

Bibliography

Bibliography

- [1] K. Abter, W. Snyder, H. Burkhardt, and G. Hirzinger. Application of Affine Invariant Fourier Descriptors to Recognition of 3D Objects. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 12(7):640–647, 1990.
- [2] S. Acton. Multigrid anisotropic diffusion. *IEEE Transactions on Image Processing*, 7(3):280–291, 1998.
- [3] D. Adalsteinsson and J. Sethian. A Fast Level Set Method for Propagating Interfaces. *Journal of Computational Physics*, 118:269–277, 1995.
- [4] R. Adams and L. Bischof. Seeded Region Growing. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 16:641–647, 1994.
- [5] E. Adelson and J. Bergen. Spatiotemporal energy models for the perception of motion. *Journal of the Optical Society of America A*, 2:284–299, 1985.
- [6] E. Adelson and J. Movshon. Phenomenal coherence of moving plaid patterns. *Nature*, 300(5892):523–525, 1982.
- [7] A. Agarwala, M. Dontcheva, M. Agrawala, S. Drucker, A. Colburn, B. Curless, D. Salesin, and M. Cohen. Interactive digital photomontage. *ACM Transactions on Graphics*, 23(3):292–300, August 2004.
- [8] J. Aggarwal and Q. Cai. Human Motion Analysis: A Review. *Computer Vision and Image Understanding*, 73(3):428–440, 1999.
- [9] M. Agrawal and L. Davis. A probabilistic framework for surface reconstruction from multiple images. In *IEEE International Conference on Computer Vision and Pattern Recognition*, volume 2, pages 470–476, December 2001.
- [10] M. Agrawal and L. Davis. Window-based, discontinuity preserving stereo. In *IEEE Conference on Computer Vision and Pattern Recognition*, pages I: 66–73, 2004.
- [11] A. Alexander, K. Hasan, M. Lazar, J. Tsuruda, and D. Parker. Analysis of partial volume effects in diffusion-tensor MRI. *Magnetic Resonance Medicine*, 45:770–780, 2001.
- [12] C. Alexander, C. Gee, and R. Bajcsy. Similarity Measure for Matching Diffusion Tensor images. In *British Machine Vision Conference*, pages 93–102, 1999.
- [13] D. Alexander, G. Barker, and S. Arridge. Detection and modeling of non-gaussian apparent diffusion coefficient profiles in human brain data. *Magn. Reson. Med.*, 48:331–340, 2002.

- [14] S. Alliney. A Property of the Minimum Vectors of a Regularizing Functional Defined by Means of the Absolute Norm. *IEEE Transactions on Signal Processing*, 45:913–917, 1997.
- [15] L. Alvarez, P-L. Lions, and J-M. Morel. Image selective smoothing and edge detection by nonlinear diffusion. *SIAM Journal of Numerical Analysis*, 29:845–866, 1992.
- [16] O. Amadiou, E. Debreuve, M. Barlaud, and G. Aubert. Inward and Outward Curve Evolution Using Level Set Method. In *IEEE International Conference on Image Processing*, volume III, pages 188–192, 1999.
- [17] S. Amari. Information Geometry on Hierarchy of Probability Distributions. *IEEE Transaction on Information Theory*, 47(5):1701–1711, 2001.
- [18] L. Ambrosio, V. Caselles, S. Masnou, and J-M. Morel. Connected Components of Sets of Finite Perimeter and Applications to Image Processing. *Journal of European Mathematical Society*, 3:39–92, 2001.
- [19] L. Ambrosio, N. Fusco, and D. Pallara. *Functions of Bounded Variation and Free Discontinuity Problems*. Oxford University Press, 2000.
- [20] L. Ambrosio and S. Masnou. A Direct Variational Approach to a Problem Arising in Image Reconstruction. *Interfaces and Free Boundaries*, 5:63–81, 2003.
- [21] N. Amenta, M. Bern, and M. Kamvysselis. A New Voronoi-Based Surface Reconstruction Algorithm. In *Proc. SIGGRAPH 98, ACM*, pages 415–421, 1998.
- [22] A. Amini, Y. Chen, M. Elayyadi, and P. Radeva. Tag surface reconstruction and tracking of myocardial beads from SPAMM-MRI with parametric b-spline surfaces. *IEEE Transactions on Medical Imaging*, 20(2):94–103, 2001.
- [23] A. Amini, S. Tehrani, and T. Weymouth. Using dynamic programming for minimizing the energy of active contours in the presence of hard constraints. In *IEEE International Conference on Computer Vision*, pages 95–99, 1988.
- [24] Amira. Amira Visualization and Modeling System. <http://www.AmiraVis.com>, 2004.
- [25] P. Anandan. A computational framework and an algorithm for the measurement of visual motion. *International Journal of Computer Vision*, 2:283–310, 1989.
- [26] P. Andresen and M. Nielsen. Non-rigid registration by geometry-constrained diffusion. *Medical Image Analysis*, 6:81–88, 2000.
- [27] F. Andreu, V. Caselles, J. Diaz, and J. Mazón. Qualitative properties of the total variation flow. *Journal of Functional Analysis*, 188(2):516–547, February 2002.
- [28] B. Appleton and H. Talbot. Globally optimal surfaces by continuous maximal flows. In *Digital Image Computing: Techniques and Applications, Proc. VIIth APRS*, volume 1, pages 623–632, December 2003.
- [29] P. Arbelaez and L. Cohen. Energy partitions and image segmentation. *Journal of Mathematical Imaging and Vision*, 20(1-2):43–57, January - March 2004.
- [30] R. Ardon and L. Cohen. Fast constrained surface extraction by minimal paths. In *Proc. IEEE Workshop on Variational and Level Set Methods in Computer Vision*, Nice, France, September 2003.
- [31] G. Aronsson. On the Partial Differential Equation $u_x^2 u_{xx} + 2u_x u_y u_{xy} + u_y^2 u_{yy} = 0$. *Ark. for Math.*, 7:395–425, 1968.
- [32] M. Ashikhmin. Synthesizing Natural Textures. In *ACM Symposium on Interactive 3D Graphics*, pages 217–226, 2001.

- [33] C. Atkinson and A. Mitchell. Rao's distance measure. *Sankhya: The Indian Journal of Statistics*, 43(A):345–365, 1981.
- [34] G. Aubert, M. Barlaud, O. Faugeras, and S. Jehan-Besson. Image segmentation using active contours: Calculus of variations or shape gradients? *SIAM Applied Mathematics*, 63(6):2128–2154, 2003.
- [35] J. August and S. Zucker. Sketches with curvature: The curve indicator random field and markov processes. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 25:387–401, 2003.
- [36] J.-F. Aujol, G. Aubert, L. Blanc-Feraud, and A. Chambolle. Image Decomposition: Applications to Textured Images and SAR Images. Technical Report 4704, INRIA, France, 2002.
- [37] S. Avidan. Support vector tracking. In *IEEE Conference on Computer Vision and Pattern Recognition*, 2001.
- [38] S. Ayer and H. Sawhney. Layered Representation of Motion Video Using Robust Maximum-Likelihood Estimation of Mixture Models and MDL Encoding. In *IEEE International Conference in Computer Vision*, pages 777–784, Cambridge, USA, 1995.
- [39] F. Azuola. *Error in the Representation of Anthropometric Data By Human Figure Models*. PhD thesis, University of Pennsylvania, Philadelphia, PA, 1996.
- [40] A. Bab-Hadiashar and D. Suter. Robust optical flow computation. *International Journal of Computer Vision*, 29:59–77, 1998.
- [41] N. Badler, C. Phillips, and B. Webber. *Simulating humans: Computer Graphics Animation and Control*. Oxford University Press, New York, NY, 1993.
- [42] C. Bajaj, F. Bernardini, and G. Xu. Automatic Reconstruction of Surfaces and Scalar Fields from 3D Scans. In *Proc. SIGGRAPH 95, ACM*, pages 109–118, 1995.
- [43] S. Baker and I. Matthews. Lucas-kanade 20 years on: A unifying framework: Part 1: The quantity approximated, the warp update rule, and the gradient descent approximation. *International Journal of Computer Vision*, 56(3):221–255, March 2004.
- [44] S. Bakshi and Y. Yang. Shape from shading for non-lambertian surfaces. In *IEEE International Conference on Image Processing*, volume 94, pages 130–134, 1994.
- [45] V. Balasubramanian. A geometric formulation of Occam's razor for inference of parametric distributions. PUPT 1588, Princeton University, December 2001.
- [46] C. Ballester, M. Bertalmio, V. Caselles, G. Sapiro, and J. Verdera. Filling-in by Joint Interpolation of Vector Fields and Grey Levels. *IEEE Transactions on Image Processing*, 10:1200–1211, 2001.
- [47] C. Ballester, V. Caselles, and J. Verdera. Disocclusion by Joint Interpolation of Vector Fields and Gray Levels. *Multiscale Modeling and Simulation*, 2:80–123, 2003.
- [48] C. Ballester, V. Caselles, J. Verdera, M. Bertalmio, and G. Sapiro. A Variational Model for Filling-in Gray level and Color Images. In *Proc. Eighth International Conference on Comp. Vision ICCV*, volume 1, pages 10–16, Vancouver, Canada, 2001.
- [49] Y. Bao and H. Krim. Towards bridging scale-space and multiscale frame analyses. In A. Petrosian and F. Meyer, editors, *Wavelets in Signal and Image Analysis*,

