Bibliography

- [1] Delve Datasets. http://www.cs.toronto.edu/ delve/data/datasets.html.
- [2] Ankur Agarwal and Bill Triggs. 3d human pose from silhouettes by relevance vector regression. In International Conference on Computer Vision & Pattern Recognition, pages II 882–888, Washington, DC, June 2004.
- [3] S. Agarwal and D. Roth. Learning a Sparse Representation for Object Detection. In European Conference on Computer Vision, 2004.
- [4] S. Arya, D. M. Mount, N. S. Netanyahu, R. Silverman, and A. Y. Wu. An optimal algorithm for approximate nearest neighbor searching fixed dimensions. *Journal of the ACM*, 45(6):891–923, 1998.
- [5] V. Athitsos, J. Alon, S. Sclaroff, and G. Kollios. Boostmap: A method for efficient approximate similarity rankings. In *IEEE Conf. on Computer Vision* and Pattern Recognition, Madison, WI, June 2004.
- [6] V. Athitsos and S. Sclaroff. Estimating 3D Hand Pose from a Cluttered Image. In *IEEE Conf. on Computer Vision and Pattern Recognition*, pages 432–439, Madison, WI, June 2003.
- [7] C. G. Atkeson, A. W. Moore, and S. Schaal. Locally weighted learning. Artificial Intelligence Review, 11(1-5):11-73, 1997.
- [8] D. H. Ballard and L. E. Wixson. Object Recognition Using Steerable Filters at Multiple Scales. In Proceedings of IEEE Workshop on Qualitative Vision, 1993.
- [9] Evgeniy Bart and Shimon Ullman. Class-based matching of object parts. In *Proceedings of CVPR Workshop on Image and Video Registration*, 2004.
- [10] J. S. Beis and D. G. Lowe. Shape Indexing Using Approximate Nearest-Neighbor Search in High-Dimensional Spaces. In *IEEE Conf. on Computer Vision and Pattern Recognition*, pages 1000–1006, 1997.
- [11] S Belongie, J. Malik, and J. Puzicha. Shape Matching and Object Recognition Using Shape Contexts. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, April 2002.

- [12] Y. Bengio, J.-F. Paiement, P. Vincent, O. Delalleau, N. Le Roux, and M. Ouimet. Out-of-sample extensions for lle, isomap, mds, eigenmaps, and spectral clustering. In *Neural Information Processing Systems*, 2004.
- [13] J. L. Bentley. Multidimensional binary search trees used for associative searching. Communications of the ACM, 18(9):509–517, September 1975.
- [14] A. C. Berg, T. L. Berg, and J. Malik. Shape Matching and Object Recognition using Low Distortion Correspondence. In *IEEE Conf. on Computer Vision and Pattern Recognition*, June 2005.
- [15] P.J. Besl and N. MacKay. A Method for Registration of 3D Shapes. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 14:239–256, February 1992.
- [16] C. L. Blake and C. J. Merz. UCI repository of machine learning databases. [http://www.ics.uci.edu/~mlearn/MLRepository.html], 1998.
- [17] E. Borenstein and S. Ullman. Class-Specific, Top-Down Segmentation. In European Conference on Computer Vision, pages 109–124, Copenhagen, Denmark, May 2002.
- [18] A. Borodin, R. Ostrovsky, and Y. Rabani. Lower bounds for high dimensional nearest neighbor search and related problems. In *Proceedings of the Thirty-First Annual ACM Symposium on Theory of Computing (STOC'99)*, pages 312–321, New York, May 1999. Association for Computing Machinery.
- [19] Michael C. Burl, Markus Weber, and Pietro Perona. A probabilistic approach to object recognition using local photometry and global geometry. In *European Conference on Computer Vision*, Freiburg, Germany, 1998.
- [20] Sumit Chopra, Raia Hadsell, and Yann LeCun. Learning a similarity metric discriminatively, with application to face verificatio. In *IEEE Conf. on Computer Vision and Pattern Recognition*. IEEE Press, 2005.
- [21] W. S. Cleveland. Robust locally weighted regression and smoothing scatter plots. Journal of American Statistical Association, 74(368):829–836, 1979.
- [22] W. S. Cleveland and S. J. Delvin. Locally weighted regression: an approach to regression analysis by local fitting. *Journal of American Statistical Association*, 83(403):596–610, 1988.
- [23] M. Collins, R. Schapire, and Y. Singer. Logistic regression, adaboost and bregman distances. In COLT: Proceedings of the Workshop on Computational Learning Theory, Morgan Kaufmann Publishers, 2000.
- [24] T. M. Cover. Estimation by the nearest neighbor rule. IEEE Transactions on Information Theory, 14:21–27, January 1968.

