K.P., 1975. Obtaining shape from shading information. In: Winston, P.H. (Ed.), The Psychology of Computer Vision. McGraw-Hill, New York, pp. 115–155.
- Horn, B.K.P., 1977. Understanding image intensities. Artif. Intell. 8, 201–231.
- Horn, B.K.P., 1986. Robot Vision. MIT Press, Cambridge, MA.
- Horn, B.K.P., Brooks, M.J., 1986. The variational approach to shape from shading. Comput. Vision Graph. Image Process 33, 174–208.
- Horn, B.K.P., Brooks, M.J. (Eds.), 1989. Shape from Shading. MIT Press, Cambridge, MA. Horn, B.K.P., Schunck, B.G., 1981. Determining optical flow. Artif. Intell. 17 (1–3), 185–203.
- Horng, J.-H., 2003. An adaptive smoothing approach for fitting digital planar curves with line segments and circular arcs. Pattern Recognit. Lett. 24 (1-3), 565-577.
- Hornik, K., Stinchcombe, M., White, H., 1989. Multilayer feedforward networks are universal approximators. Neural Networks 2, 359–366.
- Horowitz, S.L. and Pavlidis, T., 1974. Picture segmentation by a directed split-and-merge procedure. In: Proc. Second Int. Joint Conf. on Pattern Recognition. pp. 424–433.
- Hough, P.V.C., 1962. Method and Means for Recognising Complex Patterns. US Patent 3069654.
- Hsiao, J.Y., Sawchuk, A.A., 1989. Supervised textured image segmentation using feature smoothing and probabilistic relaxation techniques. IEEE Trans. Pattern Anal. Mach. Intell. 11 (12), 1279–1292.
- Hsiao, J.Y., Sawchuk, A.A., 1990. Unsupervised textured image segmentation using feature smoothing and probabilistic relaxation techniques. Comput. Vision Graph. Image Process 48, 1–21.
- Hu, M.K., 1961. Pattern recognition by moment invariants. Proc. IEEE 49, 1428.
- Hu, M.K., 1962. Visual pattern recognition by moment invariants. IRE Trans. Inf. Theory 8, 179–187.
- Huang, C.T., Mitchell, O.R., 1994. A Euclidean distance transform using greyscale morphology decomposition. IEEE Trans. Pattern Anal. Mach. Intell. 16 (4), 443–448.
- Huang, G.B., and Learned-Miller, E., 2014. Labeled Faces in the Wild: Updates and New Reporting Procedures. University of Massachusetts, Amherst Technical Report UM-CS-2014-003.
- Huang, G.B., Jain, V., and Learned-Miller, E., 2007. Unsupervised joint alignment of complex images. In: Proc. 11th IEEE Int. Conf. on Computer Vision. 14–20 October, Rio de Janeiro, Brazil.

- Huang, L., Yang, Y., Deng, Y., and Yu., Y., 2015. DenseBox: Unifying Landmark Localization with End to End Object Detection. arXiv:1509.04874v3 [cs.CV] 19 Sep.
- Huang, T.S. (Ed.), 1983. Image Sequence Processing and Dynamic Scene Analysis. Springer-Verlag, New York.
- Huang, T.S., Yang, G.J., Tang, G.Y., 1979. A fast two-dimensional median filtering algorithm. IEEE Trans. Acoust. Speech Signal Process 27, 13–18.
- Huang, T.S., Bruckstein, A.M., Holt, R.J., Netravali, A.N., 1995. Uniqueness of 3D pose under weak perspective: a geometrical proof. IEEE Trans. Pattern Anal. Mach. Intell. 17 (12), 1220–1221.
- Hubel, D.H., 1995. Eye, Brain and Vision. Scientific American Library, New York.
- Huber, P.J., 1964. Robust estimation of a location parameter. Ann. Math. Stat. 35, 73-101.
- Huber, P.J., 1981. Robust Statistics. Wiley, New York.
- Huber, P.J., 1985. Projection pursuit. Ann. Stat 13 (2), 435–475.
- Hughes, G.F., 1968. On the mean accuracy of statistical pattern recognisers. IEEE Trans. Inf. Theory 14, 55–63.
- Huttenlocher, D.P., Klanderman, G.A., Rucklidge, W.J., 1993. Comparing images using the Hausdorff distance. IEEE Trans. Pattern Anal. Mach. Intell. 15 (9), 850–863.
- Ikeuchi, K., Horn, B.K.P., 1981. Numerical shape from shading and occluding boundaries. Artif. Intell. 17, 141–184.
- Isard, M., Blake, A., 1996. Contour tracking by stochastic propagation of conditional density. Proc. Eur. Conf. Comput. Vision 1, 343–356.
- Isard, M. and Blake, A., 1998. Icondensation: unifying low-level and high-level tracking in a stochastic framework. In: Proc. European Conf. on Computer Vision. Freiburg, Germany, Vol. I, pp. 893–908.
- Ito, M., Ishii, A., 1986. Three-view stereo analysis. IEEE Trans. Pattern Anal. Mach. Intell. 8 (4), 524-532.
- Jacinto, C.N., Arnaldo, J.A., George, S.M., 2003. Using middle level features for robust shape tracking. Pattern Recognit. Lett. 24, 295–307.
- Jackway, P.T., Deriche, M., 1996. Scale-space properties of the multiscale morphological dilation-erosion. IEEE Trans. Pattern Anal. Mach. Intell. 18 (1), 38–51.
- Jain, A.K., 2010. Data clustering: 50 years beyond *k*-means. Pattern Recognit. Lett. 31 (8), 651–666.
- Jain, A.K., Dubes, R.C., 1988. Algorithms for Clustering Data. Prentice-Hall, Englewood Cliffs, NJ.
- Jain, A.K., Duin, R.P.W., Mao, J., 2000. Statistical pattern recognition. IEEE Trans. Pattern Anal. Mach. Intell. 22 (1), 4–37.
- Jain, R., 1983. Direct computation of the focus of expansion. IEEE Trans. Pattern Anal. Mach. Intell. 5, 58-63.
- Jain, V., Learned-Miller, E., 2010. FDDB: A Benchmark for Face Detection in Unconstrained Settings. University of Massachusetts Technical Report UM-CS-2010-009.
- Jang, Y.K., Kang, B.J., Park, K.R., 2008. A study on eyelid localization considering image focus for iris recognition. Pattern Recognit. Lett. 29, 1698–1704.
- Janney, P., Geers, G., 2010. Texture classification using invariant features of local textures. IET Image Process. 4 (3), 158–171.
- Jiang, J.-A., Chuang, C.-L., Lu, Y.-L., Fahn, C.-S., 2007. Mathematical-morphology-based edge detectors for detection of thin edges in low-contrast regions. IET Image Process. 1 (3), 269–277.

- Jolion, J.-M., Rosenfeld, A., 1989. Cluster detection in background noise. Pattern Recognit. 22 (5), 603-607.
- Jones, M.J., Rehg, J.M., 2002. Statistical color models with application to skin detection. Int. J. Comput. Vision 46 (1), 81–96.
- Juan, A., Vidal, E., 1994. Fast *K*-means-like clustering in metric spaces. Pattern Recognit. Lett. 15 (1), 19–25.
- Kadir, T., Brady, M., 2001. Scale, saliency and image description. Int. J. Comput. Vision 45 (2), 83–105.
- Kadir, T., Brady, M. and Zisserman, A., 2004. An affine invariant method for selecting salient regions in images. In: Proc. Eighth European Conf. on Computer Vision (ECCV). pp. 345–457.
- Kadyrov, A., Petrou, M., 2001. The trace transform and its applications. IEEE Trans. Pattern Anal. Mach. Intell. 23, 811–828.
- Kadyrov, A. and Petrou, M., 2002. Affine parameter estimation from the trace transform. In: Proc. 16th Int. Conf. on Pattern Recognition. 11–15 Aug., Québec, Canada, Vol. II, pp. 798–801.
- Kaizer, H., 1955. A Quantification of Textures on Aerial Photographs. Ms Thesis, Boston Univ., Boston, MA, USA.
- Kamat-Sadekar, V. and Ganesan, S., 1998. Complete description of multiple line segments using the Hough transform. In Davies, E.R. and Atiquzzaman, M. (eds.), Special Issue on Projection-Based Transforms, Image Vision Computing. Vol. 16, nos. 9–10, pp. 597–614.
- Kamel, M.S., Shen, H.C., Wong, A.K.C., Hong, T.M., Campeanu, R.I., 1994. Face recognition using perspective invariant features. Pattern Recognit. Lett. 15 (9), 877–883.
- Kanatani, K., Sugaya, Y. and Niitsuma, H., 2008. Triangulation from two views revisited: Hartley-Sturm vs. optimal correction. In: Proc. British Machine Vision Assoc. Conf.
- Kanesalingam, C., Smith, M.C.B., and Dodds, S.A., 1998. An efficient algorithm for environmental mapping and path planning for an autonomous mobile robot. In: Proc. 29th Int. Symp. on Robotics. Birmingham, pp. 133–136.
- Kang, D.-J., Jung, M.-H., 2003. Road lane segmentation using dynamic programming for active safety vehicles. Pattern Recognit. Lett. 24, 3177–3185.
- Kapur, J.N., Sahoo, P.K., Wong, A.K.C., 1985. A new method for gray-level picture thresholding using the entropy of the histogram. Comput. Vision Graph. Image Process 29, 273–285.
- Kasif, S., Kitchen, L., Rosenfeld, A., 1983. A Hough transform technique for subgraph isomorphism. Pattern Recognit. Lett. 2, 83–88.
- Kass, M., Witkin, A., 1987. Analyzing oriented patterns. Comput. Vision Graph. Image Process 37 (3), 362–385.
- Kass, M., Witkin, A., Terzopoulos, D., 1988. Snakes: active contour models. Int. J. Comput. Vision 1, 321–331.
- Kastrinaki, V., Zervakis, M., Kalaitzakis, K., 2003. A survey of video processing techniques for traffic applications. Image Vision Comput. 21 (4), 359–381.
- Keagy, P.M., Parvin, B., Schatzki, T.F., 1995. Machine recognition of navel orange worm damage in x-ray images of pistachio nuts. Opt. Agric., For. Biol., SPIE 2345, 192–203.
- Keagy, P.M., Parvin, B., Schatzki, T.F., 1996. Machine recognition of navel orange worm damage in X-ray images of pistachio nuts. Lebensm. Wiss. Technol. 29, 140–145.

- Kégl, B., Krzyżak, A., 2002. Piecewise linear skeletonization using principal curves. IEEE Trans. Pattern Anal. Mach. Intell. 24 (1), 59–74.
- Kehtarnavaz, N., Mohan, S., 1989. A framework for estimation of motion parameters from range images. Comput. Vision Graph. Image Process 45, 88–105.
- Kelly, P., Beardsley, P., Cooke, E., O'Connor, N., Smeaton, A., 2005. Detecting shadows and low-lying objects in indoor and outdoor scenes using homographies. Proc. IET Conf. Visual Inf. Eng, Glasgow, 4–6 April, 393–400.
- Kender, J.R., 1980. Shape from Texture. Carnegie-Mellon University, Comput. Sci. Techn. Rep. CMU-CS-81-102.
- Kender, J.R., 1983. Shape from Texture. Carnegie-Mellon Univ. Techn. Report CMU-CS-81-102.
- Kenney, C.S., Manjunath, B.S., Zuliani, M., Hewer, G.A., van Nevel, A., 2003. A condition number for point matching with application to registration and postregistration error estimation. IEEE Trans. Pattern Anal. Mach. Intell. 25 (11), 1437–1454.
- Kesidis, A.L., Papamarkos, N., 2000. On the grayscale inverse Hough transform. Image Vision Comput. 18 (8), 607–618.
- Kessal, L., Abel, N., Demigny, D., 2003. Real-time image processing with dynamically reconfigurable architecture. Real-Time Imaging 9 (5), 297–313.
- Khan, S. and Shah, M., 2000. Tracking people in presence of occlusion. In: Proc. Asian Conf. on Computer Vision.
- Khan, S., Shah, M., 2003. Consistent labeling of tracked objects in multiple cameras with overlapping fields of view. IEEE Trans. Pattern Anal. Mach. Intell. 25 (10), 1355–1360.
- Khan, S., Shah, M., 2009. Tracking multiple occluding people by localizing on multiple scene planes. IEEE Trans. Pattern Anal. Mach. Intell. 31 (3), 505–519.
- Kim, D., Kim, D., Paik, J., 2010. Gait recognition using active shape model and motion prediction. IET Comput. Vision 4 (1), 25–36.
- Kim, D.-S., Lee, W.-H., Kweon, I.-S., 2004. Automatic edge detection using 3 × 3 ideal binary pixel patterns and fuzzy-based edge thresholding. Pattern Recognit. Lett. 25 (1), 101–106.
- Kim, D.Y., Kim, J.J., Meer, P., Mintz, D. and Rosenfeld, A., 1989. Robust computer vision: a least median of squares based approach. In: Proc. DARPA Image Understanding Workshop. 23–26 May, Palo Alto, CA, pp. 1117–1134.
- Kim, Z.-W., 2008. Robust lane detection and tracking in challenging scenarios. IEEE Trans. Intell. Transp. Syst. 9 (1), 16–26.
- Kimme, C., Ballard, D., Sklansky, J., 1975. Finding circles by an array of accumulators. Commun. ACM 18, 120–122.
- Kimura, A. and Watanabe, T., 2002. An extension of the generalized Hough transform to realize affine-invariant two-dimensional (2D) shape detection. In: Proc. 16th Int. Conf. on Pattern Recognition. 11–15 Aug., Québec, Canada, Vol. I, pp. 65–69.
- Kirsch, R.A., 1971. Computer determination of the constituent structure of biological images. Comput. Biomed. Res. 4, 315–328.
- Kiryati, N., Bruckstein, A.M., 1991. Antialiasing the Hough transform. Comput. Vision Graph. Image Process: Graph. Models Image Process 53 (3), 213–222.
- Kitchen, L., Rosenfeld, A., 1979. Discrete relaxation for matching relational structures. IEEE Trans. Syst. Man Cybern 9, 869–874.