- volume 19 of *Computational Imaging and Vision*, chapter 6. Kluwer, Dordrecht, 2001.
- [50] Z. Bar-Joseph, R. El-Yaniv, D. Lischinski, and M. Werman. Texture mixing and texture movie synthesis using statistical learning. *IEEE Transactions on Visualization and Computer Graphics*, 7(2):120–135, 2001.
- [51] E. Bardinet, L. Cohen, and N. Ayache. A parametric deformable model to fit unstructured 3D data. *Computer Vision and Image Understanding*, 71(1):39–54, 1998.
- [52] G. Barles. *Solutions de Viscosité des Equations de Hamilton–Jacobi*. Springer–Verlag, 1994.
- [53] G. Barles and P. Souganidis. Convergence of Approximation Schemes for Fully Non-Linear Second Order Equations. *Asymptotic Analysis*, 4:271–283, 1991.
- [54] E. Barret, P. Payton, N. Haag, and M. Brill. General Methods for Determining Projective Invariants in Imagery. *CVGIP: Image Understanding*, 53:46–65, 1991.
- [55] E. Barrett, P. Payton, and M. Brill. Contributions to the Theory of Projective Invariants for Curves in Two or Three Dimensions. In *DARPA/ESPRIT Workshop on the use of Invariants in Computer Vision, Reykjavik, Iceland*, 1991.
- [56] R. Barrett, M. Berry, J. Chan, T. Demmel, J. Donato, J. Dongarra, V. Eijkhout, R. Pozo, C. Romine, and H. Van der Vorst. *Templates for the Solution of Linear Systems: Building Blocks for Iterative Methods*. Number 43 in Miscellaneous Titles in Applied Mathematics Series. SIAM, November 1993.
- [57] C. Barrón and I. Kakadiaris. Estimating Anthropometry and Pose from a Single Image. *Computer Vision And Image Understanding*, 81(3):269–284, March 2001.
- [58] C. Barrón and I. Kakadiaris. On the improvement of anthropometry and pose estimation from a single uncalibrated image. *Machine Vision and Applications*, 14(4):229–236, 2003.
- [59] J. Barron, D. Fleet, and S. Beauchemin. Performance of Optical Flow Techniques. *International Journal of Computer Vision*, 12:43–77, 1994.
- [60] B. Bascle and R. Deriche. Region tracking through image sequences. In *IEEE International Conference on Computer Vision*, pages 302–307, 1995.
- [61] R. Basri, L. Costa, D. Geiger, and D. Jacobs. Determining the similarity of deformable shapes. *Vision Research*, 38:2365–2385, 1998.
- [62] P. Basser. Inferring microstructural features and the physiological state of tissues from diffusion-weighted images. *NMR Biomed.*, 8:333–344, 1995.
- [63] P. Basser, J. Mattiello, and D. Le Bihan. MR diffusion tensor spectroscopy and imaging. *Biophysica*, 66:259–267, 1994.
- [64] P. Basser, J. Mattiello, and D. Le Bihan. Estimation of the effective self-diffusion tensor from the NMR. *Spin Echo. J. Magn. Reson.*, series B 103:247–254, 1994.
- [65] P. Basser and C. Pierpaoli. Microstructural and Physiological Features of Tissue Eelucidated by Quantitative Diffusion-tensor MRI. *J. Magn. Reson.*, 111(3):209–219, 1996.
- [66] A. Baumberg and D. Hogg. Learning flexible models from image sequences. In J.-O. Eklundh, editor, *European Conference on Computer Vision*, pages 299–308. Springer-Verlag, 1994.

- [67] C. Beaulieu. The basis of anisotropic water diffusion in the nervous system - a technical review. *NMR Biomed.*, 15:435–455, 2002.
- [68] P. Belhumeur, D. Kriegman, and A. Yuille. The bas-relief ambiguity. *IJCV*, 35(1):33–44, 1999.
- [69] G. Bellettini, V. Caselles, and M. Novaga. The Total Variation Flow in \mathbb{R}^n . *J. Differential. Equations*, 184:475–525, 2002.
- [70] G. Bellettini, G. Dal Maso, and M. Paolini. Semicontinuity and Relaxation Properties of a Curvature Depending Functional in 2d. *Ann. Scuola Normale Sup. di Pisa, Cl. Sci.*, 20:247–297, 1993.
- [71] G. Ben-Arous, A. Tannenbaum, and O. Zeitouni. Stochastic approximations to curve shortening flows via particle systems. *Journal Diff. Equations*, 195:119–142, 2003.
- [72] O. Ben-Shahar and S. Zucker. The perceptual organization of texture flow: A contextual inference approach. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 25:401–417, 2003.
- [73] O. Ben-Shahar and S. Zucker. Hue geometry and horizontal connections. *Neural Networks*, 17:753–771, 2004.
- [74] R. Benosman and S.-B. Kang, editors. *Panoramic Vision: Sensors, Theory, and Applications*, New York, 2001. Springer.
- [75] J. Bergen, P. Anandan, K. Hanna, and R. Hingorani. Hierarchical Model-Based Motion Estimation. In *European Conference on Computer Vision*, pages 237–252, 1992.
- [76] F. Bernardini, J. Mittleman, H. Rushmeier, C. Silva, and G. Taubin. The Ball-Pivoting Algorithm for Surface Reconstruction. *IEEE Transactions on Visualization and Computer Graphics*, 5:349–359, 1999.
- [77] M. Bertalmio, A. Bertozzi, and G. Sapiro. Navier-Stokes, fluid-dynamics, and image and video inpainting. In *Proc. of IEEE-CVPR*, pages 355–362, 2001.
- [78] M. Bertalmio, L. Cheng, S. Osher, and G. Sapiro. Variational Problems and Partial Differential Equations on Implicit Surfaces. *Journal of Computational Physics*, 174(2):759–780, 2001.
- [79] M. Bertalmio, G. Sapiro, L.-T. Cheng, and S. Osher. Image Inpainting. In *ACM SIGGRAPH*, pages 417–424, 2000.
- [80] M. Bertalmio, L. Vese, G. Sapiro, and S. Osher. Simultaneous structure and texture image inpainting. *IEEE-TIP*, 12(8):882–889, 2003.
- [81] J. Besag. On the statistical analysis of dirty images. *Journal of Royal Statistics Society*, 48:259–302, 1986.
- [82] P. Besl and N. McKay. A Method for Registration of 3-D Shapes. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 14:239–256, 1992.
- [83] K. Bhat, S. Seitz, J. Hodgins, and P. Khosla. Flow-based video synthesis and editing. In *Proceedings of SIGGRAPH*, pages 360–363, 2004.
- [84] N. Biggs. *Algebraic Graph Theory*. Number 67 in Cambridge Tracts in Mathematics. Cambridge University Press, 1974.
- [85] N. Biggs. Algebraic Potential Theory on Graphs. *Bulletin of London Mathematics Society*, 29:641–682, 1997.

- [86] J. Bigun, G. Granlund, and J. Wiklund. Multidimensional orientation estimation with applications to texture analysis and optical flow. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 13(8):775–790, 1991.
- [87] S. Birchfield and C. Tomasi. A pixel dissimilarity measure that is insensitive to image sampling. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 20(4):401–406, April 1998.
- [88] S. Birchfield and C. Tomasi. Multiway cut for stereo and motion with slanted surfaces. In *IEEE International Conference on Computer Vision*, pages 489–495, 1999.
- [89] M. Black and P. Anandan. The robust estimation of multiple motions: Parametric and piecewise-smooth flow fields. *Computer Vision and Image Understanding*, 63:75–104, 1996.
- [90] M. Black and A. Jepson. Eigenttracking: Robust matching and tracking of articulated objects using a view-based representation. In *European Conference on Computer Vision*, pages 329–342, 1996.
- [91] M. Black and A. Jepson. EigenTracking: Robust matching and tracking of articulated objects using a view-based representation. *International Journal of Computer Vision*, 26(1):63–84, 1998.
- [92] A. Blake. Visual tracking: a longer research roadmap. Internal Report MSR-TR-2005-??, Microsoft Research, 2005.
- [93] A. Blake, R. Curwen, and A. Zisserman. A framework for spatio-temporal control in the tracking of visual contours. *International Journal Computer Vision*, 11(2):127–145, 1993.
- [94] A. Blake and M. Isard. *Active contours*. Springer, 1998.
- [95] A. Blake, M. Isard, and D. Reynard. Learning to track the visual motion of contours. *Journal of Artificial Intelligence*, 78:101–134, 1995.
- [96] A. Blake, C. Rother, M. Brown, P. Perez, and P. Torr. Interactive image segmentation using an adaptive gmmrf model. In *8th European Conference on Computer Vision*, volume I of *LNCS 3021*, pages 428–441, Prague, Czech Republic, May 2004. Springer-Verlag.
- [97] W. Blaschke. *Vorlesungen uber Differential Geometrie II*. Berlin, Germany, 1923. Verlag von Julius Springer.
- [98] P. Blomgren and T. Chan. Color TV : Total Variation Methods for Restoration of Vector Valued Images. *IEEE Transactions on Image Processing*, 7(3):304–309, 1998.
- [99] P. Blomgren, T. Chan, P. Mulet, and C. Wong. Total Variation Image Restoration: Numerical Methods and Extensions. In *IEEE International Conference on Image Processing*, pages III, 384–387, 1997.
- [100] H. Blum and R. Nagel. Shape Description Using Symmetric Axis Features. *Pattern Recognition*, 10:167–180, 1978.
- [101] F. Bookstein. Principal Warps: Thin-plate Splines and the Decomposition of Deformations. *IEEE Trans. Patt. Anal. Mach. Intell.*, 11(6):567–585, June 1989.
- [102] F. Bookstein. *Morphometric Tools for Landmark Data: Geometry and Biology*. Cambridge University Press, 1991.