- [25] T. M. Cover. Rates of Convergence for Nearest Neighbor Procedures. In Proc. 1st Ann. Hawaii Conf. Systems Theory, pages 413–415, January 1968.
- [26] T. M. Cover and P. E. Hart. Nearest neighbor pattern classification. IEEE Transactions on Information Theory, 13:21–27, January 1967.
- [27] T. F. Cox and M. A. A. Cox. Multidimensional scaling. Chapman & Hall, London, 1994.
- [28] K. Crammer and Y. Singer. On the Algorithmic Implementation of Multiclass Kernel-based Vector Machines. *Journal of Machine Learning Research*, 2:265– 292, December 2001.
- [29] Curious Labs, Inc., Santa Cruz, CA. Poser 5 Reference Manual, 2002.
- [30] D. Michie, D.J. Spiegelhalter, and C.C. Taylor, editors. Machine Learning, Neural and Statistical Classification. Ellis Horwood, 1994.
- [31] M. Datar, N. Immorlica, P. Indyk, and V. Mirrokni. Locality-sensitive hashing scheme based on p-stable distributions. In annual acm symposium on computational geometry, 2004.
- [32] M. de Berg, M. van Kreveld, M. Overmars, and O. Schwarzkopf. Computational Geometry: Algorithms and Applications. Springer-Verlag, Berlin, Heidelberg, New York, second edition, 2000.
- [33] V. de Silva and J. B. Tenenbaum. Global versus local methods in nonlinear dimensionality reduction. In *Neural Information Processing Systems*, pages 705–712, 2002.
- [34] D. Demirdjian and T. Darrell. Using Multiple-Hypothesis Disparity Maps and Image Velocity for 3-D Motion Estimation. International Journal of Computer Vision, 47(1-3), 2002.
- [35] D. Demirdjian, L. Taycher, G. Shakhnarovich, K. Grauman, and T. Darrell. Avoiding the streetlight effect: Tracking by exploring likelihood modes. In *Proceedings of the International Conference on Computer Vision*, Beijing, PRC, October 2005 (to appear).
- [36] J. Deutscher, A. Blake, and I. Reid. Articulated body motion capture by annealed particle filtering. In *IEEE Conf. on Computer Vision and Pattern Recognition*, pages 126–133, Hilton Head, USA, June 2000.
- [37] L. Devroye. On the inequality of Cover and Hart in nearest neighbor discrimination. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 3:75–78, 1981.
- [38] R. O. Duda, P. E. Hart, and D. G. Stork. *Pattern classification*. John Wiley & sons, New York, second edition, 2001.

- [39] E. R. Kandel, J. H. Schwartz, and T. M. Jessell. Principles of Neural Science. Elsevier, New York, 3rd edition, 1991.
- [40] A. Elgammal and C. S. Lee. Inferring 3D Body Pose from Silhouettes using Activity Manifold Learning. In *IEEE Conf. on Computer Vision and Pattern Recognition*, Washington, DC, July 2004.
- [41] {Eyes, JAPAN}. Motion capture sequences database. www.mocapdata.com, 2005.
- [42] C. Faloutsos and K.-I. Lin. FastMap: A fast algorithm for indexing, data-mining and visualization of traditional and multimedia datasets. In Michael J. Carey and Donovan A. Schneider, editors, *Proceedings of the 1995 ACM SIGMOD International Conference on Management of Data*, pages 163–174, San Jose, California, 22–25 1995.
- [43] J. Fan and I. Gijbels. Local Polynomial Modelling and Its Applications. Chapman and Hall, 1996.
- [44] M. Farach-Colton and P. Indyk. Approximate nearest neighbor algorithms for Hausdorff metrics via embeddings. In 40th annual symposium on foundations of computer science, pages 171–179, New York, NY, 17 October 1999. IEEE Computer Society Press.
- [45] P. Felzenszwalb and D. Huttenlocher. Efficient matching of pictorial structures. In *IEEE Conf. on Computer Vision and Pattern Recognition*, pages 66–75, Los Alamitos, June 13–15 2000. IEEE.
- [46] R. Fergus, P. Perona, and A. Zisserman. Object class recognition by unsupervised scale-invariant learning. In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition*, volume 2, pages 264–271, June 2003.
- [47] D. Field. What is the goal of sensory coding? Neural Computation, 6:559–601, 1994.
- [48] J. Fritz. Distribution-Free Exponential Error Bound for Nearest Neighbor Pattern Classification. *IEEE Transactions on Information Theory*, 21(5):552–557, September 1975.
- [49] A. Frome, D. Huber, R. Kolluri, T. Bulow, and J. Malik. Recognizing objects in range data using regional point descriptors. In *European Conference on Computer Vision*, Prague, Czech Republic, May 2004.
- [50] K. Fukunaga and D. M. Hummels. Bias of nearest neighbor error estimates. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, PAMI-9(1):103–112, January 1987.

