I've proofread this but cannot check all the references. I've looked up a few names that looked obviously wrong - several names containing foreign characters (with umlauts) have not come out right.

I would also definitely recommend turning off the default hyphenation in this (and all other) chapters. This would make it much more readable.

Bibliography

- [1] Biometric consortium, http://www.biometrics.org.
- [2] International biometrics group, http://www.biometricgroup.com.
- [3] Y. Adini, Y. Moses, and S. Ullman. Face recognition: The problem of compensating for changes in illumination direction. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 19(7):721–732, 1997.
- [4] Dan Aloni. Cooperative linux. In *Proceedings of the Linux Symposium*, 2004.
- [5] K. Alsabti, S. Ranka, and V. Singh. An efficient k-means clustering algorithm. In Proc. of International Parallel Processing Symposium, 1998.
- [6] David P. Anderson, Jeff Cobb, Eric Korpela, Matt Lebofsky, and Dan Werthimer. Seti@home: An experiment in public-resource computing. Communications of the ACM, 45(11):56–61, November 2002.
- [7] Edgar Anderson. The irises of the gaspe peninsula. Bulletin of the American Iris Society, 59:2–5, 1935.
- [8] Taichi Asami, Koji Iwano, and Sadaoki Furui. Stream-weight optimization by lda and adaboost for multi-stream speaker verification. In Proceedings of International Conference on Speech Communication and Technology (Interspeech 2005), pages 2185–2188, Lisbon, Portugal, 2005.

- [9] F.R. Bach and M.I. Jordan. Kernel independent component analysis. Journal of Machine Learning Research, 3:1–48, 2002.
- [10] Kyungim Baek, Bruce A. Draper, J. Ross Beveridge, and Kai She. Pca vs. ica: A comparison on the feret data set. In *In Proceedings of Joint Conference on Information Sciences*, 2002.
- [11] Randall C. Ballard. Television system. Patent, 3 1939. Patent number: 2152234.
- [12] M.S. Bartlett, H.M. Lades, and T.J. Sejnowski. Independent component representations for face recognition. *Proceedings of SPIE*, 3299:528–539, 1998.
- [13] M.S. Bartlett, J.R. Movellan, and T.J. Sejnowski. Face recognition by independent component analysis. *IEEE Transactions on Neural Networks*, 13:1450–1464, 2002.
- [14] P.N. Belhumeur, J.P. Hespanha, and D.J. Kriegman. Eigenfaces vs. fisherfaces: Recognition using class specific linear projection. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 19(7):711–720, July 1997.
- [15] A. J. Bell and T. J. Sejnowski. An information-maximization approach to blind separation and blind deconvolution. *Neural Comput*, 7(6):1129–1159, 1995.
- [16] B. Bell and L. Mass. Firms forge alliance to enhance. Businessworld, 29 Dec 2001.
- [17] J.R. Bergen and R. Hingorani. Hierarchical motion-based frame rate conversion. Technical report, David Sarnoff Research Center, Princeton, 1990.
- [18] V. Blanz and T. Vetter. A morphable model for the synthesis of 3d faces. In *Proceedings of the SIGGRAPH'99*, pages 187–194, August 1999.

- [19] Volker Blanz and Thomas Vetter. Face recognition based on fitting a 3d morphable model. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 25(9):1063–1074, September 2003.
- [20] W.W. Bledsoe. The model method in facial recognition. Technical Report PRI:15, Panoramic Research Inc., Palo Alto, CA, 1964.
- [21] A. C. Bovik, M. Clark, and W. S. Geisler. Multichannel texture analysis using localized spatial filters. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 12:55–73, 1990.
- [22] Jean-Francois Cardoso and Antoine Souloumiac. Jacobi angles for simultaneous diagonalization. *SIAM*, 17(1):161–164, 1996.
- [23] H. Cevikalp and M. Wilkes. Face recognition by using discriminative common vectors. In *Proceedings of International Conference on Pattern Recognition*, 2004.
- [24] L.F. Chen, H.Y.M. Liao, J.C. Lin, M.T. Ko, and G.J. Yu. A new ldabased face recognition system which can solve the small sample size problem. *Pattern Recognition*, 33:1713–1726, 2000.
- [25] T.F. Cootes, G.J. Edwards, and C.J. Taylor. Active appearance models. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 23(6):681–685, 2001.
- [26] T.F. Cootes and C.J. Taylor. Locating faces using statistical features. In Proceedings of Second International Conference on Automatic Face and Gesture Recognition, pages 204–209, 1996.
- [27] T.F. Cootes and C.J. Taylor. Statistical models of appearance for computer vision. Technical report, University of Manchester, 2000.
- [28] J. Daugman. Uncertainty relation for resolution in space, spatial frequency and orientationoptimized by two-dimensional visual cortical filters. Journey of the optical Society of American A, 2:1160–1169, July 1985.