- [103] G. Borgefors. Distance Transformations in Digital Images. *Computer Vision, Graphics, and Image Processing*, 34:344–371, 1986.
- [104] E. Borovikov and L. Davis. A distributed system for real-time volume reconstruction. In *Proc. Fifth IEEE International Workshop on Computer Architectures for Machine Perception*, 2000.
- [105] J. Bosch, S. Mitchell, B. Lelieveldt, F. Nijland, O. Kamp, M. Sonka, and J. Reiber. Automatic segmentation of echocardiographic sequences by active appearance models. *IEEE Trans. Med. Imaging*, 21:1374–1383, 2002.
- [106] C. Bowyer, K. and Dyer. Aspect graphs: An introduction and survey of recent results. *Int. J. Imaging Systems and Technology*, 2:315–328, 1990.
- [107] Y. Boykov and G. Funka-Lea. Optimal Object Extraction via Constrained Graph-Cuts. *International Journal of Computer Vision (IJCV)*, 2005, to appear. (Earlier version is in ICCV'01, vol. I, pp. 105-112, July 2001).
- [108] Y. Boykov and M-P. Jolly. Interactive Organ Segmentation using Graph Cuts. In *Medical Image Computing and Computer-Assisted Intervention*, pages 276–286, Pittsburgh, PA, October 2000.
- [109] Y. Boykov and V. Kolmogorov. Computing geodesics and minimal surfaces via graph cuts. In *International Conference on Computer Vision*, volume I, pages 26–33, 2003.
- [110] Y. Boykov and V. Kolmogorov. An experimental comparison of min-cut/max-flow algorithms for energy minimization in vision. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 26(9):1124–1137, September 2004.
- [111] Y. Boykov, O. Veksler, and R. Zabih. Markov random fields with efficient approximations. In *IEEE Conference on Computer Vision and Pattern Recognition*, pages 648–655, 1998.
- [112] Y. Boykov, O. Veksler, and R. Zabih. A New Algorithm for Energy Minimization with Discontinuities. In Hancock-E-R; Pelillo-M., editor, *Energy Minimization Methods in Computer Vision and Pattern Recognition. Second International Workshop, EMMCVPR'99, York, UK, 26-29 July 1999.*, pages 205–220, 26-29 July 1999.
- [113] Y. Boykov, O. Veksler, and R. Zabih. Fast Approximate Energy Minimization via Graph Cuts. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 23:1222–1239, 2001.
- [114] K. Bredies, D. Lorenz, P. Maass, and G. Teschke. A partial differential equation for continuous non-linear shrinkage filtering and its application for analyzing MMG data. In F. Truchetet, editor, *Wavelet Applications in Industrial Processing*, volume 5266 of *Proceedings of SPIE*, pages 84–93. SPIE Press, Bellingham, 2004.
- [115] C. Bregler and J. Malik. Tracking people with twists and exponential maps. In *Proc. CVPR*, 1998.
- [116] X. Bresson, P. Vandergheynst, and J. Thiran. A Priori Information in Image Segmentation: Energy Functional based on Shape Statistical Model and Image Information. In *IEEE International Conference on Image Processing*, volume 3, pages 428–428, Barcelona, Spain, 2003.
- [117] A. Broadhurst, T. Drummond, and R. Cipolla. A Probabilistic Framework for Space Carving. In *IEEE International Conference on Computer Vision*, pages 388–393, 2001.

- [118] M. Brooks. Two results concerning ambiguity in shape from shading. In *AAAI-83*, pages 36–39, 1983.
- [119] M. Brooks, W. Chojnacki, and R. Kozera. Shading without shape. *Quarterly of Applied Mathematics*, 50(1):27–38, 1992.
- [120] M. Brown, D. Burschka, and G. Hager. Advances in computational stereo. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 25(8):993–1008, August 2003.
- [121] M. Brown and D. Lowe. Recognising Panoramas. In *IEEE International Conference in Computer Vision*, pages 1218–1225, 2003.
- [122] T. Brox, A. Bruhn, N. Papenberg, and J. Weickert. High accuracy optical flow estimation based on a theory for warping. In *ECCV04*, pages Vol IV: 25–36, 2004.
- [123] T. Brox, M. Rousson, R. Deriche, and J. Weickert. Unsupervised segmentation incorporating colour, texture, and motion. *Computer Analysis of Images and Patterns. Lecture Notes in Computer Science*, 2756:353–360, 2003.
- [124] T. Brox, J. Weickert, B. Burgeth, and P. Mrázek. Nonlinear structure tensors. Technical Report 113, Department of Mathematics, Saarland University, Saarbrücken, Germany, October 2004.
- [125] A. Bruckstein. On shape from shading. *Computer Vision Graphics Image Process*, 44:139–154, 1988.
- [126] A. Bruckstein, R. Holt, A. Netravali, and T. Richardson. Invariant Signatures for Planar Shape Recognition under Partial Occlusion. *CVGIP: Image Understanding*, 58(1):49–65, 1993.
- [127] A. Bruckstein, N. Kazir, M. Lindenbaum, and M. Porat. Invariant Signatures for Partially Occluded Planar Shapes. *International Journal of Computer Vision*, 7(3):271–285, 1992.
- [128] A. Bruckstein and A. Netravali. On Differential Invariants of Planar Curves and Recognizing Partially Occluded Planar Shapes. *Annals of Mathematics and Artificial Intelligence*, 13(3-4):227–250, 1995.
- [129] A. Bruckstein, E. Rivlin, and I. Weiss. Scale Space Semi-local Invariants. *Image and Vision Computing*, 15(5):335–344, May 1997.
- [130] A. Bruckstein, G. Sapiro, and D. Shaked. Affine Invariant Evolutions of Planar Polygons. *International Journal of Pattern Recognition and Artificial Intelligence*, 9(6):991–1014, 1996.
- [131] A. Bruckstein and D. Shaked. On Projective Invariant Smoothing and Evolutions of Planar Curves and Polygons. *Journal of Mathematical Imaging and Vision*, 7(3):225–240, Jun 1997.
- [132] A. Bruckstein and D. Shaked. Skew-Symmetry Detection via Invariant Signatures. *Pattern Recognition*, 31(2):181–192, Feb 1998.
- [133] A. Bruhn, J. Weickert, and C. Schnorr. Lucas/Kanade meets Horn/Schunck: Combining local and global optic flow methods. *International Journal of Computer Vision*, 61(3):211–231, 2005.
- [134] A. Bruss. The eikonal equation: Some results applicable to computer vision. *Journal of Mathematical Physics*, 23(5):890–896, 1982.

- [135] K. Bubna and C. Stewart. Model Selection Techniques and Merging Rules for Range Data Segmentation Algorithms. *Computer Vision and Image Understanding*, 80:215–245, 2000.
- [136] S. Buchin. Affine Differential Geometry. In *Gordon and Breach Science Publishers New York*. Science Press, Beijing, China, 1983.
- [137] J. Burbea. Informative geometry of probability spaces. *Expositiones Mathematica*, 4:347–378, 1986.
- [138] J. Burbea and C. Rao. Entropy differential metric, distance and divergence measures in probability spaces: A unified approach. *Journal of Multivariate Analysis*, 12:575–596, 1982.
- [139] P. Burt and E. Adelson. A multiresolution spline with applications to image mosaics. *ACM Transactions on Graphics*, 2(4):217–236, October 1983.
- [140] H. Buseman. *Convex Surfaces*. Interscience Publ., 1958.
- [141] E. Calabi, P. Olver, C. Shakiban, and et al. Differential and Numerically Invariant Signature Curves Applied to Object Recognition. *International Journal of Computer Vision*, 26(2):107–135, Feb 1998.
- [142] L. Calabi and W. Hartnett. Shape Recognition, Prairie Fires, Convex Deficiencies and Skeletons. *Amer. Math. Mon.*, 75:335–342, 1968.
- [143] M. Calvo and J. Oller. An explicit solution of information geodesic equations for the multivariate normal model. *Statistics and Decisions*, 9:119–138, 1991.
- [144] F. Camilli and M. Falcone. An approximation scheme for the maximal solution of the shape-from-shading model. In *ICIP'96*, pages 49–52, 1996.
- [145] V. Camion and L. Younes. Geodesic Interpolating Splines. In *Energy Minimization Methods for Computer Vision and Pattern Recognition*, pages 513–527. Springer, New York, 2001.
- [146] A. Can, H. Shen, J. Turner, H. Tanenbaum, and B. Roysam. Rapid Automated Tracing and Feature Extraction from Live High-Resolution Retinal Fundus Images Using Direct Exploratory Algorithms. *IEEE Transactions on Information Technology in Biomedicine*, 3:125–138, 1999.
- [147] A. Can, C. Stewart, B. Roysam, and H. Tanenbaum. A Feature-Based, Robust, Hierarchical Algorithm for Registering Pairs of Images of the Curved Human Retina. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 24:347–364, 2002.
- [148] D. Capel and A. Zisserman. Automated mosaicing with super-resolution zoom. In *IEEE Computer Society Conference on Computer Vision and Pattern Recognition*, pages 885–891, Santa Barbara, June 1998.
- [149] R. Carceroni and K. Kutulakos. Multi-View Scene Capture by Surfel Sampling: From Video Streams to Non-Rigid 3D Motion, Shape and Reflectance. *The International Journal of Computer Vision*, 49:175–214, 2002.
- [150] J. Carr, R. Beatson, J. Cherrie, T. Mitchell, W. Fright, B. McCallum, and T. Evans. Reconstruction and Representation of 3D Objects with Radial Basis Functions. In *ACM SIGGRAPH*, pages 67–76, 2001.
- [151] J. Carter. *Dual Methods for Total Variation-based Image Restoration*. PhD thesis, UCLA, Los Angeles, CA, 2001.