- [51] B. Georgescu, I. Shimshoni, and P. Meer. Mean shift based clustering in high dimnensions: A texture classification example. In *International Conference on Computer Vision*, 2003. (to appear).
- [52] A. Gionis, P. Indyk, and R. Motwani. Similarity search in high dimensions via hashing. In Proceedings of the 25th International Conference on Very Large Data Bases (VLDB '99), pages 518–529, San Francisco, September 1999. Morgan Kaufmann.
- [53] J. Goldberger, S. T. Roweis, G. Hinton, and R. Salakhutdinov. Neighbourhood component analysis. In *Neural Information Processing Systems*, pages 513–520, 2004.
- [54] R. Gonzalez and R. Woods. *Digital image processing*. Prentice hall, Upper Saddle River, New Jersey, 2nd edition, 2001.
- [55] K. Grauman and T. Darrell. Fast contour matching using approximate earth mover's distance. In *IEEE Conf. on Computer Vision and Pattern Recognition*, Washington, DC, June 2004.
- [56] K. Grauman and T. Darrell. The pyramid match kernel: Discriminative classification with sets of image features. In *International Conference on Computer Vision*, Beijing, PRC, October 2005.
- [57] K. Grauman, G. Shakhnarovich, and T. Darrell. A bayesian approach to imagebased visuall hull reconstruction. In *Proceedings IEEE Conf. on Computer* Vision and Pattern Recognition, Madison, WI, 2003.
- [58] K. Grauman, G. Shakhnarovich, and T. Darrell. Inferring 3d structure with a statistical image-based shape model. In *Proceedings of the International Conference on Computer Vision*, Nice, France, October 2003.
- [59] Hemera Images. www.hemera.com.
- [60] T. Hertz, A. Bar-Hillel, and D. Weinshall. Boosting margin-based distance functions for clustering. In *International Conference on Machine Learning*, Banff, Canada, July 2004.
- [61] T. Hertz, A. Bar-Hillel, and D. Weinshall. Learning distance functions for image retrieval. In *IEEE Conf. on Computer Vision and Pattern Recognition*, Washington, DC, June 2004.
- [62] G. R. Hjaltason and H. Samet. Properties of embedding methods for similarity searching in metric spaces. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 25(5):530–549, May 2003.
- [63] M. K. Hu. Visual Pattern Recognition from Motion Invariants. 8:179–187, 1962.

- [64] A. Hyvrinen and P. O. Hoyer. A two-layer sparse coding model learns simple and complex cell receptive fields and topography from natural images. *Vision Research*, 41(18):2413–2423, 2001.
- [65] P. Indyk and R. Motwani. Approximate nearest neighbors: Towards removing the curse of dimensionality. In *Proceedings of the 30th Annual ACM Symposium* on Theory of Computing (STOC-98), pages 604–613, New York, May 23–26 1998. ACM Press.
- [66] M. Isard and A. Blake. Condensation conditional density propagation for visual tracking. *International Journal of Computer Vision*, 29(1):5–28, 1998.
- [67] R. A. Jacobs, M. I. Jordan, S. J. Nowlan, and G. E. Hinton. Adaptive mixtures of local experts. *Neural Computation*, 3(1):79–87, 1991.
- [68] A. K. Jain and A. Vailaya. Image retrieval using color and shape. Pattern Recognition, 8(29):1233–1244, 1996.
- [69] M. Jones and P. Viola. Face Recognition Using Boosted Local Features. Technical Report TR2003-025, MERL, Cambridge, MA, May 2003.
- [70] Y. Ke, D. Hoiem, and R. Sukthankar. Computer vision for music identification. In *IEEE Conf. on Computer Vision and Pattern Recognition*, San Diego, CA, June 2005 (to appear).
- [71] Svetlana Lazebnik, Cordelia Schmid, and Jean Ponce. Semi-local affine parts for object recognition. In *British Machine Vision Conference*, volume volume 2, pages 779–788, 2004.
- [72] J. Lee, J. Chai, P. S. A. Reitsma, J. K. Hodgins, and N. S. Pollard. Interactive Control of Avatars Animated with Human Motion Data. ACM Transactions on Graphics: Special Issue Proceedings of SIGGRAPH, 21(3):491–500, 2002.
- [73] H. Lei and V. Govindaraju. Speeding Up Multi-class SVM by PCA and Feature Selection. In *Feature Selection in Data Mining, Workshop*, pages 72–79, 2005.
- [74] B. Leibe and B. Schiele. Analyzing contour and appearance based methods for object categorization. In *IEEE Conf. on Computer Vision and Pattern Recognition*, Madison, WI, 2003.
- [75] T. Liu, A. W. Moore, and A. Gray. New Algorithms for Efficient High Dimensional Non-parametric Classification. In *Neural Information Processing Sys*tems, 2003.
- [76] D. G. Lowe. Object recognition from local scale-invariant features. pages 1150– 1157, Corfu, Greece, December 2000.
- [77] D. G. Lowe. Distinctive image features from scale-invariant keypoints. International Journal of Computer Vision, 60(2):91–110, 2004.