two words, or hyphenated?

- [29] J. Daugman. High confidence visual recognition of persons by a test of statistical independence. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 15:1148–1160, November 1993.
- [30] John G Daugman. Complete discrete 2-d gabor transforms by neural networks for image analysis and compression. *IEE Transactions on Acoustics, Speech, and Signal Processing*, 36:1169–1179, 1988.
- [31] E. R. Davies. *Machine Vision: Theory, Algorithms, Practicalities*. Academic Press, 1990.
- [32] P.A. Devijver and J. Kittler. *Pattern Recognition: A Statistical Approach*. Prentice-Hall, 1982.
- [33] Pedro Domingos and Michael Pazzani. On the optimality of the simple bayesian classifier under zero-one loss. *Machine Learning*, 29:103–137, 1997.
- [34] H. Drucker, R.E. Schapire, and P. Y. Simard. Boosting performance in neural networks. *International Journal of Pattern Recognition and Artifical Intelligence*, 7:705–719, 1993.
- [35] D. Dunn and W. Higgins. Optimal gabor filters for texture segmentation. *IEEE Transactions on Image Processing*, 4(7):947–964, July 1995.
- [36] Dennis Dunn, William E. Higgins, and Joseph Wakeley. Texture segmentation using 2-d gabor elementary functions. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 16:130–149, 1994.
- [37] G.J. Edwards, T.F. Cootes, and C.J. Taylor. Face recognition using active appearance models. In *Proceedings of European Conference on Computer Vision*, 1998.
- [38] W. Fan, Y.H. Wang, W. Liu, and T.N. Tan. Combining null space-based gabor features for face recognition. In *Proceedings of International Conference on Pattern Recognition*, 2004.

- [39] N. Fell and P. Dempsey. Whitehall dithers on airport security. Times, 14 Jan 2002.
- [40] R. A. Fisher. The use of multiple measurements in taxonomic problems. *Annals of Eugenics*, 7:179–188, 1936.
- [41] Francois Fleuret. Fast binary feature selection with conditional mutual information. *Journal of Machine Learning Research*, 5:1531–1555, 2004.
- [42] D.A. Forsyth and J. Ponce. Computer Vision A Modern Approach. Prentice Hall, 2003.
- [43] Yoav Freund and Robert E. Schapire. A decision-theoretic generalization of on-line learning and an application to boosting. In *Computational Learning Theory: Eurocolt 95*, pages 23–37. Springer-Verlag, 1995.
- [44] Yoav Freund and Robert E. Schapire. A short introduction to boosting. *Journal of Japanese Society for Artificial Intelligence*, 14:771–780, 1999.
- [45] J. Friedman, T. Hastie, and R. Tibshirani. Additive logistic regression: a statistical view of boosting. Technical report, Stanford University, 1998.
- [46] J. Friedman, T. Hastie, and R. Tibshirani. Additive logistic regression: A statistical view of boosting. *The Annals of Statistics*, 28(2):337–374, 2000.
- [47] K. Fukunaga. Introduction to Statistical Pattern Recognition. New York: Academic Press, 1990.
- [48] Francis Galton. Personal identification and description. *Nature*, 21:173–177, June 1888.
- [49] I. Gauthier and C.A. Nelson. The development of face expertise. *Cognitive Neuroscience*, 11:219–224, 2001.