- Kitchen, L., Rosenfeld, A., 1982. Gray-level corner detection. Pattern Recognit. Lett. 1, 95–102.
- Kittler, J., 1983. On the accuracy of the Sobel edge detector. Image Vision Comput. 1, 37–42.
- Kittler, J., Illingworth, J., Föglein, J., 1985. Threshold selection based on a simple image statistic. Comput. Vision Graph. Image Process 30, 125–147.
- Klassen, E., Srivistava, A., Mio, W., Joshi, S.H., 2004. Analysis of planar shapes using geodesic paths on shape spaces. IEEE Trans. Pattern Anal. Mach. Intell. 26 (3), 372–383.
- Knop, R., 1969. Remark on Algorithm 334 [g5]: normal random deviates. Commun. ACM 12 (5), 281.
- Koenderink, J.J., van Doorn, A.J., 1979. The internal representation of solid shape with respect to vision. Biol. Cybern. 32, 211–216.
- Koivo, A.J., Kim, C.W., 1989. Robust image modelling for classification of surface defects on wood boards. IEEE Trans. Syst. Man Cybern. 19 (6), 1659–1666.
- Köktas, N.S., Yalabik, N., Yavuzer, G., Duin, R.P.W., 2010. A multi-classifier for grading knee osteoarthritis using gait analysis. Pattern Recognit. Lett. 31 (9), 898–904.
- Koller, D., Weber, J., Huang, T., Malik, J., Ogasawara, G., Rao, B. and Russell, S., 1994. Towards robust automatic traffic scene analysis in real-time. In: Proc. 12th Int. Conf. on Pattern Recognition. 9–13 Oct., Jerusalem, Israel, pp. 126–131.
- Koplowitz, J., Bruckstein, A.M., 1989. Design of perimeter estimators for digitized planar shapes. IEEE Trans. Pattern Anal. Mach. Intell. 11, 611–622.
- Kortenkamp, D., Bonasso, R.P., Murphy, R. (Eds.), 1998. Artificial Intelligence and Mobile Robots. AAAI Press/The MIT Press, Menlo Park, California; Cambridge, Massachusetts; London, England.
- Krizhevsky, A., Sutskever, I., and Hinton, G.E., 2012. ImageNet classification with deep convolutional neural networks. In: Proc. 26th Annual Conf. on Neural Information Processing Systems. 3–8 December, Lake Tahoe, Nevada.
- Kroon, D.-J., 2011. Segmentation of the Mandibular Canal in Cone-beam CT Data. PhD Thesis, University of Twente, The Netherlands.
- Kuehnle, A., 1991. Symmetry-based recognition of vehicle rears. Pattern Recognit. Lett. 12, 249–258.
- Kulpa, Z., 1977. Area and perimeter measurement of blobs in discrete binary pictures. Comput. Graph. Image Process. 6, 434–451.
- Kumar, R. and Hanson, A.R., 1989. Robust estimation of camera location and orientation from noisy data having outliers. In: Proc. Workshop on Interpretation of 3D Scenes. 27–29 Nov., Austin, TX, pp. 52–60.
- Kuo, P., Makris, D., Nebel, J.-C., 2011. Integration of bottom-up/top-down approaches for 2D pose estimation using probabilistic Gaussian modelling. Comput. Vision Image Understanding 115 (2), 242–255.
- Kuo, W.-J. and Lin, C.-C., 2007. Two-stage road sign detection and recognition. In: Proc. IEEE Int. Conf. on Multimedia and Expo. 2–5 July, Beijing, pp. 1427–1430.
- Kuo, Y.-C., Pai, N.-S., Li, Y.-F., 2011. Vision-based vehicle detection for a driver assistance system. Comput. Math. Appl. 61, 2096–2100.
- Kwok, P.C.K., 1989. Customising thinning algorithms. In: Proceedings of the Third International Conference on Image Processing and its Applications. 18–20 July, Warwick, IEE Conf. Publ. 307, 633–637.

- Lacroix, V., 1988. A three-module strategy for edge detection. IEEE Trans. Pattern Anal. Mach. Intell. 10, 803–810.
- Lamdan, Y. and Wolfson, H.J., 1988. Geometric hashing: a general and efficient model-based recognition scheme. In: Proc. IEEE Second Int. Conf. on Computer Vision, Tampa, FL (Dec.), pp. 238–249.
- Lane, R.A., Thacker, N.A., Seed, N.L., 1994. Stretch-correlation as a real-time alternative to feature-based stereo matching algorithms. Image Vision Comput. 12 (4), 203–212.
- Laurentini, A., 1994. The visual hull concept for silhouette-based image understanding. IEEE Trans. Pattern Anal. Mach. Intell. 16 (2), 150–162.
- Laws, K.I., 1979. Texture energy measures. Proc. Image Understanding Workshop, Nov 47–51.
- Laws, K.I., 1980a. Rapid texture identification. In: Proc. SPIE Conf. on Image Processing for Missile Guidance. 28 July 1 Aug, San Diego, Calif., Vol. 238, pp. 376–380.
- Laws, K.I., 1980b. Textured Image Segmentation. PhD Thesis, Univ. of Southern California, Los Angeles.
- Lazarevic-McManus, N., Renno, J.R., Makris, D., Jones, G.A., 2008. An object-based comparative methodology for motion detection based on the F-Measure. Comput. Vision Image Understanding 111 (1), 74–85.
- Leavers, V.F., 1993. Which Hough transform? Comput. Vision Graph. Image Process.: Image Understanding 58 (2), 250–264.
- Leavers, V.F., Boyce, J.F., 1987. The Radon transform and its application to shape parametrization in machine vision. Image Vision Comput. 5, 161–166.
- Lebègue, X., Aggarwal, J.K., 1993. Significant line segments for an indoor mobile robot. IEEE Trans. Rob. Autom. 9 (6), 801–815.
- LeCun, Y., Boser, B., Denker, J.S., Henderson, D., Howard, R.E., Hubbard, W., Jackel, L. D., 1989. Backpropagation applied to handwritten zip code recognition. Neural Comput. 1 (4), 541–551.
- LeCun, Y., Bottou, L., Bengio, Y., Haffner, P., 1998. Gradient-based learning applied to document recognition. Proc. IEEE 86, 2278–2324.
- Lee, D.H. and Park, Y.T., 2006. Robust vehicle detection based on shadow classification. In: Proc. 18th Int. Conf. Pattern Recognition, Vol. 3, pp. 1167–1170.
- Lee, M.-S., Medioni, G., Mordohai, P., 2002. Inference of segmented overlapping surfaces from binocular stereo. IEEE Trans. Pattern Anal. Mach. Intell. 24 (6), 824–837.
- Lei, Y., Wong, K.C., 1999. Ellipse detection based on symmetry. Pattern Recognit. Lett. 20 (1), 41–47.
- Leibe, B., Seemann, E. and Schiele, B., 2005. Pedestrian detection in crowded scenes. In: Proc. Conf. on Computer Vision and Pattern Recognition.
- Lenc, K., and Vedaldi, A., 2015. R-CNN Minus R. arXiv:1506.06981 [cs.CV] 23 Jun.
- Lepetit, V., Moreno-Noguer, F., Fua, P., 2008. EPnP: An accurate O(n) solution to the PnP problem. Int. J. Comput. Vision 81 (2), 155–166.
- Lev, A., Zucker, S.W., Rosenfeld, A., 1977. Iterative enhancement of noisy images. IEEE Trans. Syst. Man Cybern. 7, 435–442.
- Levine, M.D., 1985. Vision in Man and Machine. McGraw-Hill, New York.
- Lézoray, O., Charrier, C., 2009. Color image segmentation using morphological clustering and fusion with automatic scale selection. Pattern Recognit. Lett. 30 (4), 397–406.
- Li, H. and Lavin, M.A., 1986. Fast Hough transform based on bintree data structure. In: Proc. Conf. Comput. Vision and Pattern Recognition. Miami Beach, Florida, pp. 640–642.

- Li, H., Lavin, M.A. and LeMaster, R.J., 1985. Fast Hough transform. In: Proc. Third Workshop on Comput. Vision: Representation and Control. Bellair, pp. 75–83.
- Li, L., Tan, C.L., 2010. Recognizing planar symbols with severe perspective deformation. IEEE Trans. Pattern Anal. Mach. Intell. 32 (4), 755–762.
- Li, P., Liu, X., Xiao, L., Song, Q., 2010. Robust and accurate iris segmentation in very noisy iris images. Image Vision Comput. 28, 246–253.
- Li, S.Z., Zhang, Z.Q., 2004. FloatBoost learning and statistical face detection. IEEE Trans. Pattern Anal. Mach. Intell. 26 (9), 1112–1123.
- Li, Z., Yang, J., Liu, G., Cheng, Y., Liu, C., 2011. Unsupervised range-constrained thresholding. Pattern Recognit. Lett. 32 (2), 392–402.
- Lian, G., Lai, J., Zheng, W.-S., 2011. Spatial—temporal consistent labeling of tracked pedestrians across non-overlapping camera views. Pattern Recognit. 44, 1121—1136.
- Liao, P.-S., Chen, T.-S., Chung, P.-C., 2001. A fast algorithm for multilevel thresholding. J. Inf. Sci. Eng. 17, 713–727.
- Lin, C.C., Chellappa, R., 1987. Classification of partial 2-D shapes using Fourier descriptors. IEEE Trans. Pattern Anal. Mach. Intell. 9, 686–690.
- Lindeberg, T., 1998. Feature detection with automatic scale selection. Int. J. Comput. Vision 30 (2), 79–116.
- Lippmann, R.P., 1987. An introduction to computing with neural nets. IEEE Acoust., Speech, Signal Process. Mag. 4 (2), 4–22.
- Liu, L., Sclaroff, S., 2004. Deformable model-guided region split and merge of image regions. Image Vision Comput. 22 (4), 343–354.
- Liu, M.L., Wong, K.H., 1999. Pose estimation using four corresponding points. Pattern Recognit. Lett. 20 (1), 69–74.
- Liu, W., Wen, X.-Z., Duan, B., Yuan, H., and Wang, N., 2007. Rear vehicle detection and tracking for lane change assist. In: Proc. IEEE Intelligent Vehicles Symposium. 13–15 June, pp. 252–257.
- Lladós, J., Martí, E., Villanueva, J.J., 2001. Symbol recognition by error-tolerant subgraph matching between region adjacency graphs. IEEE Trans. Pattern Anal. Mach. Intell. 23 (10), 1137–1143.
- Lockton, R. and Fitzgibbon, A., 2002. Real-time gesture recognition using deterministic boosting. In: Proc. British Machine Vision Assoc. Conf. 2–5 Sept., Cardiff, UK, pp. 817–826.
- Long, J., Shelhamer, E., and Darrell, T., 2015. Fully convolutional networks for semantic segmentation. In: Proc. IEEE Conf. on Computer Vision and Pattern Recognition. 7–12 June, Boston, MA, pp. 3431–3440.
- Longuet-Higgins, H.C., 1981. A computer algorithm for reconstructing a scene from two projections. Nature 293, 133–135.
- Longuet-Higgins, H.C., 1984. The visual ambiguity of a moving plane. Proc. Royal Soc. London, Ser. B 233, 165–175.
- Longuet-Higgins, H.C., Prazdny, K., 1980. The interpretation of a moving retinal image. Proc. Royal Soc. London, Ser. B 208, 385–397.
- Lowe, D., 2004. Distinctive image features from scale-invariant keypoints. Int. J. Comput. Vision 60, 91–110.
- Lowe, D.G., 1999. Object recognition from local scale-invariant features. In: Proc. Seventh Int. Conf. on Computer Vision (ICCV). Corfu, Greece, pp. 1150–1157.