- [152] V. Caselles, F. Catté, B. Coll, and F. Dibos. A geometric model for active contours in image processing. *Numerische Mathematik*, 66(1):1–31, 1993.
- [153] V. Caselles, B. Coll, and J.-M. Morel. Geometry and color in natural images. *Journal Mathematical Imaging and Vision*, 16:89–105, 2002.
- [154] V. Caselles, B. Coll, and J.-M. Morel. Topographic Maps and Local Contrast Changes in Natural Images. *Int. J. of Computer Vision*, 33:5–27, 1999.
- [155] V. Caselles, R. Kimmel, and G. Sapiro. Geodesic Active Contours. In *IEEE International Conference in Computer Vision*, pages 694–699, 1995.
- [156] V. Caselles, R. Kimmel, and G. Sapiro. Geodesic Active Contours. *International Journal of Computer Vision*, 22:61–79, 1997.
- [157] V. Caselles, R. Kimmel, G. Sapiro, and C. Sbert. Minimal surfaces based object segmentation. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 19:394–398, 1997.
- [158] V. Caselles, J.-M. Morel, G. Sapiro, and A. Tannenbaum. Introduction to the special issue on PDEs and geometry-driven diffusion in image processing and analysis. *IEEE Transactions on Image Processing*, 7(3):269–274, 1998.
- [159] A. Chakraborty, L. Staib, and J. Duncan. Deformable boundary finding in medical images by integrating gradient and region information. *IEEE Transactions on Medical Imaging*, 15:859–870, december 1996.
- [160] A. Chambolle. An Algorithm for Total Variation Minimization and Applications. *J. Math. Imaging Vision*, 20:89–97, 2004.
- [161] A. Chambolle, R. DeVore, N. Lee, and B. Lucier. Nonlinear wavelet image processing: variational problems, compression, and noise removal through wavelet shrinkage. *IEEE Transactions on Image Processing*, 7(3):319–335, March 1998.
- [162] A. Chambolle and P.-L. Lions. Image Recovery via Total Variation Minimization and Related Problems. *Numerische Mathematik*, 76:167–188, 1997.
- [163] A. Chambolle and B. Lucier. Interpreting translationally-invariant wavelet shrinkage as a new image smoothing scale space. *IEEE Transactions on Image Processing*, 10(7):993–1000, 2001.
- [164] G. Champleboux, S. Lavalée, R. Szeliski, and L. Brunie. From Accurate Range Imaging Sensor Calibration to Accurate Model-Based 3-D Object Localization. In *IEEE Conference on Computer Vision and Pattern Recognition*, pages 83–89, 1992.
- [165] T. Chan and S. Esedoglu. Aspects of Total Variation Regularized L^1 Function Approximation. *UCLA CAM Report*, 04-07, 2004. Accepted for publication in *SIAM J. Appl. Math.*
- [166] T. Chan, G. Golub, and P. Mulet. A Nonlinear Primal-dual Method for Total Variation-based Image Restoration. *SIAM J. Sci. Comp.*, 20:1964–1977, 1999.
- [167] T. Chan, S. Kang, and J. Shen. Euler’s Elastica and Curvature-based Image Inpainting. *SIAM J. Appl. Math.*, 63(2):564–592, 2002.
- [168] T. Chan, M. Marquina, and P. Mulet. High-order Total Variation-based Image Restoration. *SIAM J. Sci. Comput.*, 22:503–516, 2000.
- [169] T. Chan and F. Park. Data Dependent Multiscale Total Variation Based Image Decomposition and Contrast Preserving Denoising. *UCLA CAM Report*, 04-15, 2004.

- [170] T. Chan, B. Sandberg, and L. Vese. Active contours without edges for vector-valued images. *Journal of Visual Communications and Image Representation*, 11(2):130–141, 2000.
- [171] T. Chan and J. Shen. Mathematical Models of Local Non-texture Inpaintings. *SIAM J. Appl. Math.*, 62:1019–1043, 2001.
- [172] T. Chan and J. Shen. Non-texture Inpaintings by Curvature-driven Diffusions (CDD). *J. Visual Comm. Image Rep.*, 12(4):436–449, 2001.
- [173] T. Chan and L. Vese. An Active Contour Model without Edges. In *International Conference on Scale-Space Theories in Computer Vision*, pages 141–151, 1999.
- [174] T. Chan and L. Vese. Active Contours without Edges. *IEEE Transactions on Image Processing*, 10:266–277, 2001.
- [175] T. Chan and L. Vese. A Level Set Algorithm for Minimizing the Mumford–Shah Functional in Image Processing. In *IEEE Workshop on Variational and Level Set Methods in Comp. Vis.*, pages 161–168, 2001.
- [176] T. Chan and C. Wong. Total Variation Blind Deconvolution. *IEEE Trans. Image Process.*, 7:370–375, 1998.
- [177] G. Charpiat, O. Faugeras, and R. Keriven. Approximations of shape metrics and application to shape warping and empirical shape statistics. *Journal of Foundations Of Computational Mathematics*, 2004. in press.
- [178] C. Chefd’hotel, O. Faugeras, D. Tschumperlé, and R. Deriche. Constrained flows of matrix-valued functions: application to diffusion tensor regularization. In *ECCV*, pages 251–265, 2002.
- [179] C. Chefd’hotel, D. Tschumperlé, R. Deriche, and O. Faugeras. Regularizing flows for constrained matrix-valued images. *Journal of Mathematical Imaging and Vision*, 20(1-2):147–162, 2004.
- [180] S. Chen. QuickTime VR – an image-based approach to virtual environment navigation. *Computer Graphics (SIGGRAPH’95)*, pages 29–38, August 1995.
- [181] T. Chen and D. Metaxas. Gibbs prior models, marching cubes, and deformable models: a hybrid segmentation framework for medical images. In *Medical Imaging Computing and Computer-Assisted Intervention*, volume 2, pages 703–710, 2003.
- [182] Y. Chen, W. Guo, Q. Zeng, G. He, B. Vemuri, and Y. Liu. Recovery of intra-voxel structure from hard MRI. In *IEEE International Symposium on Biomedical Imaging*, pages 1028–1031, Arlington, Virginia, 2004.
- [183] Y. Chen, W. Guo, Q. Zeng, X. Yan, F. Huang, H. Zhang, G. He, B. Vemuri, and Y. Liu. Estimation, smoothing, and characterization of apparent diffusion coefficient profiles from high angular resolution DWI. In *IEEE Int. Conf. in Computer Vision and Pattern Recognition (CVPR)*, pages 588–593, Washington, D.C., 2004.
- [184] Y. Chen, S. Levine, and M. Rao. Functionals with $p(x)$ -growth in image restoration. *submitted to SIAM*, 2004.
- [185] Y. Chen and G. Medioni. Object Modeling by Registration of Multiple Range Images. *Image and Vision Computing*, 10:145–155, 1992.
- [186] Y. Chen and G. Medioni. Description of Complex Objects from Multiple Range Images Using an Inflating Balloon Model. *Computer Vision and Image Understanding*, 61:325–334, 1995.