- [50] A.S. Georghiades, P.N. Belhumeur, and D.J. Kriegman. From few to many: Illumination cone models for face recognition under variable lighting and pose. *IEEE Transcations on pattern Analysis and Machine Intelligence*, 23:643–660, 2001.
- [51] C. Goodall. Procrustes methods in the statistical analysis of shape. Journal of the Royal Statistical Society B, 53(2):285–339, 1991.
- [52] John Gorsuch. Improved security through technology. Overhaul & Maintenance, 20 Nov 2001.
- [53] Brian J. Gough. An Introduction to GCC. Network Theory Limited, 2004.
- [54] Daniel B. Graham and Nigel M. Allinson. Characterizing virtual eigensignatures for general purpose face recognition. In H. Wechsler, P. J. Phillips, V. Bruce, F. Fogelman-Soulie, and T. S. Huang, editors, Face Recognition: From Theory to Applications, volume 163, pages 446–456. NATO ASI Series F, Computer and Systems Sciences, 1998.
- [55] Ralph Gross. Face databases. In S. Li and A.K. Jain, editors, *Handbook of Face Recognition*. Springer, New York, February 2005.
- [56] A. J. Grove and D. Schuurmans. Boosting in the limit: Maximizing the margin of learned ensembles. In *Proceedings of the Fifteenth National Conference on Artifiqal Intelligence*, 1998.
- [57] P. Hallinan. A Deformable Model for Face Recognition Under Arbitrary Lighting Conditions. PhD thesis, Harvard University, 1995.
- [58] P.J. Hancock, V. Bruce, and A.M. Burton. Recognition of unfamiliar faces. *Trends in Cognitive Sciences*, 4:330–337, 2000.
- [59] R.M. Haralick and L.G. Shapiro. *Computer and Robot Vision*, volume 2. Addison-Wesley, 1992.

- [60] H. Hong, H. Neven, and C. von der Malsburg. Online facial expression recognition based on personalized galleries. In *Proceedings of Interna*tional Conference on Automatic Face and Gesture Recognition, 1998.
- [61] B. Horn. Robot Vision. MIT Press, 1986.
- [62] B.K.P. Horn and B.G. Schunck. Determing optical flow. *Artifical Intelligence*, 17:185–203, 1981.
- [63] Chang Huang, Haizhou Ai, Bo Wu, and Shihong Lao. Boosting nested cascade detector for multi-view face detection. In *In Proceedings of International Conference on Pattern Recognition* 2004, 2004.
- [64] J. Huang, B. Heisele, and V. Blanz. Component-based face recognition with 3d morphable models. In Proceedings of the 4th International Conference on Audio- and Video-Based Biometric Person Authentication, AVBPA 2003, pages 27–34, Guildford, UK, June 2003.
- [65] Rui Huang, Qingshan Liu, Hanqing Lu, and Songde Ma. Solving the small sample size problem of lda. In Proceedings of the 16th International Conference on Pattern Recognition, volume 3, 2002.
- [66] A. Hyvarinen. Fast and robust fixed-point algorithms for independent component analysis. *IEEE Transactions on Neural Networks*, 10:626– 634, 1999.
- [67] A. Hyvarinen, J Karhunen, and E. Oja. *Independent Component Analysis*. John Wiley & Sons, 2001.
- [68] K. Ichikawa, T. Mita, and O. Hori. Component-based robust face detection using adaboost and decision tree. In Proceedings of the 7th International Conference on Automatic Face and Gesture Recognition, FGR 2006, 2006.
- [69] A. Jain. Fundamentals of Digital Image Processing. Prentice-Hall, 1989.