- Lüdtke, N., Luo, B., Hancock, E. and Wilson, R.C., 2002. Corner detection using a mixture model of edge orientation. In: Proc. 16th Int. Conf. on Pattern Recognition. 11–15 Aug., Québec, Canada, Vol. II, pp. 574–577.
- Lukac, R., 2003. Adaptive vector median filtering. Pattern Recognit. Lett. 24 (12), 1889–1899.
- Luo, B., Hancock, E.R., 2001. Structural graph matching using the EM algorithm and singular value decomposition. IEEE Trans. Pattern Anal. Mach. Intell. 23 (10), 1120–1136.
- Luong, Q.-T., Faugeras, O., 1997. Self-calibration of a moving camera from point correspondences and fundamental matrices. Int. J. Comput. Vision 22 (3), 261–289.
- Lutton, E., Maître, H., Lopez-Krahe, J., 1994. Contribution to the determination of vanishing points using Hough transform. IEEE Trans. Pattern Anal. Mach. Intell. 16 (4), 430–438.
- Lyvers, E.R., Mitchell, O.R., 1988. Precision edge contrast and orientation estimation. IEEE Trans. Pattern Anal. Mach. Intell. 10, 927–937.
- Ma, L., Tan, T., Wang, Y., Zhang, D., 2003. Personal identification based on iris texture analysis. IEEE Trans. Pattern Anal. Mach. Intell. 25 (12), 1519–1533.
- Ma, Y., Derksen, H., Hong, W., Wright, J., 2007. Segmentation of multivariate mixed data via lossy data coding and compression. IEEE Trans. Pattern Anal. Mach. Intell. 29 (9), 1546–1562.
- Mackeown, W.P.J., Greenway, P., Thomas, B.T., Wright, W.A., 1994. Contextual image labelling with a neural network. IEE Proc. Vision Image Signal Process. 141 (4), 238–244.
- MacQueen, J.B., 1967. Some methods for classification and analysis of multivariate observations. In: Proc. Fifth Berkeley Symp. on Math. Stat. and Prob. Vol. I, pp. 281–297.
- Magee, D.R., 2004. Tracking multiple vehicles using foreground, background and motion models. Image Vision Comput. 22, 143–155.
- Magee, M.J., Aggarwal, J.K., 1984. Determining vanishing points from perspective images. Comput. Vision Graph. Image Process. 26 (2), 256–267.
- Makris, D., Ellis, T. and Black, J., 2004. Bridging the Gaps between Cameras. In: Proc. IEEE Conf. on Computer Vision and Pattern Recognition. Washington DC, USA, pp. 205–210.
- Manthalkar, R., Biswas, P.K., Chatterji, B.N., 2003. Rotation invariant texture classification using even symmetric Gabor filters. Pattern Recognit. Lett. 24 (12), 2061–2068.
- Marchant, J.A., 1996. Tracking of row structure in three crops using image analysis. Comput. Electron. Agric. 15, 161–179.
- Marchant, J.A., Brivot, R., 1995. Real-time tracking of plant rows using a Hough transform. Real-Time Imaging 1 (5), 363–371.
- Marchant, J.A., Onyango, C.M., 1995. Fitting grey level point distribution models to animals in scenes. Image Vision Comput. 13 (1), 3–12.
- Marchant, J.A., Tillett, R.D., Brivot, R., 1998. Real-time segmentation of plants and weeds. Real-Time Imaging 4, 243–253.
- Marr, D., 1976. Early processing of visual information. Philos. Trans. Royal Soc. London, Ser. B 275, 483–524.
- Marr, D., Hildreth, E., 1980. Theory of edge detection. Proc. Royal Soc. London, Ser. B 207, 187–217.

- Marr, D., Poggio, T., 1979. A computational theory of human stereo vision. Proc. Royal Soc. London, Ser. B 204, 301–328.
- Marshall, S., 2004. New direct design method for weighted order statistic filters. IEE Proc. Vision Image Signal Process. 151 (1), 1–8.
- Marshall, S., Harvey, N., Shah, D. (Eds.), 1998. Proc. Noblesse Workshop on Non-linear Model Based Image Analysis. Glasgow (1–3 July). Springer-Verlag, London.
- Marslin, R.F., Sullivan, G.D. and Baker, K.D., 1991. Kalman filters in constrained model based tracking. In: Proc. Second British Machine Vision Assoc. Conf. 23–26 Sept., Glasgow, pp. 371–374.
- Martino, L., Luengo, D., Míguez, J., 2012. Efficient sampling from truncated bivariate Gaussians via Box–Muller transformation. Electron. Lett. 48 (24), 1533–1534.
- Mastorakis, G., Davies, E.R., 2011. Improved line detection algorithm for locating road lane markings. Electron. Lett. 47 (3), 183–184.
- Matas, J., Chum, O., Urban, M., Pajdla, T., 2002. Robust wide baseline stereo from maximally stable extremal regions. Proc. British Machine Vision Conf. (BMVC). Cardiff University, UK, pp. 384–393.
- Mathias, M., Benenson, R., Pedersoli, M., and Van Gool, L., 2014. Face detection without bells and whistles. In: Proc. 13th European Conf. on Computer Vision. 8–11 September, Zurich, Switzerland.
- Maybank, S., 1992. Theory of Reconstruction from Image Motion. Springer-Verlag, Berlin, Heidelberg.
- Maybank, S. and Tan, T. (Eds.) (2004). Special issue: Visual Surveillance. Image Vision Comput. 22 (7), 515–582.
- Maybank, S.J., 1986. Algorithm for analysing optical flow based on the least squares method. Image Vision Comput. 4, 38–42.
- Maybank, S.J., 1996. Stochastic properties of the cross ratio. Pattern Recognit. Lett. 17 (3), 211–217.
- Maybank, S.J., Faugeras, O., 1992. A theory of self-calibration of a moving camera. Int. J. Comput. Vision 8 (2), 123–151.
- Maybeck, P.S., 1979. Stochastic Models, Estimation, and Control, Volume 1. Academic Press, New York and London.
- McFarlane, N.J.B., Schofield, C.P., 1995. Segmentation and tracking of piglets in images. Mach. Vision Appl. 8 (3), 187–193.
- McGunnigle, G., Chantler, M., 2003. Resolving handwriting from background printing using photometric stereo. Pattern Recognit. 36, 1869–1879.
- McGunnigle, G., Dong, J., 2011. Augmenting photometric stereo with coaxial illumination. IET Comput. Vision 5 (1), 33–49.
- McLoughlin, S., Deegan, C., Mulvihill, C., Fitzgerald, C., Markham, C., 2008. Mobile mapping for the automated analysis of road signage and delineation. IET Intel. Transport Syst. 2 (1), 61–73.
- Medina-Carnicer, R., Muñoz-Salinas, R., Carmona-Poyato, A., Madrid-Cuevas, F.J., 2011. A novel histogram transformation to improve the performance of thresholding methods in edge detection. Pattern Recognit. Lett. 32 (5), 676–693.
- Meer, P., Georgescu, B., 2001. Edge detection with embedded confidence. IEEE Trans. Pattern Anal. Mach. Intell. 23 (12), 1351–1365.
- Meer, P., Mintz, D. and Rosenfeld, A., 1990. Least median of squares based robust analysis of image structure. In: Proc. DARPA Image Understanding Workshop. 11–13 Sept., Pittsburgh, Pennsylvania, pp. 231–254.

- Meer, P., Mintz, D., Rosenfeld, A., Kim, D.Y., 1991. Robust regression methods for computer vision: a review. Int. J. Comput. Vision 6 (1), 59–70.
- Méler, A., Decrouez, M. and Crowley, J., 2010. BetaSAC: a new conditional sampling for RANSAC. In: Proc. British Machine Vision Assoc. Conf.
- Merlin, P.M., Farber, D.J., 1975. A parallel mechanism for detecting curves in pictures. IEEE Trans. Comput. 28, 96–98.
- Mikolajczyk, K., 2002. Interest Point Detection Invariant to Affine Transformations. PhD Thesis. Institut National Polytechnique de Grenoble (INPG), France.
- Mikolajczyk, K. and Schmid, C., 2002. An affine invariant interest point detector. In: Proc. European Conf. on Computer Vision (ECCV). Copenhagen, Denmark, pp. 128–142.
- Mikolajczyk, K., Schmid, C., 2004. Scale and affine invariant interest point detectors. Int. J. Comput. Vision 60 (1), 63–86.
- Mikolajczyk, K., Schmid, C., 2005. A performance evaluation of local descriptors. IEEE Trans. Pattern Anal. Mach. Intell. 27 (10), 1615–1630.
- Mikolajczyk, K., Tuytelaars, T., Schmid, C., Zisserman, A., Matas, J., Schaffalitzky, F., et al., 2005. A comparison of affine region detectors. Int. J. Comput. Vision 65, 43–72.
- Mikolov, T., Chen, K., Corrado, G., Dean, J., 2013. Efficient Estimation of Word Representations in Vector Space. arXiv:1301.3781v3 [cs.CL] 7 Sep.
- Min, T.-H., Park, R.-H., 2009. Eyelid and eyelash detection method in the normalized iris image using the parabolic Hough model and Otsu's thresholding method. Pattern Recognit. Lett. 30, 1138–1143.
- Minsky, M.L., Papert, S.A., 1969. Perceptrons. MIT Press, Cambridge.
- Mirmehdi, M., Petrou, M., 2000. Segmentation of colour textures. IEEE Trans. Pattern Anal. Mach. Intell. 22 (2), 142–159.
- Mirmehdi, M., Xie, X., Suri, J. (Eds.), 2008. Handbook of Texture Analysis. Imperial College Press, London.
- Mishra, A.K., Fieguth, P.W., Clausi, D.A., 2011. Decoupled active contour (DAC) for boundary detection. IEEE Trans. Pattern Anal. Mach. Intell. 33 (2), 310–324.
- Mohr, R. and Wu, C. (Eds.), 1998. In: Special Issue on Geometric Modelling and Invariants for Computer Vision, Image Vision Computing. 16, 1.
- Mokhtarian, F., Bober, M., 2003. Curvature Scale Space Representation: Theory, Applications and MPEG-7 Standardisation. Kluwer Academic Publishers, Dordrecht.
- Mokhtarian, F., Abbasi, S., Kittler, J., 1996. Efficient and robust shape retrieval by shape content through curvature scale space. In: Proc. 1st Int. Conf. Image Database and Multi-Search, pp. 35–42.
- Montiel, E., Aguado, A.S., Nixon, M.S., 2001. Improving the Hough transform gathering process for affine transformations. Pattern Recognit. Lett. 22 (9), 959–969.
- Moravec, H.P., 1977. Towards automatic visual obstacle avoidance. In: Proc. Fifth Int. Joint. Conf. on Artificial Intelligence. 22–25 August, Cambridge, MA, pp. 584.
- Moravec, H.P., 1980. Obstacle avoidance and navigation in the real world by a seeing robot rover. Stanford Artif. Intell. Lab. Memo AIM-340.
- Mori, G., Belongie, S., Malik, J., 2005. Efficient shape matching using shape contexts. IEEE Trans. Pattern Anal. Mach. Intell. 27 (11), 1832–1837.
- Mundy, J.L. and Zisserman, A. (Eds.), 1992a. Geometric Invariance Computer Vision. MIT Press, Cambridge, MA.
- Mundy, J.L. and Zisserman, A., 1992b. Appendix—Projective Geometry for Machine Vision. In Mundy, J.L. and Zisserman, A. (Eds.) (1992a), op. cit., pp. 463–519.