- [187] Y. Chen, H. Tagare, S. Thiruvankadam, F. Huang, D. Wilson, K. Gopinath, R. Briggs, and E. Geiser. Using prior shapes in geometric active contours in a variational framework. *International Journal on Computer Vision*, 50(3):315–328, 2002.
- [188] Y. Chen, H. Thiruvankadam, H. Tagare, F. Huang, and D. Wilson. On the Incorporation of Shape Priors into Geometric Active Contours. In *IEEE Workshop in Variational and Level Set Methods*, pages 145–152, 2001.
- [189] Y. Chen, B. C. Vemuri, and L. Wang. Image Denoising and Segmentation via Non-linear Diffusion. *Computers and Mathematics with Applications*, 39(5/6):131–149, 2000.
- [190] T. Chenevert, J. Brunberg, and J. Pipe. Anisotropic diffusion in human white matter: Demonstration with MR techniques in vivo. *Radiology*, 177:401–405, 1990.
- [191] Y. Cheng. Mean Shift, Mode Seeking, and Clustering. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 17:790–799, 1995.
- [192] C. Chesnaud, P. Réfrégier, and V. Boulet. Statistical region snake-based segmentation adapted to different physical noise models. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 21:1145–1156, November 1999.
- [193] S. Cho and H. Saito. A Divide-and-Conquer Strategy in Shape from Shading problem. In *CVRP'97*, 1997.
- [194] D. Chopp. Computing Minimal Surfaces via Level Set Curvature Flow. *Journal of Computational Physics*, 106:77–91, 1993.
- [195] A. Chorin and J. Marsden. *A Mathematical Introduction to Fluid Mechanics*. Springer-Verlag, Third Edition, 1993.
- [196] G. Christensen. *Deformable shape models for anatomy*. PhD thesis, Electrical engineering, Washington University, St. Louis, Missouri, August 1994.
- [197] G. Christensen. Consistent Linear-elastic Transformations for Image Matching. In *Proceedings of Information Processing in Medical Imaging—IPMI 99*, pages 224–237. Springer-Verlag, 1999.
- [198] H. Chui and A. Rangarajan. A New Point Matching Algorithm for Non-rigid Registration. *Computer Vision and Image Understanding*, 89:114–141, 2003.
- [199] H. Chui, L. Win, J. Duncan, R. Schultz, and A. Rangarajan. A Unified Non-rigid Feature Registration Method for Brain Mapping. *Medical Image Analysis*, 7:112–130, 2003.
- [200] O. Chum and J. Matas. Randomized ransac with td,d test. In *Proc. BMVC'02, Vol. 2*, pages 448–457, 2002.
- [201] A. Chung, W. Wells III, A. Norbash, and W. Grimson. Multi-modal Image Registration by Minimizing Kullback-Leibler Distance. In *International Conference on Medical Image Computing and Computer-Assisted Intervention*, volume 2 of *Lecture Notes in Computer Science*, pages 525–532. Springer, 2002.
- [202] U. Clarenz, U. Diewald, G. Dziuk, Rumpf. M., and R. Rusu. A Finite Element Method for Surface Restoration with Smooth Boundary Conditions. *Preprint*, 2003.
- [203] I. Cohen and L. Cohen. A hybrid hyperquadric model for 2-D and 3-D data fitting. *Computer Vision and Image Understanding*, 63(3):527–541, May 1996.
- [204] L. Cohen. On active contour models and balloons. *CVGIP: Image Understanding*, 53:211–218, 1991.

- [205] L. Cohen. Avoiding local minima for deformable curves in image analysis. In *Curves and Surfaces with Applications in CAGD*, pages 77–84. A. Le Méhauté, C. Rabut, and L. L. Schumaker (eds.), 1997.
- [206] L. Cohen. Multiple contour finding and perceptual grouping using minimal paths. *Journal of Mathematical Imaging and Vision*, 14(3), 2001. CEREMADE TR 0101, Jan 2001.
- [207] L. Cohen, E. Bardinet, and N. Ayache. Surface reconstruction using active contour models. In *SPIE Conference on Geometric Methods in Computer Vision*, pages 38–50, San Diego, CA, 1993.
- [208] L. Cohen and I. Cohen. Finite-element methods for active contour models and balloons for 2-D and 3-D images. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 15:1131–1147, 1993.
- [209] L. Cohen and R. Kimmel. Fast marching the global minimum of active contours. In *IEEE International Conference on Image Processing (ICIP'96)*, pages I:473–476, Lausanne, Suisse, September 1996.
- [210] L. Cohen and R. Kimmel. Global minimum for active contour models: A minimal path approach. *International Journal of Computer Vision*, 24(1):57–78, August 1997.
- [211] T. Cohignac. *Reconnaissance de Formes Planes*. PhD thesis, Université Paris Dauphine, 1994.
- [212] T. Cohignac, C. Lopez, and J.M. Morel. Integral and Local Affine Invariant Parameters and Application to Shape Recognition. In D. Dori and A. Bruckstein, editors, *Shape Structure and Pattern Recognition*. World Scientific Publishing, 1995.
- [213] R. Coifman and D. Donoho. Translation invariant denoising. In A. Antoine and G. Oppenheim, editors, *Wavelets in Statistics*, pages 125–150. Springer, New York, 1995.
- [214] R. Coifman and A. Sowa. New methods of controlled total variation reduction for digital functions. *SIAM Journal on Numerical Analysis*, 39(2):480–498, 2001.
- [215] R. Collins, A. Lipton, H. Fujiyoshi, and T. Kanade. Algorithms for cooperative multi-sensor surveillance. *Proceedings of the IEEE*, 89(10):1456–1477, October 2001.
- [216] D. Comaniciu, V. Ramesh, and P. Meer. Real-time tracking of non-rigid objects using mean shift. In *IEEE Conference on Computer Vision and Pattern Recognition*, pages 142–151, 2000.
- [217] W. Cook, W. Cunningham, W. Pulleyblank, and A. Schrijver. *Combinatorial Optimization*. John Wiley & Sons, 1998.
- [218] T. Cootes. Statistical models of appearance for computer vision. Technical report, University of Manchester, 2004.
- [219] T. Cootes, C. Beeston, G. Edwards, and C. Taylor. Unified Framework for Atlas Matching Using Active Appearance Models. In *Information Processing in Medical Imaging*, pages 322–333, 1999.
- [220] T. Cootes, D. Cooper, C. Taylor, and J. Graham. Trainable method of parametric shape description. *Image and Vision Computing*, 10(5):289–294, 1992.
- [221] T. Cootes, G. Edwards, and C. Taylor. Active appearance models. In *European Conference on Computer Vision*, volume 1407, pages 484–500, 1998.

- [222] T. Cootes, G. Edwards, and C. Taylor. Active appearance models. *IEEE Trans. Pattern Anal. and Machine Intelligence*, 23:681–685, 2001.
- [223] T. Cootes, C. Taylor, D. Cooper, and J. Graham. Active shape models - their training and application. *Computer Vision and Image Understanding*, 61:38–59, 1995.
- [224] K. Cornelis, M. Pollefeys, M. Vergauwen, and L. Van Gool. Augmented reality from uncalibrated video sequences. In *3D Structure from Images - SMILE 2000, LNCS, Vol. 2018*, pages 150–167. Springer-Verlag, 2001.
- [225] I. Corouge, S. Gouttard, and G. Gerig. A statistical shape model of individual fiber tracts extracted from diffusion tensor MRI. In *MICCAI*, pages 671–679, 2004.
- [226] O. Coulon, D. Alexander, and S. Arridge. Diffusion tensor magnetic resonance image regularisation. *Medical Image Analysis*, 8(1):47–67, 2004.
- [227] R. Courant and D. Hilbert. *Methods of Mathematical Physics*, volume 2. John Wiley and Sons, 1989.
- [228] F. Courteille, A. Crouzil, J-D. Durou, and P. Gurdjos. Towards shape from shading under realistic photographic conditions. In *ICPR'04*, 2004.
- [229] T. Cover and J. Thomas. *Elements of Information Theory*. Wiley-Interscience, 1991.
- [230] C. Cowan and P. Kovesi. Automatic sensor placement from vision task requirements. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 10(3):407–416, May 1988.
- [231] T. Cox and M. Cox. *Multidimensional Scaling*. Chapman & Hall, London, 2001.
- [232] B. Craine, Craine E., C. O'Toole, and Q. Ji. Digital imaging colposcopy: Corrected area measurements using Shape-from-Shading. *IEEE Transactions on Medical Imaging*, 17(6):1003–1010, 1998.
- [233] D. Cremers, T. Kohlberger, and C. Schnörr. Shape statistics in kernel space for variational image segmentation. *Pattern Recognition*, 36(9):1929–1943, September 2003.
- [234] D. Cremers and S. Soatto. Motion Competition: A Variational Framework for Piecewise Parametric Motion Segmentation. *International Journal of Computer Vision*. to appear.
- [235] D. Cremers and S. Soatto. A pseudo distance for shape priors in level set segmentation. In *IEEE Workshop on Variational, Geometric and Level Set Methods (VLSM)*, pages 169–176, Nice, 2003.
- [236] D. Cremers, N. Sochen, and C. Schnörr. Multiphase Dynamic Labeling for Variational Recognition-driven Image Segmentation. In *European Conference on Computer Vision*, pages 74–86, Prague, Czech Republic, 2004.
- [237] D. Cremers, F. Tischhäuser, J. Weickert, and C. Schnörr. Diffusion Snakes: Introducing statistical shape knowledge into the Mumford–Shah functional. *International Journal on Computer Vision*, 50(3):295–313, 2002.
- [238] A. Criminisi, P. Perez, and K. Toyama. Region filling and object removal by exemplar-based image inpainting. *IEEE-TIP*, 13(9):1200–1212, 2004.
- [239] W. Culbertson, T. Malzbender, and G. Slabaugh. Generalized voxel coloring. In B. Triggs, A. Zisserman, and R. Szeliski, editors, *Vision Algorithms: Theory and Practice (Proc. Int. Workshop on Vision Algorithms)*, volume 1883 of *Lecture Notes in Computer Science*, pages 100–115. Springer-Verlag, 2000.