- [70] A.K. Jain, P.W. Robert, and J. Mao. Statistical pattern recognition: A review. *IEEE Transactions on Pattern Anlysis and Machine Intelligence*, 22(1):4–37, 2000.
- [71] A.K. Jain, A. Ross, and S. Prabhakar. An introduction to biometric recognition. *IEEE Transactions on Circuits and Systems for Video Technology*, 14:4–20, 2004.
- [72] Anil K. Jain and Farshid Farrokhnia. Unsupervised texture segmentation using gabor filters. *Pattern Recognition*, 4:1167 1186, December 1991.
- [73] O. Jesorsky, K. Kirchberg, and R. Frischholz. Robust face detection using the hausdorff distance. In *Proceedings of Third International Conference on Audio- and Video-based Biometric Person Authentication*, 2001.

Physiology?

- [74] J. Jones and L. Palmer. An evaluation of two-dimensional gabor filter model of simple receptive fields in cat striate cortex. *Journal of NeuroPhysiol*, 58:1233–1258, 1987.
- [75] A. Kadyrov and M. Petrou. The trace transform and its applications. IEEE Transactions on Pattern Analysis and Machine Intelligence, 23(8):811–828, August 2001.
- [76] Takeo Kanade. Computer recognition of human faces. *Interdisciplinary Systems Research*, 47:1–106, 1977.
- [77] Michael Kearns and Leslie G. Valiant. Cryptographic limitations on learning boolean formula and finite automata. *Journal of the Association for Computing Machinery*, 41:67–95, 1994.
- [78] M.D. Kelly. Visual identification of people by computer. Stanford AI Project AI-130, Stanford University, 1970.
- [79] R. Keys. Cubic convolution interpolation for digital image processing. IEEE Transactions on Signal Processing, Acoustics, Speech, and Signal Processing, 29(6):1153–1160, December 1981.

- [80] M. Kirby and L. Sirovich. Application of the karhunen-love procedure for the characterization of human faces. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 12(1):103–108, Jan 1990.
- [81] Ron Kohavi. A study of cross-validation and bootstrap for accuracy estimation and model selection. In *Proceedings of the Fourteenth International Joint Conference on Artificial Intelligence*, 1995.
- [82] H. Kong, L. Wang-adn E. Teoh, J. Wang, and R. Venkateswarlu. A framework of 2d fisher discriminant analysis: Application to face recognition with small number of training samples. In *Proceedings of IEEE Conference on Computer Vision and Pattern Recognition*, 2005.
- [83] Hui Kong, Xuchun Li, Jian-Gang Wang, and Chandra Kambhamettu. Ensemble lda for face recognition. In *Proceedings of the International Conference on Biometrics Authentification (ICBA)*, 2006.
- [84] Volker Krueger. Gabor Wavelet Networks for Object Representation. PhD thesis, Christian-Albrechts University, Kiel, Germany, 2001.
- [85] V. Kruger. Gabor wavelet network for object representation. In Proceedings of International Dagstuhl Workshop, 2000.
- [86] M. Lades, J. Vorbruggen, J. Buhmann, J. Lange, C.v.d. Malsburg, and R. Wurtz. Distortion invariant object recognition on the dynamic link architecture. *IEEE Transactions on Computers*, 42:300–311, 1993.
- [87] Jerome Landre. Programming with intel ipp and intel opency under gnu linux: A beginner's tutorial. Technical report, Universite de Bourgogne, 2003.
- [88] A. Lanitis, C.J. Taylor, and T.F. Cootes. Automatic interpretation and coding of face images using flexible models. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 19(7):743–756, 1997.
- [89] T. Lee. Image representation using 2d gabor wavelets. *IEEE Transaction on Pattern Analysis and Machine Intelligence*, 18:959–971, 1996.