- Myatt, D.R., Torr, P.H.S., Nasuto, S.J., Bishop, J.M., Craddock, R., 2002. Napsac: high noise, high dimensional robust estimation it's in the bag. Proc. British Machine Vision Assoc. Conf. 458–467.
- Nagao, M., Matsuyama, T., 1979. Edge preserving smoothing. Comput. Graph. Image Process. 9, 394–407.
- Nagel, H.-H., 1983. Displacement vectors derived from second-order intensity variations in image sequences. Comput. Vision Graph. Image Process. 21, 85–117.
- Nagel, H.-H., 1986. Image sequences ten (octal) years–from phenomenology towards a theoretical foundation. In: Proc. Eighth Int. Conf. on Pattern Recognition. 27–31 October, Paris, pp. 1174–1185.
- Nagel, R.N., Rosenfeld, A., 1972. Ordered search techniques in template matching. Proc. IEEE 60, 242–244.
- Nait-Charif, H. and McKenna, S.J., 2004. Tracking poorly modelled motion using particle filters with iterated likelihood weighting. In: Proc. Asian Conf. on Computer Vision. Jeju Island, Korea, pp. 156–161.
- Nait-Charif, H., McKenna, S.J., 2006. Tracking the activity of participants in a meeting. Mach. Vision Appl. 17 (2), 83–93.
- Nakagawa, Y., Rosenfeld, A., 1979. Some experiments on variable thresholding. Pattern Recognit. 11, 191–204.
- Narendra, P.M., 1978. A separable median filter for image noise smoothing. In: Proc. IEEE Computer Soc. Conf. on Pattern Recognition and Image Process. 31 May—2 June, Chicago, pp. 137—141.
- Ng, H.-F., 2006. Automatic thresholding for defect detection. Pattern Recognit. Lett. 27 (14), 1644–1649.
- Ni, K., Jin, H. and Dellaert, F., 2009. GroupSAC: Efficient consensus in the presence of groupings. In: Proc. Int. Conf. on Computer Vision. October, Kyoto, Japan.
- Niblack, W., 1985. An Introduction to Digital Image Processing. Strandberg, Birkeroed, Denmark.
- Nieminen, A., Heinonen, P., Neuvo, Y., 1987. A new class of detail-preserving filters for image processing. IEEE Trans. Pattern Anal. Mach. Intell. 9, 74–90.
- Nilsson, N.J., 1965. Learning Machines—Foundations of Trainable Pattern-Classifying Systems. McGraw-Hill, New York.
- Nitzan, D., Brain, A.E., Duda, R.O., 1977. The measurement and use of registered reflectance and range data in scene analysis. Proc. IEEE 65, 206–220.
- Nixon, M., 1985. Application of the Hough transform to correct for linear variation of background illumination in images. Pattern Recognit. Lett. 3, 191–194.
- Nixon, M., Aguado, A., 2008. Feature Extraction and Image Processing, second ed. Academic Press, Oxford, UK.
- Nixon, M.S., Tan, T.N., Chellappa, R., 2006. Human Identification Based on Gait. Springer, New York.
- Noble, J.A., 1988. Finding corners. Image Vision Comput. 6, 121–128.
- Noh, H., Hong, S., Han, B., 2015. Learning deconvolution network for semantic segmentation. In: Proc. IEEE Int. Conf. on Computer Vision. 13–16 December, Santiago, Chile, pp. 1520–1528. See also arXiv:1505.04366v1 [cs.CV] 17 May.
- North, D.O., 1943. An analysis of the factors which determine signal/noise discrimination in pulsed-carrier systems. In: Rep. PTR-6C; Reprinted in Proc. IEEE 51, 1963, RCA Lab., Princeton, NJ, pp. 1016–1027.

- Noyce, R.N., 1977. Microelectronics. Sci. Am. 237 (September), 62-69.
- Nummiaro, K., Koller-Meier, E., Van Gool, L., 2003. An adaptive color-based particle filter. Image Vision Comput. 21 (1), 99–110.
- O'Gorman, F., 1978. Edge detection using Walsh functions. Artif. Intell. 10, 215-223.
- O'Gorman, F., Clowes, M.B., 1976. Finding picture edges through collinearity of feature points. IEEE Trans. Comput. 25, 449–456.
- Ohanian, P.P., Dubes, R.C., 1992. Performance evaluation for four classes of textural features. Pattern Recognit. 25, 819–833.
- Ohta, Y., Maenobu, K. and Sakai, T., 1981. Obtaining surface orientation from texels under perspective projection. In: Proc. Seventh Int. Joint Conf. on Artif. Intell. Vancouver, pp. 746–751.
- Oja, E., 1982. A simplified neuron model as a principal component analyzer. Int. J. Neural. Syst. 1, 61–68.
- Ojala, T., Pietikäinen, M., Mäenpää, T., 2002. Multiresolution gray-scale and rotation-invariant texture classification with local binary patterns. IEEE Trans. Pattern Anal. Mach. Intell. 24 (7), 971–987.
- Olague, G. and Hernández, B., 2002. Flexible model-based multi-corner detector for accurate measurements and recognition. In: Proc. 16th Int. Conf. on Pattern Recognition. 11–15 Aug., Québec, Canada, Vol. II, pp. 578–583.
- Olson, C.F., 1998. Improving the generalized Hough transform through imperfect grouping. In Davies, E.R. and Atiquzzaman, M. (Eds.), Special Issue on Projection-Based Transforms, Image Vision Computing. 16 (9–10), 627–634.
- Olson, C.F., 1999. Constrained Hough transforms for curve detection. Comput. Vision Image Understanding 73 (3), 329–345.
- Onyango, C.M., Marchant, J.A., 1996. Modelling grey level surfaces using three-dimensional point distribution models. Image Vision Comput. 14, 733–739.
- Ooms, D., Palm, R., Leemans, V., Destain, M.-F., 2010. A sorting optimization curve with quality and yield requirements. Pattern Recognit. Lett. 31 (9), 983–990.
- Osteen, R.E., Tou, J.T., 1973. A clique-detection algorithm based on neighbourhoods in graphs. Int. J. Comput. Inf. Sci. 2, 257–268.
- Otsu, N., 1979. A threshold selection method from gray-level histograms. IEEE Trans. Syst. Man Cybern. 9 (1), 62–66.
- Pal, N.R., Pal, S.K., 1989. Object-background segmentation using new definitions of entropy. IEE Proc. E 136 (4), 284–295.
- Paler, K., Kittler, J., 1983. Greylevel edge thinning: a new method. Pattern Recognit. Lett. 1, 409–416.
- Paler, K., Föglein, J., Illingworth, J., Kittler, J., 1984. Local ordered grey levels as an aid to corner detection. Pattern Recognit. 17, 535–543.
- Pan, X.-B., Brady, M., Bowman, A.K., Crowther, C., Tomlin, R.S.O., 2004. Enhancement and feature extraction for images of incised and ink texts. Image Vision Comput. 22 (6), 443–451.
- Pan, X.D., Ellis, T.J. and Clarke, T.A., 1995. Robust tracking of circular features. In: Proc. Sixth British Machine Vision Assoc. Conf. 11–14 Sept., Birmingham, pp. 553–562.
- Panda, D.P., Rosenfeld, A., 1978. Image segmentation by pixel classification in (gray level, edge value) space. IEEE Trans. Comput. 27, 875–879.
- Papadakis, N., Bugeau, A., 2011. Tracking with occlusions via graph cuts. IEEE Trans. Pattern Anal. Mach. Intell. 33 (1), 144–157.

- Paragios, N., Deriche, R., 2000. Geodesic active contours and level sets for the detection and tracking of moving objects. IEEE Trans. Pattern Anal. Mach. Intell. 22 (3), 266–280.
- Parker, D.B., 1985. Learning-logic: casting the cortex of the human brain in silicon. Technical Report TR-47, Center for Comput. Res. in Economics and Management Sci., MIT, Cambridge, MA.
- Parker, J.R., 1994. Practical Computer Vision Using C. Wiley, New York.
- Patel, D., Hannah, I. and Davies, E.R., 1994. Texture analysis for foreign object detection using a single layer neural network. In: Proc. IEEE Int. Conf. on Neural Networks. 28 June-2 July, Florida, Vol. VII, pp. 4265-4268.
- Pavlidis, T., 1980. Algorithms for shape analysis of contours and waveforms. IEEE Trans. Pattern Anal. Mach. Intell. 2, 301–312.
- Pearl, J., 1988. Probabilistic Reasoning in Intelligent Systems: Networks of Plausible Inference. Morgan Kaufmann, San Mateo, CA.
- Pearson, K., 1901. On lines and planes of closest fit to systems of points in space. Philos. Mag. 2, 559–572.
- Pelillo, M., 1999. Replicator equations, maximal cliques and graph isomorphism. Neural Comput. 11 (8), 1933–1955.
- Pentland, A.P., 1984. Fractal-based description of natural scenes. IEEE Trans. Pattern Anal. Mach. Intell. 6 (6), 661–674.
- Perdoch, M., Matas, J. and Obdrzalek, S., 2007. Stable affine frames on isophotes. In: Proc. Int. Conf. on Computer Vision (ICCV).
- Persoon, E., Fu, K.-S., 1977. Shape discrimination using Fourier descriptors. IEEE Trans. Syst. Man Cybern. 7, 170–179.
- Petrou, M. and Kittler, J., 1988. On the optimal edge detector. In: Proc. Fourth Alvey Vision Conf. 31 August—2 September, Manchester, pp. 191—196.
- Petrou, M., Petrou, C., 2010. Image Processing: The Fundamentals, second ed. John Wiley and Sons, Ltd, Chichester, UK.
- Petrou, M., Sevilla, P.G., 2006. Image Processing: Dealing With Texture. Wiley, Chichester, UK.
- Pfaltz, J.L., Rosenfeld, A., 1967. Computer representation of planar regions by their skeletons. Commun. ACM 10, 119–125.
- Pflugfelder, R. and Bischof, H., 2008. Tracking across non-overlapping views via geometry. In: Proc. IEEE Int. Conf. on Pattern Recognition.
- Pflugfelder, R., Bischof, H., 2010. Localization and trajectory reconstruction in surveillance cameras with nonoverlapping views. IEEE Trans. Pattern Anal. Mach. Intell. 32 (4), 709–721.
- Phong, B.-T., 1975. Illumination for computer-generated pictures. Commun. ACM 18, 311–317.
- Pietikäinen, M., Rosenfeld, A., Davis, L.S., 1983. Experiments with texture classification using averages of local pattern matches. IEEE Trans. Syst. Man Cybern. 13 (3), 421–426.
- Pike, M.C., 1965. Algorithm 267: random normal deviate [g5]. Commun. ACM 8 (10), 606
- Pitt, M.K., Shephard, N., 1999. Filtering via simulation: auxiliary particle filters. J. Am. Stat. Assoc. 94 (446), 590–599.
- Plummer, A.P.N., Dale, F., 1984. The Picture Processing Language Compiler Manual. National Physical Laboratory, Teddington.