- [240] B. Curless and M. Levoy. A volumetric method for building complex models from range images. In *ACM SIGGRAPH*, pages 303–312, 1996.
- [241] R. Curwen and A. Blake. Dynamic contours: real-time active splines. In A. Blake and A. Yuille, editors, *Active Vision*, pages 39–58. MIT, 1992.
- [242] D. Cygansky, J. Orr, T. Cott, and R. Dodson. An Affine Transform Invariant Curvature Function. In *Proceedings of the First ICCV*, pages 496–500, London, England, 1987.
- [243] P. Danielsson. Euclidean Distance Mapping. *Computer Graphics and Image Processing*, 14:227–248, 1980.
- [244] M. Darboux. Sur Un Probleme de Geometrie Elementarie. *Bull. Sci. Math*, 2:298–304, 1878.
- [245] T. Darrell, D. Demirdjian, N. Checka, and P. Felzenszwalb. Plan-view trajectory estimation with dense stereo background models. In *IEEE International Conference on Computer Vision*, pages II: 628–635, Vancouver, Canada, June 2001.
- [246] R. Davies, C. Twining, T. Cootes, J. Waterton, and C. Taylor. 3D statistical shape models using direct optimisation of description length. In *European Conference on Computer Vision – ECCV*, pages 3–21, 2002.
- [247] R. Davies, C. Twining, T. Cootes, J. Waterton, and C. Taylor. A minimum description length approach to statistical shape modelling. *IEEE Transactions on Medical Imaging*, 21(5), May 2002. 525–537.
- [248] J. Davis. Mosaics of scenes with moving objects. In *IEEE Computer Society Conference on Computer Vision and Pattern Recognition*, pages 354–360, Santa Barbara, June 1998.
- [249] J. Davis, S. Marschner, M. Garr, and M. Levoy. Filling Holes in Complex Surfaces Using Volumetric Diffusion. In *Proc. First International Symposium on 3D Data Processing, Visualization, and Transmission*, 2002.
- [250] L. Davis, E. Borovikov, R. Cutler, D. Harwood, and T. Horprasert. Multi-perspective analysis of human action. In *Proc. Third International Workshop on Cooperative Distributed Vision*, November 1999.
- [251] K. De Cock and B. De Moor. Subspace angles between linear stochastic models. In *IEEE Conference on Decision and Control*, volume 2, pages 1561–1566, 2000.
- [252] P. Debevec and J. Malik. Recovering high dynamic range radiance maps from photographs. *Proceedings of SIGGRAPH 97*, pages 369–378, August 1997.
- [253] J. Debonet and P. Viola. Roxels: Responsibility weighted 3d volume reconstruction. In *IEEE International Conference on Computer Vision*, volume 1, pages 415–425, 1999.
- [254] E. Debreuve, M. Barlaud, G. Aubert, and J. Darcourt. Space time segmentation using level set active contours applied to myocardial gated SPECT. *IEEE Transactions on Medical Imaging*, 20(7):643–659, July 2001.
- [255] D. Decarlo and D. Metaxas. Blended deformable models. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 18(4):443–448, 1996.
- [256] M. Delfour and J. Zolésio. *Shape and geometries*. Advances in Design and Control, SIAM, 2001.
- [257] A. Dempster, N. Laird, and D. Rubin. Maximum likelihood from incomplete data via the EM algorithm. *Journal Royal Statistical Society Series B*, 39:1–38, 1977.

- [258] J. Dendy. Black Box Multigrid. *Journal of Computational Physics*, 48:366–386, 1982.
- [259] R. Deriche. Using Canny’s Criteria to Derive a Recursively Implemented Optimal Edge Detector. *International Journal of Computer Vision*, 1:167–187, 1987.
- [260] R. Deriche, D. Tschumperlé, and C. Lenglet. DT-MRI estimation, regularization and fiber tractography. In *Proc. of the 2nd ISBI*, pages 9–12, Washington D.C, 2004.
- [261] A. Dervieux and F. Thomasset. A finite element method for the simulation of rayleigh-taylor instability. *Lecture Notes in Mathematics*, 771:145–159, 1979.
- [262] A. Dervieux and F. Thomasset. Multifluid incompressible flows by a finite element method. In W. Reynolds and R.W. MacCormack, editors, *Seventh International Conference on Numerical Methods in Fluid Dynamics*, volume 141 of *Lecture Notes in Physics*, pages 158–163, June 1980.
- [263] T. Deschamps. *Curve and Shape Extraction with Minimal Path and Level-Sets techniques - Applications to 3D Medical Imaging*. PhD thesis, Université Paris-IX Dauphine, Paris, December 2001.
- [264] T. Deschamps and L. Cohen. Fast extraction of minimal paths in 3D images and applications to virtual endoscopy. *Medical Image Analysis*, 5(4):281–299, December 2001. Video in the web version of the journal.
- [265] T. Deschamps and L. Cohen. Fast extraction of tubular and tree 3D surfaces with front propagation methods. In *Proc. IEEE ICPR’02*, Quebec, Canada, August 2002.
- [266] T. Deschamps and L. Cohen. Grouping connected components using minimal path techniques. In Springer, editor, *Geometrical Method in Biomedical image processing*. R. Malladi (ed.), 2002.
- [267] F. Devernay and O. Faugeras. Computing differential properties of 3-d shapes from stereoscopic images without 3-d models. In *Proc. IEEE Conf. on Computer Vision and Pattern Recognition*, 1994.
- [268] E. Dickmanns and V. Graefe. Applications of dynamic monocular machine vision. *Machine Vision and Applications*, 1:241–261, 1988.
- [269] E. Dijkstra. A note on two problems in connection with graphs. *Numerische Mathematic*, 1:269–271, 1959.
- [270] H. Dinh, G. Turk, and G. Slabaugh. Reconstructing Surfaces Using Anisotropic Basis Functions. In *Proceedings IEEE Int. Conference on Computer Vision 2001*, pages 606–613, 2001.
- [271] A. Dobbins, S. Zucker, and M. Cynader. Endstopping and curvature. *Vision Research*, 29:1371–1387, 1989.
- [272] D. Dobson and C. Vogel. Global Total Variation Minimization. *SIAM Journal on Numerical Analysis*, 37:646–664, 2000.
- [273] J. Dongarra, I. Duff, D. Sorenson, and H. van der Vorst. *Solving Linear Systems on Vector and Shared Memory Computers*. Society for Industrial and Applied Mathematics, Philadelphia, 1991.
- [274] D. Donoho. De-noising by soft thresholding. *IEEE Transactions on Information Theory*, 41:613–627, 1995.
- [275] D. Donoho and I. Johnstone. Ideal spatial adaptation by wavelet shrinkage. *Biometrika*, 81(3):425–455, 1994.

- [276] C. Dorai, J. Weng, and A. Jain. Optimal Registration of Object Views Using Range Data. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 19:1131–1138, 1997.
- [277] G. Doretto. *DYNAMIC TEXTURES: modeling, learning, synthesis, animation, segmentation, and recognition*. PhD thesis, University of California, Los Angeles, CA, March 2005.
- [278] G. Doretto, A. Chiuso, Y. Wu, and S. Soatto. Dynamic textures. *International Journal of Computer Vision*, 51(2):91–109, 2003.
- [279] G. Doretto, D. Cremers, P. Favaro, and S. Soatto. Dynamic texture segmentation. In *IEEE International Conference in Computer Vision*, volume 2, pages 1236–1242, 2003.
- [280] G. Doretto, E. Jones, and S. Soatto. Spatially homogeneous dynamic textures. In *European Conference on Computer Vision*, volume 2, pages 591–602, 2004.
- [281] G. Doretto and S. Soatto. Editable dynamic textures. In *IEEE Conference on Computer Vision and Pattern Recognition*, volume 2, pages 137–142, 2003.
- [282] G. Doretto and S. Soatto. Modeling dynamic scenes with active appearance. Technical report, UCLA Computer Science Department, December 2004.
- [283] P. Doyle and L. Snell. *Random Walks and Electric Networks*. Number 22 in Carus mathematical monographs. Mathematical Association of America, Washington, D.C., 1984.
- [284] I. Dryden and K. Mardia. *Statistical Shape Analysis*. John Wiley & Son, 1998.
- [285] Y. Duan, L. Yang, H. Qin, and D. Samaras. Shape Reconstruction from 3D and 2D Data using PDE-Based Deformable Surfaces. In *European Conference on Computer Vision*, pages 238–251, 2004.
- [286] J. Duchon. *Splines Minimizing Rotation-invariant Semi-norms in Sobolev Spaces, in Constructive Theory of Functions of Several Variables*, pages 85–100. Springer-Verlag, 1977.
- [287] R. Duda and P. Hart. *Pattern Classification and Scene Analysis*. John Wiley & Sons, 1973.
- [288] R. Duda, P. Hart, and P. Stork. *Pattern Classification*. Wiley Interscience, 2000.
- [289] P. Dupuis, U. Grenander, and M. Miller. Variational Problems on Flows of Diffeomorphisms for Image Matching. *Quarterly of Applied Math.*, 56:587–600, 1998.
- [290] P. Dupuis and J. Oliensis. An optimal control formulation and related numerical methods for a problem in shape reconstruction. *The Annals of Applied Probability*, 4(2):287–346, 1994.
- [291] J.-D. Durou, M. Falcone, and M. Sagona. A survey of numerical methods for shape from shading. Technical Report 2004-2-R, IRIT, 2004.
- [292] J.-D. Durou and D. Piau. Ambiguous shape from shading with critical points. *JMIV*, 12(2):99–108, 2000.
- [293] N. Duta and M. Sonka. Segmentation and interpretation of MR brain images: An improved active shape model. *IEEE Trans. Med. Imaging*, 17:1049–1062, 1998.
- [294] H. Edelsbrunner and E. Mücke. Three-dimensional Alpha Shapes. *ACM Transactions on Graphics*, 13:43–72, 1994.