- [90] Stan Z. Li and ZhenQiu Zhang. Floatboost learning and statistical face detection. *IEEE Transactions on Pattern Analysis and Machine Learning*, 26(9):1112–1123, 2004.
- [91] Wentian Li. Mutual information functions versus correlation functions. Journal of Statistical Physics, 60:823–837, 1990.
- [92] Ping Sung Liao, Tse Sheng Chen, and Pau Choo Chung. A fast algorithm for mulitlevel thresholding. *Journal of Information Science and Engineering*, 17:713–727, 2001.
- [93] C. Liu. Enhanced independent component analysis and its application to content based face image retrieval. *IEEE Transections on Systems, Man, and Cybernetics- Part B: Cybernetics*, 34(2):1117–1127, April 2004.
- [94] C. Liu. Gabor-based kernel pca with fractional power polynomial models for face recognition. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 26:572–581, 2004.
- [95] C. Liu and H. Wechsler. Gabor feature based classification using enhanced fisher linear discriminant model for face recognition. *IEEE Transactions on Image Processing*, 11:467–476, 2002.
- [96] C. Liu and H. Wechsler. Independent component analysis of gabor features for face recognition. *IEEE Transactions on Neural Networks*, 14:919–928, 2003.
- [97] Chengjun Liu and Harry Wechsler. A gabor feature classifier for face recognition. In *Proceedings of the Eighth International Conference on Computer Vision (ICCV'01)*, volume 2, 2001.
- [98] M. M. Loeve. *Probability Theory*. Princeton N.J, 1955.
- [99] J. Lu, K.N. Plataniotis, and A.N. Venetsanopoulos. Face recognition using lda-based algorithms. *IEEE Transactions on Neural Networks*, 14(1):195–200, January 2003.

- [100] X.G. Lu, Y.H. Wang, and A.K. Jain. Combining classifiers for face recognition. In *Proceedings of IEEE International Conference on Mul*timedia and Expo, volume 3, pages 13–16, 2003.
- [101] Xiaoguang Lu. 3D Face Recognition across Pose and Expression. PhD thesis, Michigan State University, 2006.
- [102] M.J. Lyons, J. Budynek, and S. Akamatsu. Automatic classification of single facial image. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 21:1357–1362, 1999.
- [103] J. Ma, Y. Zhao, S. Ahalt, and D. Eads. Osu svm: A support vector machine toolbox for matlab. Online, 2001.
- [104] B.S. Manjunath and W.Y. Ma. Texture features for browsing and retrieval of image data. *IEEE Transcations on Pattern Analysis and Machine Intelligence*, 18(8):837–842, August 1996.
- [105] Aleix Martinez and Avinash Kak. Pca versus lda. *IEEE Transactions* on Pattern Analysis and Machine Intelligence, 23:228–233, 2001.
- [106] J. Matas, M. Hamous, and K. Jonsson. Comparison of face verification results on the xm2vts database. In *Proceedings of the International Conference on Pattern Recognition*, 2000.
- [107] Jiri Matas and Jan Sochman. Adaboost. Technical report, Centre for Machine Perception, Czech Technical University, Prague, 2004.
- [108] K. Messer, J. Matas, J. Kittler, and K. Jonsson. Xm2vtsdb: The extended m2vts database. In Audio- and Video-based Biometric Person Authentication, AVBPA'99, pages 72–77, Washington, D.C., March 1999. 16 IDIAP–RR 99-02.
- [109] B. Moghaddam. Principal manifolds and probabilistic subspaces for visual recognition. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 24:780–788, 2002.

- [110] B. Moghaddam, T. Jebara, and A. Pentland. Bayesian face recognition. Pattern Recognition, 33:1771–1782, November 2000.
- [111] B. Moghaddam and A. Pentland. Probabilistic visual learning for object representation. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 19(7):696–710, July 1997.
- [112] A.V. Nefian and HI Hayes, M.H. Hidden markov models for face recognition. In *Proceedings of the IEEE International Conference on Acoustics, Speech, and Signal Processing, ICASSP'98*, volume 5, pages 2721–2724, May 1998.
- [113] A.V. Nefian and III. Hayes, M.H. Maximum likelihood training of the embedded hmm for face detection and recognition. In *Proceedings of the IEEE International Conference on Image Processing, ICIP 2000*, volume 1, pages 33–36, Vancouver, BC, Canada, September 2000.
- [114] E. Osuna, R. Freund, and F. Girosi. Training support vector machines: An application to face detection. In *Proceedings of IEEE Conference on Computer Vision and Pattern Recognition*, pages 130–136, June 1997.
- [115] N. Otsu. A threshold selection method from gray level histograms. *IEEE Transcations on Systems, Man and Cybernetics*, 9:62–66, March 1979. minimize inter class variance.
- [116] D. Pelleg and A. Moore. X-means: Extending k-means with efficient estimation of the number of the clusters. In *Proceedings of International Conference on Machine Learning*, 2000.
- [117] P. S. Penev and J. J. Atick. Local feature analysis: A general statistical theory for object representation. *Neural Systems*, 7:477–500, 1996.
- [118] Hanchuan Peng, Fuhui Long, and Chris Ding. Feature selection based on mutual information: Criteria of max-dependency, max-relevance, and min-redundancy. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 27:1226–1238, 2005.