- [78] David G. Lowe. Similarity metric learning for a variable-kernel classifier. Technical report, February 15 1994.
- [79] S. Mahamud and M. Hebert. The optimal distance measure for object detection. In *IEEE Conf. on Computer Vision and Pattern Recognition*, Madison, WI, June 2003.
- [80] Raphaël Marée, Pierre Geurts, Justus Piater, and Louis Wehenkel. Random subwindows for robust image classification. In *IEEE Conf. on Computer Vision* and Pattern Recognition, volume 1, pages 34–40, June 2005.
- [81] J. Matas, O. Chum, U. Martin, and T. Pajdla. Robust wide baseline stereo from maximally stable extremal regions. In *British Machine Vision Conference*, pages 384–393, London, UK, September 2002.
- [82] Bartlett W. Mel. SEEMORE: Combining color, shape, and texture histogramming in a neurally inspired approach to visual object recognition. *Neural Computation*, 9(4):777–804, 1997.
- [83] David Meyer, Friedrich Leisch, and Kurt Hornik. The support vector machine under test. *Neurocomputing*, 55:169–186, September 2003.
- [84] Krystian Mikolajczyk, Tinne Tuytelaars, Cordelia Schmid, Andrew Zisserman, J. Matas, F. Schaffalitzky, T. Kadir, and L. Van Gool. A comparison of affine region detectors. *Submitted to International Journal of Computer Vision*, 2004. Submitted in August 2004.
- [85] Baback Moghaddam, Tony Jebara, and Alex Pentland. Bayesian face recognition. Pattern Recognition, 33:1771–1782, 2000.
- [86] G. Mori, S. Belongie, and J. Malik. Shape contexts enable efficient retrieval of similar shapes. In *IEEE Conf. on Computer Vision and Pattern Recognition*, pages 723–730, Lihue, HI, 2001.
- [87] G. Mori and J. Malik. Estimating Human Body Configurations using Shape Context Matching. In European Conference on Computer Vision, pages 666– 680, 2002.
- [88] G. Mori, X. Ren, A.A. Efros, and J. Malik. Recovering human body configurations: Combining segmentation and recognition. In *IEEE Conf. on Computer Vision and Pattern Recognition*, volume 2, pages 326–333, 2004.
- [89] B. A. Olshausen and D. J. Field. Sparse coding with an overcomplete basis set: A strategy employed in V1. Vision Research, 37:3311–3325, 1997.
- [90] D. Psaltis, R. R. Snapp, and S. S. Venkatesh. On the Finite Sample Performance of the Nearest Neighbor Classifier. *IEEE Transactions on Information Theory*, 40(3):820–837, May 1994.