- [295] B. Efron and R. Tibshirani. *An Introduction to the Bootstrap*. Number 57 in Monographs on Statistics and Applied Probability. Chapman and Hall, 1993.
- [296] A. Efros and W. Freeman. Image Quilting for Texture Synthesis and Transfer. In *Proc. SIGGRAPH 01, ACM Press*, pages 341–346, 2001.
- [297] A. Efros and T. Leung. Texture synthesis by non-parametric sampling. In *IEEE International Conference on Computer Vision*, pages 1033–1038, 1999.
- [298] G. Emile-Male. *The Restorer's Handbook of Easel Painting*. Van Nostrand Reinhold, New York, 1976.
- [299] S. Esedoglu and S. Osher. Decomposition of Images by the Anisotropic Rudin-Osher-Fatemi Model. *Comm. Pure Appl. Math.*, 57:1609–1626, 2004.
- [300] S. Esedoglu and J. Shen. Digital Inpainting Based on the Mumford-Shah-Euler Image Model. *European J. Appl. Math.*, 13:353–370, 2002.
- [301] L. Evans and R. Gariepy. *Measure theory and fine properties of functions*. CRC Press, 1992.
- [302] L. Evans and P. Souganidis. Differential games and representation formulas for solutions of hamilton-jacobi-isaacs equations. *Indiana Univ. Math. J.*, 33:773–797, 1984.
- [303] H. Farid and E. Simoncelli. Differentiation of discrete multi-dimensional signals. *IEEE Transactions on Image Processing*, 13(4):496–508, 2004.
- [304] G. Farin. *Curves and Surfaces for Computer-Aided Geometric Design*. Academic Press, San Diego, 1997.
- [305] G. Farneback. Very high accuracy velocity estimation using orientation tensors, parametric motion models, and simultaneous segmentation of the motion field. In *IEEE International Conference on Computer Vision*, volume 1, pages 171–177, Vancouver, 2001.
- [306] O. Faugeras. What can be seen in three dimensions with an uncalibrated stereo rig? In *Computer Vision – ECCV'92, LNCS, Vol.588*, pages 563–578. Springer-Verlag, 1992.
- [307] O. Faugeras. Cartan's Moving Frame Method and its Application to the Geometry and Evolution of Curves in the Euclidian, Affine and Projective Planes. In J. Mundy, A. Zisserman, and D. Forsyth, editors, *Applications of Invariance in Computer Vision*, chapter Foundations, pages 11–46. Springer Verlag, 1993.
- [308] O. Faugeras and R. Keriven. Complete Dense Stereovision Using Level Set Methods. In *European Conference on Computer Vision*, pages 379–393, 1998.
- [309] O. Faugeras and R. Keriven. Variational Principles, Surface Evolution, PDEs, Level Set Methods, and the Stereo Problem. *IEEE Transactions on Image Processing*, 7:336–344, 1998.
- [310] O. Faugeras, Q.-T. Luong, and S. Maybank. Camera self-calibration: Theory and experiments. In *Computer Vision – ECCV'92, LNCS, Vol.588*, pages 321–334. Springer-Verlag, 1992.
- [311] O. Faugeras, Q.-T. Luong, and T. Papadopoulos. *The geometry of multiple images*. MIT press, 2001.
- [312] O. Faugeras, F. Lustman, and G. Toscani. Motion and structure from motion from point and line matches. In *IEEE International Conference on Computer Vision*, pages 25–34, 1987.

- [313] C. Feddern, J. Weickert, and B. Burgeth. Level-set Methods for Tensor-valued Images. In *IEEE Workshop on Variational and Level Set Methods in Comp. Vis.*, pages 65–72, 2003.
- [314] C. Feddern, J. Weickert, B. Burgeth, and M. Welk. Curvature-driven PDE methods for matrix-valued images. Technical Report 104, Department of Mathematics, Saarland University, Saarbrücken, Germany, April 2004.
- [315] J. Feldmar and N. Ayache. Rigid, affine and locally affine registration of free-form surfaces. *International Journal of Computer Vision*, 18:99–119, 1996.
- [316] M. Fischler and R. Bolles. Random sampling consensus: a paradigm for model fitting with application to image analysis and automated cartography. *Commun. Assoc. Comp. Mach.*, 24:381–395, 1981.
- [317] M. Fischler and R. Elschlager. The representation and matching of pictorial structures. *IEEE. Trans. Computers*, C-22(1), 1973.
- [318] A. Fitzgibbon. Stochastic rigidity: image registration for nowhere-static scenes. In *IEEE International Conference in Computer Vision*, volume 1, pages 662–669, 2001.
- [319] D. Fleet, M. Black, Y. Yacoob, and A. Jepson. Design and use of linear models for image motion analysis. *International Journal of Computer Vision*, 36(3):169–191, 2000.
- [320] D. Fleet and A. Jepson. Computation of component image velocity from local phase information. *International Journal of Computer Vision*, 5:77–104, 1990.
- [321] D. Fleet and A. Jepson. Stability of phase information. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 15:1253–1268, 1993.
- [322] J. Fleet. *Measurement of Image Velocity*. Kluwer, Norwell, MA, 1992.
- [323] P. Fletcher and S. Joshi. Principal geodesic analysis on symmetric spaces: Statistics of diffusion tensors. In *CVAMIA-MMBIA*, pages 87–98, 2004. ECCV'04 workshop.
- [324] L. Ford and D. Fulkerson. *Flows in Networks*. Princeton University Press, 1962.
- [325] W. Förstner and B. Moonen. A metric for covariance matrices. Technical report, Dept. of Geodesy and Geoinformatics, Stuttgart University, 1999.
- [326] A. Frangi, W. Niessen, K. Vincken, and M. Viergever. Multiscale vessel enhancement filtering. In *Proc. MICCAI'98, Cambridge*, pages 130–137, 1998.
- [327] A. Frangi, D. Rueckert, J. Schnabel, and W. Niessen. Automatic construction of multiple-object three-dimensional statistical shape models: application to cardiac modeling. *IEEE Transactions on Medical Imaging*, 21(9):1151–66, 2002.
- [328] L. Frank. Anisotropy in high angular resolution diffusion-weighted MRI. *Magn Reson Med*, 45:935–939, 2001.
- [329] L. Frank. Characterization of hisotropy in high angular resolution diffusion weighted MRI. *Magn Reson Med*, 47:1083–1099, 2002.
- [330] W. Freeman and E. Adelson. The design and use of steerable filters. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 13:891–906, 1991.
- [331] K. Fritzsche, A. Can, H. Shen, C. Tsai, J. Turner, H. Tanenbaum, C. Stewart, and B. Roysam. Automated Model Based Segmentation, Tracing and Analysis of Retinal Vasculature from Digital Fundus Images. In J. S. Suri and S. Laxminarayan, editors, *State-of-The-Art Angiography, Applications and Plaque Imaging Using MR, CT, Ultrasound and X-rays*, pages 225–298. Academic Press, 2003.