- [119] A. Pentland, B. Moghaddam, and T. Starner. View-based and modular eigenspaces for face recognition. In *In Proceedings of IEEE Conference on Computer Vision and Pattern Recognition*, 1994.
- [120] P. Jonathon Phillips, Hyeonjoon Moon, Syed A. Rizvi, and Patrick J.Rauss. The FERET evaluation methodology for face-recognition algorithms. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 22(10):1090–1104, October 2000.
- [121] P. Jonathon Phillips, Patrick J. Rauss, and Sandor Z. Der. Feret (face recognition technology) recognition algorithm development and test results. Technical report, Army Research Lab, 1996.
- [122] P.J. Phillips, H. Moon, P. Rauss, and S.A. Rizvi. The feret methodology for face recognition algorithm. In *Proceedings of the International Conference on Computer Vision and Pattern Recognition*, pages 137–143, 1997.
- [123] P.J. Phillips, H. Wechsler, J. Huang, and P.J. Rauss. The feret database and evaluation procedure for face recognition algorithm. *Image and Vision Computing*, 16(5):295–306, 1998.
- [124] Chris Pope. Ways to keep the terrorist grounded. *Professional Engineering*, 14:20–21, 2001.
- [125] W.H. Press, S.A. Teukolsky, W.T. Vetterling, and B.P. Flannery. Numerical Recipes in C. Cambridge University Press, 1992.
- [126] M. Riedmiller and H. Braun. A direct adaptive method for faster backpropagation learning: The rprop algorithm. In *Proceeding of In*ternational Conference on Neural Network, 1993.
- [127] S.A. Rizvi, P.J. Phillips, and H. Moon. The feret verification testing protocol for face recognition algorithm. In *Proceedings of the International Conference on Automatic Face and Gesture Recognition*, number 48-53, 1998.

- [128] S.A. Rizvi, P.J. Phillips, and H. Moon. A verification protocol and statistical performance analysis for face recognition algorithm. In *Proceedings of the International Conference on Computer Vision and Pattern Recognition*, pages 833–838, 1998.
- [129] A. R.Martinez and R. Benavente. The ar face database. Technical Report 24, Computer Vision Center, 1998.
- [130] Frank Rosenblatt. The perceptron: A probabilistic model for information storage and organization in the brain. *Psychological Review*, 65:3860408, 1958.
- [131] Gunnar Rtsch, Sebastian Mika, Bernhard Schlkopf, and Klaus-Robert Miler. Constructing boosting algorithms from syms: An application to one-class classification. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 24:1184 1199, 2002.
- [132] P.K. Sahoo, S. Soltani, A.K. Wong, and Y.C. Chan. A survey of thresholding techniques. Computer Vision, Graphics and Image Processing, 41:233–260, 1988.
- [133] Ferdinando S. Samaria and Andy C. Harter. Parameterisation of a stochastic model for human face identification. In *IEEE 2nd Workshop on Applications of Computer Vision*, page 138ï142, Sarasota (Florida), December 1994.
- [134] R.E. Schapire. The strength of weak learnability. *Machine Learning*, 5(2):197–227, 1990.
- [135] R.E. Schapire and Y. Singer. Improved boosting algorithms using confidence-rated predictions. In *Proceedings11th Annal Conference on Computational Learning Theory*, number 80-91, 1998.
- [136] Robert E. Schapire. A brieft introduction to boosting. In *Proceedings of the Sixteenth International Joint Conference on Artificial Intelligence*, 1999.