- Pollard, S.B., Porrill, J., Mayhew, J.E.W., Frisby, J.P., 1987. Matching geometrical descriptions in three-space. Image Vision Comput. 5 (2), 73–78.
- Postaire, J.G., Touzani, A., 1989. Mode boundary detection by relaxation for cluster analysis. Pattern Recognit. 22 (5), 477–489.
- Prati, A., Mikić, I., Trivedi, M.M., Cucchiara, R., 2003. Detecting moving shadows: algorithms and evaluation. IEEE Trans. Pattern Anal. Mach. Intell. 25 (7), 918–923.
- Pratt, W.K., 2001. Digital Image Processing, second ed. Wiley-Interscience, New York, USA.
- Press, W.H., Teukolsky, S.A., Vetterling, W.T., Flannery, B.P., 1992. Numerical Recipes in C. The Art of Scientific Computing, second ed. Cambridge Univ. Press, Cambridge.
- Press, W.H., Teukolsky, S.A., Vetterling, W.T., Flannery, B.P., 1997. Numerical Recipes in C, second ed. Cambridge University Press, Cambridge.
- Prewitt, J.M.S., 1970. Object enhancement and extraction. In: Lipkin, B.S., Rosenfeld, A. (Eds.), Picture Processing and Psychopictorics. Academic Press, New York, pp. 75–149.
- Prieto, M.S., Allen, A.R., 2003. A similarity metric for edge images. IEEE Trans. Pattern Anal. Mach. Intell. 25 (10), 1265–1273.
- Prieto, M.S., Allen, A.R., 2009. Using self-organising maps in the detection and recognition of road signs. Image Vision Comput. 27, 673–683.
- Princen, J., Illingworth, J. and Kittler, J., 1989a. A hierarchical approach to line extraction. In: Proc. IEEE Computer Vision and Pattern Recognition Conf. San Diego, pp. 92–97.
- Princen, J., Yuen, H.K., Illingworth, J. and Kittler, J., 1989b. Properties of the adaptive Hough transform. In: Proc. Sixth Scand. Conf. on Image Analysis. 19–22 June, Oulu, Finland, pp. 613–620.
- Princen, J., Illingworth, J., Kittler, J., 1994. Hypothesis testing: a framework for analyzing and optimizing Hough transform performance. IEEE Trans. Pattern Anal. Mach. Intell. 16 (4), 329–341.
- Pringle, K.K., 1969. Visual perception by a computer. In: Grasselli, A. (Ed.), Automatic Interpretation and Classification of Images. Academic Press, New York, pp. 277–284.
- Pritchard, D., Heidrich, W., 2003. Cloth motion capture. Comput. Graphics Forum (Eurographics 2003) 22 (3), 263–271.
- Pun, C.-M., Lee, M.-C., 2003. Log-polar wavelet energy signatures for rotation and scale invariant texture classification. IEEE Trans. Pattern Anal. Mach. Intell. 25 (5), 590–603.
- Pun, T., 1980. A new method for grey-level picture thresholding using the entropy of the histogram. Signal Process. 2, 223–237.
- Pun, T., 1981. Entropic thresholding, a new approach. Comput. Graph. Image Process. 16, 210–239.
- Rabbani, H., Gazor, S., 2010. Image denoising employing local mixture models in sparse domains. IET Image Process. 4 (5), 413–428.
- Rajashekhar, Chaudhuri, S., Namboodiri, V.P., 2007. Retrieval of images of man-made structures based on projective invariance. Pattern Recognit. 40, 296–308.
- Ramanan, D., 2006. Learning to parse images of articulated bodies. In: Proc. Neural Information Processing Systems Conf. pp. 1129–1136.
- Rätsch, G., Mika, S., Schölkopf, B., Müller, K.-R., 2002. Constructing boosting algorithms from SVMs: an application to one-class classification. IEEE Trans. Pattern Anal. Mach. Intell. 24 (9), 1184–1199.

- Ravanbakhsh, M., Mousavi, H., Rastegari, M., Murino, V., and Davis, L.S., 2015. Action Recognition with Image Based CNN Features. arXiv:1512.03980v1 [cs.CV] 13 Dec.
- Redmon, J., Farhadi, A., 2016. YOLO9000: Better, Faster, Stronger. arXiv:1612.08242v1 [cs.CV] 25 Dec.
- Redmon, J., Divvala, S., Girshick, R., and Farhadi, A., 2015. You Only Look Once: Unified, Real-time Object Detection. arXiv:1506.02640 [cs.CV] 8 Jun.
- Reed, T.R., Du Buf, J.M.H., 1993. A review of recent texture segmentation and feature extraction techniques. Comput. Vision Graph. Image Process.: Image Understanding 57, 359–372.
- Reeves, A.P., Akey, M.L. and Mitchell, O.R., 1983. A moment-based two-dimensional edge operator. In: Proc. IEEE Computer Soc. Conf. on Comput. Vision and Pattern Recognition. 19–23 June, pp. 312–317.
- Ren, J., Jiang, J., Wang, D., Ipson, S.S., 2010. Fusion of intensity and inter-component chromatic difference for effective and robust colour edge detection. IET Image Process. 4 (4), 294–301.
- Ren, S., He, K., Girshick, R., and Sun, J., 2015. Faster R-CNN: towards Real-time Object Detection with Region Proposal Networks. arXiv:1506.01497 [cs.CV] 4 Jun.
- Rindfleisch, T., 1966. Photometric method for lunar topography. Photogramm. Eng. 32, 262-276.
- Ringer, M. and Lazenby, J., 2000. Modelling and tracking articulated motion from multiple camera views. In: Proc. 11th British Machine Vision Assoc. Conf. 11–14 Sept., Bristol, UK, pp. 172–181.
- Rish, I., 2001. An empirical study of the naive Bayes classifier. In: Proc. IJCAI-01 Workshop on Empirical Methods in AI, Int. Jt. Conf. on Artificial Intelligence. pp. 41–46.
- Robert, L., 1996. Camera calibration without feature extraction. Comput. Vision Image Understanding 63 (2), 314–325.
- Roberts, L.G., 1965. Machine perception of three-dimensional solids. In: Tippett, J., et al., (Eds.), Optical and Electro-optical Information Processing. MIT Press, Cambridge, MA, pp. 159–197.
- Robinson, G.S., 1977. Edge detection by compass gradient masks. Comput. Graph. Image Process. 6, 492–501.
- Robles-Kelly, A. and Hancock, E.R., 2002. A graph-spectral approach to correspondence matching. In: Proc. 16th Int. Conf. on Pattern Recognition. 11–15 Aug., Québec, Canada, Vol. IV, pp. 176–179.
- Rocket, P.I., 2003. Performance assessment of feature detection algorithms: a methodology and case study of corner detectors. IEEE Trans. Image Process. 12 (12), 1668–1676.
- Rodríguez, J.J., García-Osorio, C., Maudes, J., 2010. Forests of nested dichotomies. Pattern Recognit. Lett. 31, 125–132.
- Rogers, D.F., 1985. Procedural Elements for Computer Graphics. McGraw-Hill, New York.
- Rosenblatt, F., 1958. The perceptron: a probabilistic model for information storage and organisation in the brain. Psychol. Rev. 65, 386–408.
- Rosenblatt, F., 1962. Principles of Neurodynamics. Spartan, New York.
- Rosenfeld, A., 1969. Picture Processing by Computer. Academic Press, New York.
- Rosenfeld, A., 1970. Connectivity in digital pictures. J. ACM 17, 146-160.
- Rosenfeld, A., Pfaltz, J.L., 1966. Sequential operations in digital picture processing. J. ACM 13, 471–494.

- Rosenfeld, A., Pfaltz, J.L., 1968. Distance functions on digital pictures. Pattern Recognit. 1, 33–61.
- Rosenfeld, A., Troy, E.B., 1970a. Visual texture analysis. Computer Science Center, Univ. of Maryland Techn. Report TR-116.
- Rosenfeld, A. and Troy, E.B., 1970b. Visual texture analysis. In: Conf. Record for Symposium on Feature Extraction and Selection in Pattern Recognition. Oct., Argonne, Ill, IEEE Publication 70C-51C, pp. 115–124.
- Rosenfeld, A., VanderBrug, G.J., 1977. Coarse-fine template matching. IEEE Trans. Syst. Man Cybern. 7, 104–107.
- Rosenfeld, A., de la Torre, P., 1983. Histogram concavity analysis as an aid in threshold selection. IEEE Trans. Syst. Man Cybern. 13 (3), 231–235.
- Rosenfeld, A., Hummel, R.A., Zucker, S.W., 1976. Scene labelling by relaxation operations. IEEE Trans. Syst. Man Cybern. 6, 420–433.
- Rosie, A.M., 1966. Information and Communication Theory. Blackie, London.
- Rosin, P., 2000. Fitting superellipses. IEEE Trans. Pattern Anal. Mach. Intell. 22 (7), 726–732.
- Rosin, P.L., 2001. Unimodal thresholding. Pattern Recognit. 34 (11), 2083-2096.
- Rosin, P.L., West, G.A.W., 1995. Curve segmentation and representation by superellipses. IEE Proc. Vision Image Signal Process. 142 (5), 280–288.
- Rosten, E., Porter, R., Drummond, T., 2010. Faster and better: a machine learning approach to corner detection. IEEE Trans. Pattern Anal. Mach. Intell. 32 (1), 105–119.
- Roth, G. and Whitehead, A., 2002. Some improvements on two autocalibration algorithms based on the fundamental matrix. In: Proc. 16th Int. Conf. on Pattern Recognition. 11–15 Aug., Québec, Canada, Vol. II, pp. 312–315.
- Rother, C. and Carlsson, S., 2001. Linear multi view reconstruction and camera recovery. In: Proc. Eighth IEEE Int. Conf. on Computer Vision, Vancouver.
- Rothwell, C.A., 1995. Object Recognition through Invariant Indexing. Oxford University Press, Oxford.
- Rothwell, C.A., Zisserman, A., Forsyth, D.A. and Mundy, J.L., 1992a. Canonical frames for planar object recognition. In: Proc Second European Conf. on Computer Vision, Santa Margherita Ligure. 19–22 May, Italy, pp. 757–772.
- Rothwell, C.A., Zisserman, A., Marinos, C.I., Forsyth, D.A., Mundy, J.L., 1992b. Relative motion and pose from arbitrary plane curves. Image Vision Comput. 10 (4), 250–262.
- Rousseeuw, P.J., 1984. Least median of squares regression. J. Am. Stat. Assoc. 79 (388), 871–880.
- Rousseeuw, P.J., Leroy, A.M., 1987. Robust Regression and Outlier Detection. Wiley, New York.
- Rowley, H., Baluja, S., Kanade, T., 1998. Neural network-based face detection. IEEE Trans. Pattern Anal. Mach. Intell. 20 (1), 23–38.
- Roy, P.P., Pal, U., Lladós, J., 2011. Document seal detection using GHT and character proximity graphs. Pattern Recognit. 44, 1282–1295.
- Rubinstein, R.Y., Kroese, D.P., 2007. Simulation and the Monte Carlo Method, second ed. Wiley, Hoboken, NJ, USA.
- Rumelhart, D.E., Hinton, G.E., Williams, R.J., 1986. Learning internal representations by error propagation. In: Rumelhart, D.E., McClelland, J.L. (Eds.), Parallel Distributed Processing: Explorations in the Microstructure of Cognition. The MIT Press, Cambridge, Mass, pp. 318–362.
- Rummel, P., Beutel, W., 1984. Workpiece recognition and inspection by a model-based scene analysis system. Pattern Recognit. 17, 141–148.