- [91] A. Quattoni, M. Collins, and T. Darrell. Conditional Random Fields for Object Recognition. In *Neural Information Processing Systems*, 2004.
- [92] R. P. Rao and D. Ballard. Object indexing using an iconic sparse distributed memory. In Intl. Conf. on Computer Vision, pages 24–31, 1995.
- [93] L. Ren, G. Sharknarovich, J. Hodgins, H. Pfister, and P. Viola. Learning silhouette features for control of human motion. ACM Transactions on Graphics, 2005 (to appear).
- [94] R. Ronfard, C. Schmid, and B. Triggs. Learning to parse pictures of people. In *European Conference on Computer Vision*, Copenhagen, Denmark, 2002.
- [95] R. Rosales and S. Sclaroff. Specialized mappings and the estimation of body pose from a single image. In *IEEE Human Motion Workshop*, pages 19–24, Austin, TX, 2000.
- [96] S. T. Roweis and L. Saul. Nonlinear dimensionality reduction by locally linear embedding. *Science*, 290(5500):2323–2326, December 2000.
- [97] S. Mahamud. Discriminative Distance Measures for Object Detection. PhD thesis, Carnegie-Mellon University, 2002.
- [98] P. Sallee and B. Olshausen. Learning sparse multiscale image representations. In *Neural Information Processing Systems*, 2003.
- [99] R. E. Schapire. A brief introduction to boosting. In IJCAI, pages 1401–1406, 1999.
- [100] R. E. Schapire and Y. Singer. Improved boosting algorithms using confidencerated predictions. *Machine Learning*, 37(3):297–336, 1999.
- [101] B. Schiele and J. L. Crowley. Recognition without Correspondence using Multidimensional Receptive Field Histograms. *ijcv*, 36(1):31–50, January 2000.
- [102] C. Schmid, R. Mohr, and C. Bauckhage. Evaluation of interest point detectors. International Journal of Computer Vision, 37(2):151–172, 2000.
- [103] B. Schölkopf and A. Smola. *Learning with Kernels*. MIT Press, 2002.
- [104] Thomas B. Sebastian, Philip N. Klein, and Benjamin B. Kimia. Recognition of Shapes by Editing Shock Graphs. In *International Conference on Computer Vision*, pages 755–762, Vancouver, BC, July 2001. IEEE Computer Society.
- [105] G. Shakhnarovich, P. Viola, and T. Darrell. Fast pose estimation with parameter sensitive hashing. In *Proceedings of the International Conference on Computer Vision*, Nice, France, October 2003.
- [106] C.A Shipp and L. I. Kuncheva. An investigation into how AdaBoost affects classifier diversity. In *Proc. IPMU*, pages 203–208, 2002.

- [107] J. Sivic, B. C. Russell, A. A. Efros, A. Zisserman, and W. T. Freeman. Discovering objects and their location in images. In *International Conference on Computer Vision*, 2005.
- [108] C. Sminchisescu and B. Triggs. Estimating Articulated Human Motion with Covariance Scaled Sampling. International Journal of Robotics Research, 22(6):371–393, 2003.
- [109] R. R. Snapp and S. S. Venkatesh. Asymptotic derivation of the finite-sample risk of the k nearest neighbor classifier. Technical Report UVM-CS-1998-0101, University of Vermont, Burlingotn, Burlington, VT, October 1997.
- [110] B. Stenger, P. R. S. Mendonca, and R. Cipolla. Model-Based 3D Tracking of an Articulated Hand. In *IEEE Conf. on Computer Vision and Pattern Recognition*, pages 310–317, Lihue, HI, December 2001.
- [111] C. J. Taylor. Reconstruction of articulated objects from point correspondences in a single uncalibrated image. Computer Vision and Image Understanding, 80(3):349–363, December 2000.
- [112] J. B. Tenenbaum, V. de Silva, and J. C. Langford. A global geometric framework for nonlinear dimensionality reduction. *Science*, 290(5500):2319–2323, December 2000.
- [113] Luís Torgo. Error estimators for pruning regression trees. pages 125–130, Chemnitz, Germany, April 1998.
- [114] P. Viola and M. Jones. Fast and robust classification using asymmetric adaboost and a detector cascade. In T. G. Dietterich, S. Becker, and Z. Ghahramani, editors, Advances in Neural Information Processing Systems 14, Cambridge, MA, 2002. MIT Press.
- [115] Paul Viola and Michael Jones. Robust real-time face detection. In International Conference on Computer Vision, pages 747–747, Los Alamitos, CA, July 2001. IEEE Computer Society.
- [116] Laurenz Wiskott and Terrence Sejnowski. Slow feature analysis: Unsupervised learning of invariances. Neural Computation, 14(4):715–770, 2002.
- [117] Jianxin Wu, James M. Rehg, and Matthew D. Mullin. Learning a rare event detection cascade by direct feature selection. In Sebastian Thrun, Lawrence Saul, and Bernhard Schölkopf, editors, Advances in Neural Information Processing Systems 16, Cambridge, MA, 2004. MIT Press.
- [118] E. P. Xing, A. Y. Ng, M. I. Jordan, and S. Russell. Distance metric learning with application to clustering with side-information. In S. Thrun S. Becker and K. Obermayer, editors, Advances in Neural Information Processing Systems 15, pages 505–512. MIT Press, Cambridge, MA, 2003.