- [137] B. Scholkopf, A. Smola, and K.R. Muller. Nonlinear component analysis as a kernel eigenvalue problem. *Neural Computation*, 10:1299–1319, 1998.
- [138] Caifeng Shan, Shaogang Gong, and Peter W. McOwan. Conditional mutual information based boosting for facial expression recognition. In *Proceedings of British Machine Vision Conference*, 2005.
- [139] A. Shashua. Geometry and Photometry in 3D Visual Recognition. PhD thesis, Massachusetts Institute of Technology, 1994.
- [140] Linlin Shen and Li Bai. Mutualboost learning for selecting gabor features for face recognition. Pattern Recognition Letters, 27:1758–1767, 2006.
- [141] T. Sim, S. Baker, and M. Bsat. The cmu pose, illumination, and expression database. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 25(12):1615–1618, December 2003.
- [142] Pawan Sinha, Benjamin Balas, Yuri Ostrovsky, and Richard Russell. Face recognition by humans: Nineteen results all computer vision researchers should know about. *Proceedings of The IEEE*, 94(11):1948–1962, November 2006.
- [143] C. Snow, H. Nguyen, V. S. Pande, and M. Gruebele. Absolute comparison of simulated and experimental protein-folding dynamics. *Nature*, 420(6911):102–106, 2002.
- [144] Milan Sonka, Vaclav Hlavac, and Roger Boyle. *Image Processing, Analysis, and Machine Vision*. Thomson-Engineering, September 1998.
- [145] S. Srisuk and W. Kurutach. Face recognition using a new texture representation of face images. In *Proceedings of Electrical Engineering Conference*, pages 1097–1102, Cha-am, Thailand, November 2003.
- [146] S. Srisuk, M. Petrou, W. Kurutach, and A. Kadyrov. Face authentication using the trace transform. In *Proceedings of the IEEE Com-*

- puter Society Conference on Computer Vision and Pattern Recognition (CVPR'03), pages 305–312, Madison, Wisconsin, USA, June 2003.
- [147] D.L. Swet and J. Weng. Using discriminant eigenfeatures for image retrieval. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 18:831–836, 1996.
- [148] John Shawe Taylor and Nello Cristianini. Kernel Methods for Pattern Analysis. Cambridge University Press, 2004.
- [149] A. Tefas, C. Kotropoulos, and I. Pitas. Using support vector machines to enhance the performance of elastic graph matching for frontal face authentication. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 23(7):735–746, July 2001.
- [150] Joshua B. Tenenbaum, Vin de Silva, and John C. Langford. A global geometric framework for nonlinear dimensionality reduction. SCIENCE, 290:2319–2323, 2000.
- [151] Andreas Teuner, Olaf Pichler, and Bedrich J. Hosticka. Unsupervised texture segmentation of image using tuned matched gabor filters. *IEEE Transactions on Image Processing*, 4(6):863–870, 1995.
- [152] Douglas Thain, Todd Tannenbaum, and Miron Livny. Condor and the grid. In Fran Berman, Geoffrey Fox, and Tony Hey, editors, *Grid Computing: Making the Global Infrastructure a Reality*. John Wiley & Sons Inc., December 2002.
- [153] M. Turk and A. Pentland. Eigenfaces for recognition. *Journey of Cognitive Neuroscience*, 3(1):71–86, 1991.
- [154] L. G. Valiant. A theory of the learnable. Communications of the ACM, 27:1134–1142, 1984.
- [155] V. Vapnik. The Nature of Statistical Learning Theory. Springer-Verlag, 1995.