- Ruta, A., Li, Y., Liu, X., 2010. Real-time traffic sign recognition from video by class-specific discriminative features. Pattern Recognit. 43, 416–430.
- Rutovitz, D., 1970. Centromere finding: some shape descriptors for small chromosome outlines. In: Meltzer, B., Michie, D. (Eds.), Machine Intelligence 5. Edinburgh University Press, Edinburgh, pp. 435–462.
- Sagonas, C., Panagakis, Y., Zafeiriou, S., Pantic, M., 2015. Face Frontalization for Alignment and Recognition. arXiv:1502.00852v1 [cs.CV] 3 Feb.
- Sagonas, C., Panagakis, Y., Zafeiriou, S., Pantic, M., 2016. Robust statistical frontalization of human and animal faces. Int. J. Computer Vision. Springer, http://dx.doi.org/ 10.1007/s11263-016-0920-7, published online 20 July 2016.
- Sahoo, P.K., Soltani, S., Wong, A.K.C., Chen, Y.C., 1988. A survey of thresholding techniques. Comput. Vision Graph. Image Process 41, 233–260.
- Sakarya, U., Erkmen, I., 2003. An improved method of photometric stereo using local shape from shading. Image Vision Comput. 21 (11), 941–954.
- Sanchiz, J.M., Pla, F., Marchant, J.A., Brivot, R., 1996. Structure from motion techniques applied to crop field mapping. Image Vision Comput. 14, 353–363.
- Sanfeliu, A., Fu, K.S., 1983. A distance measure between attributed relational graphs for pattern recognition. IEEE Trans. Syst. Man Cybern. 13 (3), 353–362.
- Sangwine, S.J., Horne, R.E.N. (Eds.), 1998. The Colour Image Processing Handbook. Chapman and Hall, London.
- Schaffalitsky, F., Zisserman, A., 2000. Planar grouping for automatic detection of vanishing lines and points. Image Vision Comput. 18 (9), 647–658.
- Schapire, R.E., 1990. The strength of weak learnability. Mach. Learn. 5 (2), 197–227.
- Schildt, H., 1995. C++, the Complete Reference, third ed. McGraw-Hill, Osborne.
- Schmid, C., Mohr, R., Bauckhage, C., 2000. Evaluation of interest point detectors. Int. J. Comput. Vision 37 (2), 151–172.
- Schmidt, J., Fritsch, J. and Kwolek, B., 2006. Kernel particle filter for real-time 3D body tracking in monocular color images. In: Proc. IEEE Int. Conf. on Automatic Face and Gesture Recognition. Southampton, UK, pp. 567–572.
- Schneiderman, H., Nashman, M., Wavering, A.J., Lumia, R., 1995. Vision-based robotic convoy driving. Mach. Vision Appl. 8 (6), 359–364.
- Schölkopf, B., Smola, A., Müller, K.R., 1997. Kernel principal component analysis. Int. Conf. Artif. Neural Networks 583–588.
- Scott, G.L., 1988. Local and Global Interpretation of Moving Images. Pitman/Morgan Kaufmann, London/San Mateo, CA.
- Sebe, N., Lew, M.S., 2003. Comparing salient point detectors. Pattern Recognit. Lett. 24 (1-3), 89-96.
- Sebe, N., Tian, Q., Loupias, E., Lew, M.S., Huang, T.S., 2003. Evaluation of salient point techniques. Image Vision Comput. 21 (13–14), 1087–1095.
- Semple, J.G., Kneebone, G.T., 1952. Algebraic Projective Geometry. Oxford University Press, Oxford.
- Ser, P.-K., Siu, W.-C., 1995. Novel detection of conics using 2-D Hough planes. IEE Proc. Vision Image Signal Process. 142 (5), 262–270.
- Serra, J., 1982. Image Analysis and Mathematical Morphology. Academic Press, New York.
- Sewisy, A.A., Leberl, F., 2001. Detection ellipses by finding lines of symmetry in the images via an hough transform applied to straight lines. Image Vision Comput. 19 (12), 857–866.

- Sezgin, M., Sankur, B., 2004. Survey over image thresholding techniques and quantitative performance evaluation. J. Electron. Imaging 13 (1), 146–168.
- Sfikas, G., Nikou, C., and Galatsanos, N., 2007. Robust image segmentation with mixtures of Student's t-distributions. In: Proc. IEEE Int. Conf. on Image Processing. Vol. I, pp. 273–276.
- Shah, M.A., Jain, R., 1984. Detecting time-varying corners. Comput. Vision Graph. Image Process 28, 345–355.
- Shakespeare, W., 1599. The Tragedy of Julius Caesar.
- Shapiro, L.G., Haralick, R.M., 1985. A metric for comparing relational descriptions. IEEE Trans. Pattern Anal. Mach. Intell. 7 (1), 90–94.
- Shen, F., Wang, H., 2002. Corner detection based on modified Hough transform. Pattern Recognit. Lett. 23 (8), 1039–1049.
- Shen, X., Hogg, D., 1995. 3D shape recovery using a deformable model. Image Vision Comput. 13 (5), 377–383.
- Shima, T., Saito, S., Nakajima, M., 2010. Design and evaluation of more accurate gradient operators on hexagonal lattices. IEEE Trans. Pattern Anal. Mach. Intell. 32 (6), 961–973.
- Shioyama, T., Uddin, M.S., 2004. Detection of pedestrian crossings with projective invariants from image data. Meas. Sci. Technol. 15, 2400–2405.
- Shirai, Y., 1972. Recognition of polyhedra with a range finder. Pattern Recognit. 4, 243–250.
- Shirai, Y., 1987. Three-dimensional Computer Vision. Springer-Verlag, Berlin.
- Shufelt, J.A., 1999. Performance evaluation and analysis of vanishing point detection techniques. IEEE Trans. Pattern Anal. Mach. Intell. 21 (3), 282–288.
- Shuster, R., Ansari, N., Bani-Hashemi, A., 1993. Steering a robot with vanishing points. IEEE Trans. Rob. Autom. 9 (4), 491–498.
- Siebel, N.T. and Maybank, S.J., 2002. Fusion of multiple tracking algorithms for robust people tracking. In: Heyden, A., Sparr, G., Nielsen, M. and Johansen, P. (Eds.), Proc. Seventh European Conf. on Computer Vision (ECCV). Vol. IV, pp. 373–387.
- Siegel, A.F., 1982. Robust regression using repeated medians. Biometrika 69 (1), 242–244.
- Silberberg, T.M., Davies, L., Harwood, D., 1984. An iterative Hough procedure for three-dimensional object recognition. Pattern Recognit. 17, 621–629.
- Silletti, A., Abate, A., Axelrod, J.D., Tomlin, C.J., 2011. Versatile spectral methods for point set matching. Pattern Recognit. Lett. 32 (5), 731–739.
- Simard, P., Bottou, L., Haffner, P., LeCun, Y., 1999. Boxlets: a fast convolution algorithm for neural networks and signal processing, Advances in Neural Information Processing Systems, 11. MIT Press, Cambridge, MA, USA.
- Simonyan K., and Zisserman, A., 2015. Very Deep Convolutional Networks for Large-scale Image Recognition. arXiv:1409.1556v6 10 Apr.
- Simonyan, K., Vedaldi, A., Zisserman, A., 2014. Deep Inside Convolutional Networks: Visualising Image Classification Models and Saliency Maps. arXiv:1312.6034v2 [cs. CV] 19 Apr.
- Sirovich, L., Kirby, M., 1987. A two-dimensional procedure for the characterization of human faces. J. Opt. Soc. Am. 4 (3), 519–524.
- Sjöberg, F., Bergholm, F., 1988. Extraction of diffuse edges by edge focussing. Pattern Recognit. Lett. 7, 181–190.
- Sklansky, J., 1970. Recognition of convex blobs. Pattern Recognit. 2, 3–10.

- Sklansky, J., 1978. On the Hough technique for curve detection. IEEE Trans. Comput. 27, 923–926.
- Sklansky, J., Cordella, L.P., Levialdi, S., 1976. Parallel detection of concavities in cellular blobs. IEEE Trans. Comput. 25, 187–196.
- Slama, C.C. (Ed.), 1980. Manual of Photogrammetry, fourth ed. Amer. Soc. of Photogrammetry, Falls Church, VA.
- Smith, S., Brady, J.M., 1997. Susan a new approach to low level image processing. Int. J. Comput. Vision 23 (1), 45–78.
- Smolka, B., 2010. Peer group switching filter for impulse noise reduction in color images. Pattern Recognit. Lett. 31 (6), 484–495.
- Soille, P., 2003. Morphological Image Analysis: Principles and Applications, second ed. Springer-Verlag, Heidelberg.
- Soille, P., Vogt, P., 2009. Morphological segmentation of binary patterns. Pattern Recognit. Lett. 30 (4), 456–459.
- Song, J., Cai, M., Lyu, M. and Cai, S., 2002. A new approach for line recognition in largesize images using Hough transform. In: Proc. 16th Int. Conf. on Pattern Recognition. 11–15 Aug., Québec, Canada, Vol. I, pp. 33–36.
- Sonka, M., Hlavac, V., Boyle, R., 2007. Image Processing, Analysis, and Machine Vision, third ed. Thomson Engineering, Toronto, Canada.
- Spence, A., Robb, M., Timmins, M., Chantler, M., 2004. Real-time per-pixel rendering of textiles for virtual textile catalogues. Int. J. Clothing Sci. Technol. 16 (1/2).
- Startchik, S., Milanese, R., Pun, T., 1998. Projective and illumination invariant representation of disjoint shapes. Image Vision Comput. 16 (9–10), 713–723.
- Stauffer, C., and Grimson, W.E.L., 1999. Adaptive background mixture models for real-time tracking. In: Proc. IEEE Conf. on Computer Vision and Pattern Recognition. 23–25 June, Ft. Collins, CO, pp. 246–252.
- Steele, J.M., Steiger, W.L., 1986. Algorithms and complexity for least median of squares regression. Discrete Appl. Math. 14, 93–100.
- Stella, E., Lovergine, F.P., D'Orazio, T., Distante, A., 1995. A visual tracking technique suitable for control of convoys. Pattern Recognit. Lett. 16 (9), 925–932.
- Stephens, R.S., 1991. Probabilistic approach to the Hough transform. Image Vision Comput. 9 (1), 66–71.
- Stevens, K., 1980. Surface perception from local analysis of texture and contour. MIT Artif. Intell. Lab. Memo AI-TR-512.
- Stockman, G.C., Agrawala, A.K., 1977. Equivalence of Hough curve detection to template matching. Commun. ACM 20, 820–822.
- Straforini, M., Coelho, C., Campani, M., 1993. Extraction of vanishing points from images of indoor and outdoor scenes. Image Vision Comput. 11 (2), 91–99.
- Stroustrup, B., 1997. The C++ Programming Language, third ed. Addison-Wesley, Reading, MA, USA.
- Sturm, P., 2000. A case against Kruppa's equations for camera self-calibration. IEEE Trans. Pattern Anal. Mach. Intell. 22 (10), 1199–1204.
- Sugrue, M., Davies, E.R., 2007. Motion signals provide rapid discernment of pedestrians and pedestrian behaviour. Electron. Lett. 43 (23), 1267–1269.
- Sugrue, M. and Davies, E.R., 2008. Motion detection and tracking by mimicking neurological dorsal/ventral pathways. In: Chapter 9 in Bharath, A. and Petrou, M. (Eds.) Reverse Engineering the Human Vision System: Next Generation Artificial Vision Systems. pp. 217–247.

- Sullivan, G.D., 1992. Visual interpretation of known objects in constrained scenes. Philos. Trans. Royal Soc. London, Ser. B 337, 361–370.
- Sun, Y., Wang, X., and Tang, X., 2013. Hybrid deep learning for face verification. In: Proc. IEEE Int. Conf. on Computer Vision. 1–8 December, Darling Harbour, Sydney, pp. 1489–1496.
- Sun, Y., Wang, X., and Tang, X., 2014a. Deep Learning Face Representation by Joint Identification-Verification. arXiv:1406.4773v1 [cs.CV] 18 Jun.
- Sun, Y., Wang, X., and Tang, X., 2014b. Deep learning face representation from predicting 10,000 classes. In: Proc. IEEE Conf. on Computer Vision and Pattern Recognition. 24–27 June, Columbus, Ohio, pp. 1891–1898.
- Sun, Z., Bebis, G. and Miller, R., 2004. On-road vehicle detection using optical sensors: a review. In: IEEE Int. Conf. on Intelligent Transportation Systems, pp. 585–590.
- Sun, Z., Bebis, G., Miller, R., 2006. On-road vehicle detection: a review. IEEE Trans. Pattern Anal. Mach. Intell. 28 (5), 694–711.
- Suzuki, K., Horiba, I., Sugie, N., 2003. Neural edge enhancer for supervised edge enhancement from noisy images. IEEE Trans. Pattern Anal. Mach. Intell. 25 (12), 1582–1596.
- Swain, M.J., Ballard, D.H., 1991. Color indexing. Int. J. Comput. Vision 7 (1), 11-32.
- Szegedy, C., Liu, W., Jia, Y., Sermanet, P., Reed, S., Anguelov, D., et al., 2014. Going Deeper with Convolutions. arXiv:1409.4842v1 [cs.CV] 17 Sep.
- Tabandeh, A.S. and Fallside, F., 1986. Artificial intelligence techniques and concepts for the integration of robot vision and 3D solid modellers. In: Proc. Int. Conf. on Intell. Autonomous Systems. 18–11 December, Amsterdam.
- Taigman, Y., Yang, M., Ranzato, M.'A., and Wolf, L., 2014. DeepFace: closing the gap to human-level performance in face verification. In: Proc. IEEE Conf. on Computer Vision and Pattern Recognition. 24–27 June, Columbus, OH, pp. 1701–1708.
- Tan, T.N., 1995. Structure, pose and motion of bilateral symmetric objects. In: Proc. Seventh British Machine Vision Assoc. Conf. 11–14 Sept., Birmingham, pp. 473–482.
- Tan, T.N., Sullivan, G.D., Baker, K.D., 1994. Recognizing objects on the ground-plane. Image Vision Comput. 12 (3), 164–172.
- Tang, Y.Y., You, X., 2003. Skeletonization of ribbon-like shapes based on a new wavelet function. IEEE Trans. Pattern Anal. Mach. Intell. 25 (9), 1118–1133.
- Tao, W.-B., Tian, J.-W., Liu, J., 2003. Image segmentation by three-level thresholding based on maximum fuzzy entropy and genetic algorithm. Pattern Recognit. Lett. 24 (16), 3069-3078.
- Teixeira, L.F., Corte-Real, L., 2009. Video object matching across multiple independent views using local descriptors and adaptive learning. Pattern Recognit. Lett. 30 (2), 157–167.
- Theil, H., 1950. A rank-invariant method of linear and polynomial regression analysis (parts 1–3). Nederlandsche Akad. Wetenschappen Proc. A53, 386–392, 521–525 and 1397–1412.
- Theodoridis, S., Koutroumbas, K., 1999. Pattern Recognition. Academic Press, London.
- Tighe, J., Lazebnik, S., 2013. Finding things: Image parsing with regions and per-exemplar detectors. In: Proc. IEEE Conf. on Computer Vision and Pattern Recognition. 23–28 June, Portland, Oregon, pp. 3001–3008.
- Tillett, R.D., Onyango, C.M., Marchant, J.A., 1997. Using model-based image processing to track animal movements. Comput. Electron. Agric. 17, 249–261.
- Tipping, M.E., Bishop, C.M., 1999. Mixtures of probabilistic principal component analyzers. Neural Comput. 11 (2), 443–482.

- Tissainayagam, P., Suter, D., 2004. Assessing the performance of corner detectors for point feature tracking applications. Image Vision Comput. 22 (8), 663–679.
- Toennies, K., Behrens, F. and Aurnhammer, M., 2002. Feasibility of Hough-transform-based iris localisation for real-time application. In: Proc. 16th Int. Conf. on Pattern Recognition. 11–15 Aug., Québec, Canada, Vol. II, pp. 1053–1056.
- Torr, P.H.S., Davidson, C., 2003. IMPSAC: synthesis of importance sampling and random sample consensus. IEEE Trans. Pattern Anal. Mach. Intell. 25 (3), 354–364.
- Torr, P.H.S. and Fitzgibbon, A.W., 2003. Invariant fitting of two view geometry or In defiance of the 8 point algorithm. In: Proc. British Machine Vision Assoc. Conf. 9–11 Sept., Norwich, UK, pp. 83–92.
- Torr, P.H.S., Fitzgibbon, A.W., 2004. Invariant fitting of two view geometry. IEEE Trans. Pattern Anal. Mach. Intell. 26 (5), 648–650.
- Torreão, J.R.A., 2001. A Green's function approach to shape from shading. Pattern Recognit. 34 (12), 2367–2382.
- Torreão, J.R.A., 2003. Geometric—photometric approach to monocular shape estimation. Image Vision Comput. 21 (12), 1045–1062.
- Toulson, D.L., Boyce, J.F., 1992. Segmentation of MR images using neural nets. Image Vision Comput. 10 (5), 324–328.
- Tsai, D.-M., 1995. A fast thresholding selection procedure for multimodal and unimodal histograms. Pattern Recognit. Lett. 16 (6), 653–666.
- Tsai, F.C.D., 1996. A probabilistic approach to geometric hashing using line features. Comput. Vision Image Understanding 63 (1), 182–195.
- Tsai, R.Y., 1986. An efficient and accurate camera calibration technique for 3D machine vision. In: Proc. Conf. on Comput. Vision Pattern Recognition. Miami, FL, pp. 364-374.
- Tsai, R.Y., Huang, T.S., 1984. Uniqueness and estimation of three-dimensional motion parameters of rigid objects with curved surfaces. IEEE Trans. Pattern Anal. Mach. Intell. 6, 13–27.
- Tsuji, S., Matsumoto, F., 1978. Detection of ellipses by a modified Hough transform. IEEE Trans. Comput. 27, 777–781.
- Tsukune, H. and Goto, K., 1983. Extracting elliptical figures from an edge vector field. In: Proc. IEEE Conf. on Computer Vision and Pattern Recognition. Washington, pp. 138–141.
- Turin, G.L., 1960. An introduction to matched filters. IRE Trans. Inf. Theory 6, 311–329.
- Turk, M.A., Pentland, A.P., 1991. Eigenfaces for recognition. J. Cogn. Neurosci. 3 (1), 71–86.
- Turney, J.L., Mudge, T.N., Volz, R.A., 1985. Recognizing partially occluded parts. IEEE Trans. Pattern Anal. Mach. Intell IEEE Trans. Pattern Anal. Mach. Intell. 7, 410–421.
- Tuytelaars, T., Mikolajczyk, K., 2008. Local invariant feature detectors: a survey. Found. Trends Comput. Graphics Vision 3 (3), 177–280.
- Tuytelaars, T. and Van Gool, L., 2000. Wide baseline stereo matching based on local, affinely invariant regions. In: Proc. British Machine Vision Conf. (BMVC), Bristol University, UK, pp. 412–422.
- Tuytelaars, T., Van Gool, L., 2004. Matching widely separated views based on affine invariant regions. Int. J. Comput. Vision 1 (59), 61–85.
- Tuytelaars, T., Turina, A., van Gool, L., 2003. Noncombinatorial detection of regular repetitions under perspective skew. IEEE Trans. Pattern Anal. Mach. Intell. 25 (4), 418–432.

- Tzomakas, C. and von Seelen, W., 1998. Vehicle Detection in Traffic Scenes Using Shadows. Internal Report 98–06. Ruhr-Universität Bochum.
- Ullman, S., 1979. The Interpretation of Visual Motion. MIT Press, Cambridge, MA.
- Ullmann, J.R., 1969. Experiments with the *n*-tuple method of pattern recognition. IEEE Trans. Comput. 18, 1135–1137.
- Ullmann, J.R., 1973. Pattern Recognition Techniques. Butterworth, London.
- Ullmann, J.R., 1974. Binarisation using associative addressing. Pattern Recognit. 6, 127–135.
- Ullmann, J.R., 1976. An algorithm for subgraph isomorphism. J. ACM 23, 31–42.
- Ulusoy, I., Yuruk, H., 2011. New method for the fusion of complementary information from infrared and visual images for object detection. IET Image Process. 5 (1), 36–48.
- Umeyama, S., 1988. An eigen decomposition approach to weighted graph matching problems. IEEE Trans. Pattern Anal. Mach. Intell. 10 (5), 695–703.
- Unser, M., 1986. Local linear transforms for texture measurements. Signal Process. 11, 61–79.
- Unser, M., Eden, M., 1989. Multiresolution feature extraction and selection for texture segmentation. IEEE Trans. Pattern Anal. Mach. Intell. 11 (7), 717–728.
- Unser, M., Eden, M., 1990. Nonlinear operators for improving texture segmentation based on features extracted by spatial filtering. IEEE Trans. Syst. Man Cybern. 20 (4), 804–815.
- Vaillant, R., Monrocq, C., Le Cun, Y., 1994. Original approach for the localisation of objects in images. IEE Proc. Vision Image Signal Process. 141 (4), 245–250.
- Valero, S., Chanussot, J., Benediktsson, J.A., Talbot, H., Waske, B., 2010. Advanced directional mathematical morphology for the detection of the road network in very high resolution remote sensing images. Pattern Recognit. Lett. 31 (10), 1120–1127.
- van de Sande, K.E.A., Gevers, T., Snoek, C.G.M., 2010. Evaluating color descriptors for object and scene recognition. IEEE Trans. Pattern Anal. Mach. Intell. 32 (9), 1582–1596.
- van de Sande, K.E.A., Uijlings, J., Snoek, C., and Smeulders, A., 2012. Hybrid coding for selective search. PASCAL Visual Object Classes (VOC) Classification Challenge Workshop, in conjunction with the European Conf. on Computer Vision. 12 October, Florence, Italy.
- van der Merwe, R., Doucet, A., De Freitas, N., Wan, E., 2000. The unscented particle filter. Proc. Neural Inf. Process. Syst.584–590.
- van Digellen, J., 1951. Photometric investigations of the slopes and heights of the ranges of hills in the Maria of the moon. Bull. Astron. Inst. Netherlands 11, 283–289.
- van Dijck, H., van der Heijden, F., 2003. Object recognition with stereo vision and geometric hashing. Pattern Recognit. Lett. 24 (1–3), 137–146.
- van Ginneken, B., Frangi, A.F., Staal, J.J., ter Haar Romeny, B.M., Viergever, M.A., 2002. Active shape model segmentation with optimal features. IEEE Trans. Med. Imaging 21 (8), 924–933.
- Van Gool, L., Dewaele, P., Oosterlinck, A., 1985. Survey: Texture analysis anno 1983. Comput. Vision Graph. Image Process 29, 336–357.
- Van Gool, L., Proesmans, M. and Zisserman, A., 1998. Planar homologies as a basis for grouping and recognition. In Special Issue on Geometric Modelling and Invariants for Computer Vision, Image Vision Comput. 16 (1), 21–26.
- van Wyk, M.A., Durrani, T.S., van Wyk, B.J., 2002. A RKHS interpolator-based graph matching algorithm. IEEE Trans. Pattern Anal. Mach. Intell. 24 (7), 988–995.

- VanderBrug, G.J., Rosenfeld, A., 1977. Two-stage template matching. IEEE Trans. Comput. 26, 384–393.
- Vapnik, V.N., 1998. Statistical Learning Theory. Wiley, New York.
- Vega, I.R., Sarkar, S., 2003. Statistical motion model based on the change of feature relationships: human gait-based recognition. IEEE Trans. Pattern Anal. Mach. Intell. 25 (10), 1323-1328.
- Vetrov, D.P., Kropotov, D.A., Osokin, A.A., 2010. Automatic determination of the number of components in the EM algorithm of restoration of a mixture of normal distributions. Comput. Math. Phys. 50 (4), 733–746.
- Vezzani, R. and Cucchiara, R., 2008. Ad-hoc: appearance driven human tracking with occlusion handling. In: Proc. First Int. Workshop on Tracking Humans for Evaluation of Motion in Image Sequences (THEMIS). Leeds, UK, pp. 9–18.
- Vezzani, R., Grana, C., Cucchiara, R., 2011. Probabilistic people tracking with appearance models and occlusion classification: the AD-HOC system. Pattern Recognit. Lett. 32, 867–877.
- Vincze, M., 2001. Robust tracking of ellipses at frame rate. Pattern Recognit. 34 (2), 487–498.
- Vinyals, O., Toshev, A., Bengio, S., and Erhan, D., 2015. Show and tell: a neural image caption generator. In: Proc. IEEE Conf. on Computer Vision and Pattern Recognition. 7–12 June, Boston, MA, pp. 3156–3164. See also: arXiv:1411.4555v2 [cs.CV] 20 Apr.
- Viola, P. and Jones, M., 2001. Rapid object detection using a boosted cascade of simple features. In: Proc. IEEE Conf. on Computer Vision and Pattern Recognition. 8–14 December, Kauai, Hawaii, Vol. 1, pp. 511–518.
- Viola, P., Jones, M.J., 2004. Robust real-time face detection. Int. J. Comput. Vision 57 (2), 137–154.
- Vistnes, R., 1989. Texture models and image measures for texture discrimination. Int. J. Comput. Vision 3, 313–336.
- Vondrick, C., Pirsiavash, H., Torralba, A., 2016. Anticipating visual representations from unlabeled video. In: Proc. IEEE Conf. on Computer Vision and Pattern Recognition. 26 June–1 July, Las Vegas, pp. 98–106. See also arXiv:1504.08023v2 [cs.CV] 30 Nov.
- Wang, C., Sun, H., Yada, S., Rosenfeld, A., 1983. Some experiments in relaxation image matching using corner features. Pattern Recognit. 16, 167.
- Wang, J., Bebis, G. and Miller, R., 2005. Overtaking vehicle detection using dynamic and quasi-static background modeling. In: Proc. IEEE Workshop on Machine Vision for Intelligent Vehicles. 21 June, San Diego, CA.
- Wang, J.-G., Sung, E., 2001. Gaze determination via images of irises. Image Vision Comput. 19 (12), 891–911.
- Wang, J.-G., Sung, E. and Venkateswarlu, R., 2003. Determining pose of a human face from a single monocular image. In: Proc. British Machine Vision Assoc. Conf. 9–11 Sept., Norwich, UK, pp. 103–112.
- Wang, L., Bai, J., 2003. Threshold selection by clustering gray levels of boundary. Pattern Recognit. Lett. 24 (12), 1983–1999.
- Wang, S., Siskind, J.M., 2003. Image segmentation with ratio cut. IEEE Trans. Pattern Anal. Mach. Intell. 25 (6), 675–690.
- Ward, A.D., Hamarneh, G., 2010. The groupwise medial axis transform for fuzzy skeletonization and pruning. IEEE Trans. Pattern Anal. Mach. Intell. 32 (6), 1084–1096.