- [156] P. Viola and M. Jones. Rapid object detection using a boosted cascade of simple features. In *Proceedings of IEEE Conference on Computer Vision and Pattern Recognition*, volume 1, pages 511–518, 2001.
- [157] P. Viola and M. Jones. Robust real-time object detection. *International Journal of Computer Vision*, 57(2):137–154, May 2004.
- [158] B. Weyrauch, J. Huang, B. Heisele, and V. Blanz. Component-based face recognition with 3d morphable models. In *Proceedings of CVPR Workshop on Face Processing in Video (FPIV'04)*, 2004.
- [159] Wikipedia. Lookup table wikipedia, the free encyclopedia, 2008. [Online; accessed 9-May-2008].
- [160] Wikipedia. Netpbm format wikipedia, the free encyclopedia, 2008. [Online; accessed 21-April-2008].
- [161] L. Wiskott, J.M. Fellous, N. Krger, and C. Malsburg. Face recognition by elastic bunch graph matching. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 19:775–779, 1997.
- [162] L. Wiskott, J.M. Fellous, N. Krger, and C. Malsburg. Face recognition by elastic bunch graph matching. In L.C. Jain et al, editor, *Intelligent Biometric Techniques in Fingerprint and Face Recognition*, pages 355–396. CRC Press, 1999.
- [163] Bo Wu, Haizhou Ai, and Ran Liu. Glasses detection by boosting simple wavelet features. In *ICPR '04: Proceedings of the Pattern Recognition*, 17th International Conference on (ICPR'04) Volume 1, pages 292–295. Washington, DC, USA, IEEE Computer Society, 2004.
- [164] X.J. Wu, J. Kittler, J.Y. Yang, K. Messer, and S.T. Wang. A new direct lda (d-lda) algorithm for feature extraction in face recognition. In Proceedings of International Conference on Pattern Recognition, 2004.
- [165] J. Yang, D. Zhang, A.F. Frangi, and J. Yang. Two-dimensional pca: a new approach to appearance-based face representation and recogni-

- tion. IEEE Transactions on Pattern Analysis and Machine Intelligence, 26:131–137, 2004.
- [166] M.H. Yang. Kernel eigenfaces vs. kernel fisherfaces: Face recognition using kernel methods. In *Proceedings of the Fifth IEEE International Conference on Automatic Face and Gesture Recognition*, 2002.
- [167] Ming-Hsuan Yang. Face recognition using extended isomap. In Proceedings of Image Processing. 2002. Proceedings. 2002 International Conference on, 2002.
- [168] Peng Yang, Shiguang Shan, Wen Gao, Stan Li, and Dong Zhang. Face recognition using ada-boosted gabor features. In *Proceedings of the 6th IEEE International Conference on Automatic Face and Gesture Recognition*, 2004.
- [169] David Young and James Ferryman. Faster learning via optimised adaboost. In IEEE Conference on Advanced Video and Signal Based Surveillance, 2005. AVSS 2005., 2005.
- [170] Z. Zhang, M. Lyons, M. Schuster, and S. Akamastsu. Comparison between geometry-based and gabor wavelets-based facial expression recognition using multi-layer perceptron. In *Proceeding of International Conference on Automatic Face and Gesture Recognition*, volume 1, pages 454–457, 1998.
- [171] W. Zhao and R. Chellappa. Sfs based view synthesis for robust face recognition. In *Proceedings of IEEE International Conference on Automatic Face and Gesture Recognition*, pages 285–292, 2000.
- [172] W. Zhao, R. Chellappa, and A. Krishnaswamy. Discriminant analysis of principal components for face recognition. In *Proceedings of the 3rd IEEE International Conference on Face and Gesture Recognition*, FG'98, 1998.
- [173] W. Zhao, R. Chellappa, A. Rosenfeld, and P.J. Phillips. Face recognition: A literature survey. *ACM Computing Surveys*, 1:399–458, 2003.

- [174] S. Zhou, R. Chellappa, and B. Moghaddam. Intra-personal kernel space for face recognition. In *Proceedings of the 6th International Conference on Automatic Face and Gesture Recognition, FGR2004*,, 2004.
- [175] Ji Zhu, Saharon Rosset, Hui Zhou, and Trevor Hastie. Multi-class adaboost. A multiclass generalization of the Adaboost algorithm, based on a generalization of the exponential loss, 2006.