- Webb, A., 2002. Statistical Pattern Recognition. Wiley, Chichester, UK.
- Weiman, C.F.R., 1976. Highly parallel digitised geometric transformations without matrix multiplication. In: Proc. Int. Joint Conf. on Parallel Processing, pp. 1–10.
- Werbos, P.J., 1974. Beyond Regression: New Tools for Prediction and Analysis in the Behavioral Sciences, PhD Thesis. Harvard Univ., Cambridge, MA.
- Wermser, D. and Liedtke, C.-E., 1982. Texture analysis using a model of the visual system. In: Proc. Sixth Int. Conf. on Pattern Recognition. 19–22 Oct., Munich, pp. 1078–1081.
- Wermser, D., Haussmann, G., Liedtke, C.-E., 1984. Segmentation of blood smears by hierarchical thresholding. Comput. Vision Graph. Image Process 25, 151–168.
- Weska, J.S., 1978. A survey of threshold selection techniques. Comput. Graph. Image Process. 7, 259–265.
- Weska, J.S., Rosenfeld, A., 1976. An application of texture analysis to materials inspection. Pattern Recognit. 8, 195–199.
- Weska, J.S., Nagel, R.N., Rosenfeld, A., 1974. A threshold selection technique. IEEE Trans. Comput. 23, 1322–1326.
- Weszka, J.S., Dyer, C.R., Rosenfeld, A., 1976. A comparative study of texture measures for terrain classification. IEEE Trans. Syst. Man Cybern. 6 (4), 269–285.
- Whelan, P.F., Molloy, D., 2001. Machine Vision Algorithms in Java. Springer, London.
- White, J.M., Rohrer, G.D., 1983. Image thresholding for optical character recognition and other applications requiring character image extraction. IBM J. Res. Dev. 27, 400–411.
- Wiejak, J.S., Buxton, H., Buxton, B.F., 1985. Convolution with separable masks for early image processing. Comput. Vision Graph. Image Process. 32, 279–290.
- Will, P.M., Pennington, K.S., 1971. Grid coding: a preprocessing technique for robot and machine vision. Artif. Intell. 2, 319–329.
- Wilson, H.R., Giese, S.C., 1977. Threshold visibility of frequency gradient patterns. Vision Res. 17, 1177–1190.
- Witkin, A.P., 1981. Recovering surface shape and orientation from texture. Artif. Intell. 17, 17–45.
- Witkin, A.P., 1983. Scale-space filtering. In: Proc. Fourth Int. Joint. Conf. on Artif. Intell. Tbilisi, Georgi, USSR, pp. 1019–1022.
- Wolf, L., Hassner, T., and Taigman, Y., 2009. Similarity scores based on background samples. In: Proc. Asian Conf. on Computer Vision.
- Wolfson, H.J., 1991. Generalizing the generalized Hough transform. Pattern Recognit. Lett. 12 (9), 565–573.
- Wong, R.Y., Hall, E.L., 1978. Scene matching with invariant moments. Comput. Graph. Image Process. 8, 16–24.
- Woodham, R.J., 1978. Reflectance map techniques for analysing surface defects in metal castings. MIT Artif. Intell. Lab. Memo AI-TR-457.
- Woodham, R.J., 1980. Photometric method for determining surface orientation from multiple images. Opt. Eng. 19, 139–144.
- Woodham, R.J., 1981. Analysing images of curved surfaces. Artif. Intell. 17, 117–140.
- Wu, A.Y., Hong, T.-H., Rosenfeld, A., 1982. Threshold selection using quadtrees. IEEE Trans. Pattern Anal. Mach. Intell. 4, 90–94.
- Wu, H., Yoshikawa, G., Shioyama, T., Lao, S. and Kawade, M., 2002. Glasses frame detection with 3D Hough transform. In: Proc. 16th Int. Conf. on Pattern Recognition. 11–15 Aug., Québec, Canada, Vol. II, pp. 346–349.

- Wu, T.-P., Tang, C.-K., 2010. Photometric stereo via expectation maximization. IEEE Trans. Pattern Anal. Mach. Intell. 32 (3), 546–560.
- Xie, Y. and Ji, Q., 2002. A new efficient ellipse detection method. In: Proc. 16th Int. Conf. on Pattern Recognition. 11–15 Aug., Québec, Canada, Vol. II, pp. 957–960.
- Xu, D., Li, Y.F., Tan, M., 2008. A general recursive linear method and unique solution pattern design for the perspective-n-point problem. Image Vision Comput. 26, 740–750.
- Xu, L., Oja, E., 1993. Randomized Hough transform (RHT): basic mechanisms, algorithms, and computational complexities. Comput. Vision Graph. Image Process.: Image Understanding 57 (2), 131–154.
- Xu, L.-Q., Landabaso, J.L. and Pardàs, M., 2005. Shadow removal with blob-based morphological reconstruction for error correction. In: Proc. Int. Conf. on Acoustics, Speech, Signal Process.
- Xu, M., Ellis, T.J., Godsill, S.J., Jones, G.A., 2011. Visual tracking of partially observable targets with suboptimal filtering. IET Comput. Vision 5 (1), 1–13.
- Yan, C., Sang, N., Zhang, T., 2003. Local entropy-based transition region extraction and thresholding. Pattern Recognit. Lett. 24 (16), 2935–2941.
- Yan, J., Zhang, X., Lei, Z., Li, S.Z., 2014. Face detection by structural models. Image Vision Comput. 32 (10), 790–799.
- Yan, S., Xu, D., Yang, Q., Zhang, L., 2007. Multilinear discriminant analysis for face recognition. IEEE Trans. Image Process. 16 (1), 212–220.
- Yang, S., Luo, P., Loy, C.C., and Tang, X., 2015a. From facial parts responses to face detection: a deep learning approach. In: Proc. IEEE Int. Conf. on Computer Vision. 13–16 December, Santiago, Chile, pp. 3676–3684.
- Yang, S., Luo, P., Loy, C.C., Tang, X., 2015b. From Facial Parts Responses to Face Detection: A Deep Learning Approach. arXiv:1509.06451v1 [cs.CV] 22 Sep.
- Yang, S., Luo, P., Loy, C.C., and Tang, X., 2017. Faceness-Net: Face Detection through Deep Facial Part Responses. arXiv:1701.08393v1 [cs.CV] 29 Jan.
- Yang, Y., Li, Z., Zhang, L., Murphy, C., Ver Hoeve, J., and Jiang, H., 2012. Local label descriptor for example based semantic image labelling. In: Proc. 12th European Conf. on Computer Vision. 7–13 October, Florence, Italy, pp. 361–375.
- Yitzhaky, Y., Peli, E., 2003. A method for objective edge detection evaluation and detector parameter selection. IEEE Trans. Pattern Anal. Mach. Intell. 25 (8), 1027–1033.
- Youn, E., Jeong, M.K., 2009. Class dependent feature scaling method using naive Bayes classifier for text datamining. Pattern Recognit. Lett. 30 (5), 477–485.
- Yu, T., Zhang, C., Cohen, M., Rui, Y. and Wu, Y., 2007. Monocular video foreground/background segmentation by tracking spatial-color Gaussian mixture models. In: Proc. IEEE Workshop on Motion and Video Computing, Austin, TA.
- Yuen, H.K., Illingworth, J. and Kittler, J., 1988. Ellipse detection using the Hough transform. In: Proc. Fourth Alvey Vision Conf. 31 August—2 September, Manchester, pp. 265–271.
- Yuen, H.K., Princen, J., Illingworth, J. and Kittler, J., 1989. A comparative study of Hough transform methods for circle finding. In: Proc. Fifth Alvey Vision Conf. 31 August–2 September, Manchester, pp. 169–174.
- Yuille, A., Poggio, T.A., 1986. Scaling theorems for zero crossings. IEEE Trans. Pattern Anal. Mach. Intell. 8, 15–25.
- Zahn, C.T., Roskies, R.Z., 1972. Fourier descriptors for plane closed curves. IEEE Trans. Comput. 21, 269–281.
- Zeiler, M., Krishnan, D., Taylor, G., and Fergus, R., 2010. Deconvolutional networks. In: Proc. IEEE Conf. on Computer Vision and Pattern Recognition. 13–18 June, San Francisco, CA, pp. 2528–2535.

- Zeiler M.D., and Fergus, R., 2014. Visualizing and understanding convolutional networks. In: Proc. 13th European Conf. on Computer Vision. 8–11 September, Zurich, Switzerland.
- Zhang, B., Tian, W., Jin, Z., 2006. Head tracking based on the integration of two different particle filters. Meas. Sci. Technol. 17 (11), 2877–2883.
- Zhang, G., Wei, Z., 2003. A position-distortion model of ellipse centre for perspective projection. Meas. Sci. Technol 14, 1420–1426.
- Zhang, J., Modestino, J.W., 1990. A model-fitting approach to cluster validation with application to stochastic model-based image segmentation. IEEE Trans. Pattern Anal. Mach. Intell. 12 (10), 1009–1017.
- Zhang, L., Wu, B. and Nevatia, R., 2007. Pedestrian detection in infrared images based on local shape features. In: Proc. Third Joint IEEE Int. Workshop on Object Tracking and Classification in and Beyond the Visible Spectrum.
- Zhang, Z., 1995. Motion and structure of four points from one motion of a stereo rig with unknown extrinsic parameters. IEEE Trans. Pattern Anal. Mach. Intell. 17 (12), 1222–1227.
- Zheng, D., Zhao, Y., Wang, J., 2005. An efficient method of license plate location. Pattern Recognit. Lett. 26, 2431–2438.
- Zhou, H., Wallace, A.M., Green, P.R., 2003. A multistage filtering technique to detect hazards on the ground plane. Pattern Recognit. Lett. 24, 1453–1461.
- Zhou, J., Fu, Z., Robles-Kelly, A., 2011. Structured learning approach to image descriptor combination. IET Comput. Vision 5 (2), 134–142.
- Zhou, Y., Xu, R., Hu, X., Ye, Q., 2006. A robust lane detection and tracking method based on computer vision. Meas. Sci. Technol. 17 (4), 736–745.
- Zhu, X., and Ramanan, D., 2012. Face detection, pose estimation, and landmark localization in the wild. In: Proc. IEEE Conf. on Computer Vision and Pattern Recognition. 16–21 June, Providence, RI, pp. 2879–2886.
- Zhu, Y., Comaniciu, D., Pellkofer, M. and Koehler, T., 2004. Passing vehicle detection from dynamic background using robust information fusion. In: Proc. Conf. on IEEE Intelligent Transportation Systems.
- Zhuang, X., Haralick, R.M., 1986. Morphological structuring element decomposition. Comput. Vision, Graph, Image Process. 35, 370–382.
- Zielke, T., Braukermann, M., von Seelen, W., 1993. Intensity and edge-based symmetry detection with an application to car-following. Comput. Vision Graph. Image Process.: Image Understanding 58 (2), 177–190.
- Zisserman, A., Marinos, C., Forsyth, D.A., Mundy, J.L. and Rothwell, C.A., 1990. Relative motion and pose from invariants. In: Proc. 1st British Machine Vision Assoc. Conf. 24–27 Sept., Oxford, pp. 7–12.
- Zucker, S.W., 1976a. Toward a model of texture. Comput. Graph. Image Process. 5, 190–202.
- Zucker, S.W., 1976b. Region growing: childhood and adolescence. Comput. Graph. Image Process. 5, 382–399.
- Zuniga, O.A. and Haralick, R.M., 1983. Corner detection using the facet model. In: Proc. IEEE Conf. on Computer Vision and Pattern Recognition, pp. 30–37.
- Zuniga, O.A., Haralick, R.M., 1987. Integrated directional derivative gradient operator. IEEE Trans. Pattern Anal. Mach. Intell. 17, 508-517.