- [332] M. Fréchet. Les éléments aléatoires de nature quelconque dans un espace distancié. *Annales de l'Institut H. Poincaré*, 10(4):215–310, 1948.
- [333] K. Fukunaga and L. Hostetler. The estimation of the gradient of a density function, with applications in pattern recognition. *IEEE Trans. Info. Theory*, IT-21:32–40, 1975.
- [334] M. Gage and R. Hamilton. The heat equation shrinking convex plane curves. *Journal of Differential Geometry*, 23:69–96, 1986.
- [335] M. Gastaud, M. Barlaud, and G. Aubert. Combining shape prior and statistical features for active contour segmentation. *IEEE Transactions on Circuits and Systems for Video Technology*, 14(5):726–734, May 2004.
- [336] D. Gavrilu. Multi-feature hierarchical template matching using distance transforms. In *Proc. of IEEE International Conference on Pattern Recognition*, pages 439–444. Brisbane, Australia, 1998.
- [337] D. Gavrilu. The Visual Analysis of Human Movement: A Survey. *Computer Vision and Image Understanding*, 73(1):82–98, 1999.
- [338] D. Gavrilu and V. Philomin. Real-time object detection for smart vehicles. In *IEEE International Conference on Computer Vision*, pages 87–93, 1999.
- [339] N. Gelfand, L. Ikemoto, S. Rusinkiewicz, and M. Levoy. Geometrically Stable Sampling for the ICP Algorithm. In *Proceedings of the 4th International Conference on 3-D Digital Imaging and Modeling*, pages 260–267, 2003.
- [340] D. Geman and B. Jedynak. An active testing model for tracking roads in satellite images. *IEEE Trans. on Pattern Analysis and Machine Intelligence*, 18(1):1–14, 1996.
- [341] S. Geman and D. Geman. Stochastic Relaxation, Gibbs Distributions, and the Bayesian Restoration of Images. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 6:721–741, 1984.
- [342] S. Geman and D. McClure. Statistical methods for tomographic image reconstruction. *Bulletin of the International Statistical Institute*, LII-4:5–21, 1987.
- [343] D. Gennery. Visual tracking of known three-dimensional objects. *International Journal Computer Vision*, 7(3):243–270, 1992.
- [344] G. Gerig, O. Kübler, R. Kikinis, and F. Jolesz. Nonlinear anisotropic filtering of MRI data. *IEEE Transactions on Medical Imaging*, 11:221–232, 1992.
- [345] A. Gibbons. *Algorithmic Graph Theory*. Cambridge University Press, 1989.
- [346] J. Gibson. *The Perception of the Visual World*. Houghton Mifflin, Boston, 1950.
- [347] F. Girosi, M. Jones, and T. Poggio. Regularization Theory and Neural Network Architectures. *Neural Computation*, 7:219–269, 1995.
- [348] C. Glasbey and Mardia K. A penalized likelihood approach to image warping. *J. R. Statist. Soc. B*, 63:465–514, 2001.
- [349] S. Gold and A. Rangarajan. Graph matching by graduated assignment. In *CVPR96*, pages 239–244, 1996.
- [350] A. Goldberg and R. Tarjan. A new approach to the maximum-flow problem. *Journal of the Association for Computing Machinery*, 35(4):921–940, October 1988.
- [351] R. Goldenberg, R. Kimmel, E. Rivlin, and M. Rudzsky. Fast Geodesic Active Contours. *IEEE Transactions on Image Processing*, 10:1467–1475, 2001.

- [352] G. Golub and C. Van Loan. *Matrix Computations*. The Johns Hopkins University Press, 3rd edition, 1996.
- [353] J. Gomes and O. Faugeras. Reconciling distance functions and level sets. *Journal of Visual Communication and Image Representation*, 11:209–223, 2000.
- [354] H. González-Banos and J.C. Latombe. A randomized art-gallery algorithm for sensor placement. In *SCG*, Medford, MA, June 2001.
- [355] N. Gordon, D. Salmond, and A. Smith. Novel approach to nonlinear/non-Gaussian Bayesian state estimation. *IEE Proc. F*, 140(2):107–113, 1993.
- [356] L. Grady. *Space-Variant Computer Vision: A Graph-Theoretic Approach*. PhD thesis, Boston University, Boston, MA, 2004.
- [357] L. Grady and G. Funka-Lea. Multi-Label Image Segmentation for Medical Applications Based on Graph-Theoretic Electrical Potentials. In *Computer Vision and Mathematical Methods in Medical and Biomedical Image Analysis, ECCV 2004 Workshops CVAMIA and MMBIA*, pages 230–245, Prague, Czech Republic, 2004.
- [358] L. Grady and E. Schwartz. Anisotropic Interpolation on Graphs: The Combinatorial Dirichlet Problem. Technical Report CAS/CNS-TR-03-014, Department of Cognitive and Neural Systems, Boston University, Boston, MA, July 2003.
- [359] R. Gray and L. Davisson. *An introduction to statistical signal processing*. electronic document, available on-line at <http://ee.stanford.edu/~gray/sp.html>, August 2004.
- [360] R. Gray, J. Young, and A. Aiyer. Minimum discrimination information clustering: modeling and quantization with gauss mixtures. In *International Conference on Image Processing*, Thessaloniki, Greece, October 2001.
- [361] M. Grayson. The heat equation shrinks embedded plane curves to round points. *Journal of Differential Geometry*, 26:285–314, 1987.
- [362] D. Greig, B. Porteous, and A. Seheult. Exact Maximum a posteriori Estimation for Binary Images. *Journal of the Royal Statistical Society, Series B*, 51(2):271–279, 1989.
- [363] K. Gremban. *Combinatorial Preconditioners for Sparse, Symmetric Diagonally Dominant Linear Systems*. PhD thesis, Carnegie Mellon University, Pittsburgh, PA, October 1996.
- [364] U. Grenander. *General Pattern Theory*. Oxford University Press, 1993.
- [365] U. Grenander, Y. Chow, and D.M. Keenan. *HANDS. A Pattern Theoretical Study of Biological Shapes*. Springer-Verlag, New York, 1991.
- [366] U. Grenander and M. Miller. Computational anatomy: An emerging discipline. *Quarterly of Applied Mathematics*, LVI(4):617–694, 1998.
- [367] M. Grimaud. *La Géodésie Numérique en Morphologie Mathématique. Application à la Détection Automatique de Microcalcifications en Mammographie Numérique*. PhD thesis, E.N.S. des Mines de Paris, 1991.
- [368] M. Grimaud. New measure of contrast : dynamics. *Image Algebra and Morphological Processing III, San Diego CA, Proc. SPIE*, 1992.
- [369] H. Grossauer and O. Scherzer. Using the Complex Ginzburg-Landau Equation for Digital Inpainting in 2D and 3D. In *Scale-Space '03. Lecture Notes in Computer Science*, pages 225–236. Springer Verlag, 2003.
- [370] H. Guggenheimer. *Differential Geometry*. McGraw-Hill, New York, 1963.

- [371] F. Guichard and J-M. Morel. *Image Iterative Smoothing and P.D.E.'s*. Book in preparation, 2003.
- [372] H. Guo, A. Rangarajan, S. Joshi, and L. Younes. Non-rigid Registration of Shapes via Diffeomorphic Point Matching. *ISBI 2004*, 2004.
- [373] W. Guo, Q. Zeng, Y. Chen, and Y. Liu. White matter fiber tracking using multi-directional vector field. page 2004, Preprint.
- [374] W. Hackbusch. *Iterative Solution of Large Sparse Systems of Equations*. Springer-Verlag, 1994.
- [375] G. Hager and P. Belhumeur. Efficient region tracking with parametric models of geometry and illumination. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 27(10):1025–1039, 1998.
- [376] G. Hager and K. Toyama. Xvision: combining image warping and geometric constraints for fast tracking. In *European Conference on Computer Vision*, pages 507–517, 1996.
- [377] J. Hallam. Resolving observer motion by object tracking. In *International Joint Conference on Artificial Intelligence*, volume 2, pages 792–798, 1983.
- [378] Halphen. *Sur les Invariants Différentiels des Courbes Gauches*. PhD thesis, J. Ecole Polytechnique, XXVII, 1880.
- [379] J. Hammersley and P. Clifford. *Markov fields on finite graphs and lattices*. Preprint University of California, Berkeley, 1971.
- [380] F. Hampel, E. Ronchetti, P. Rousseeuw, and W. Stahel. *Robust Statistics: The Approach Based on Influence Functions*. Wiley, New York, 1986.
- [381] R. Haralick. Digital step edges from zero crossing of second directional derivatives. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 6:58–68, 1984.
- [382] F. Harary. *Graph Theory*. Addison-Wesley, 1994.
- [383] C. Harris. Geometry from visual motion. In A. Blake and A. Yuille, editors, *Active Vision*, pages 263–284. MIT, 1992.
- [384] C. Harris. Tracking with rigid models. In A. Blake and A. Yuille, editors, *Active Vision*, pages 59–74. MIT, 1992.
- [385] C. Harris and M. Stephens. A combined corner and edge detector. In *Fourth Alvey Vision Conference*, pages 147–151, 1988.
- [386] R. Hartley. In defense of the eight-point algorithm. *IEEE Trans. on Pattern Analysis and Machine Intell.*, 19(6):580–593, June 1997.
- [387] R. Hartley, R. Gupta, and T. Chang. Stereo from uncalibrated cameras. In *Proc. CVPR'92*, pages 761–764, 1992.
- [388] R. Hartley and P. Sturm. Triangulation. *Computer Vision and Image Understanding*, 68(2):146–157, 1997.
- [389] R. Hartley and A. Zisserman. *Multiple View Geometry in Computer Vision*. Cambridge University Press, 2000.
- [390] H. Haussecker and J. Fleet. Estimating optical flow with physical models of brightness variation. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 23(6):661–673, 2001.

- [391] T. Heap and D. Hogg. Wormholes in shape space: Tracking through discontinuous changes in shape. In *IEEE International Conference on Computer Vision*, 1998.
- [392] D. Heeger and J. Bergen. Pyramid-Based Texture Analysis/Synthesis. In *Proceedings of ACM SIGGRAPH 95*, ACM Press, pages 229–238, 1995.
- [393] D. Heeger and A. Jepson. Subspace methods for recovering rigid motion i: Algorithms and implementation. *International Journal of Computer Vision*, 7(2):95–117, January 1992.
- [394] F. Hèlein. *Harmonic Maps, Conservation Laws and Moving Frames*. Cambridge University Press, 2 edition, 2002.
- [395] A. Herbulot, S. Jehan-Besson, M. Barlaud, and G. Aubert. Shape gradient for image segmentation using information theory. In *IEEE International Conference on Acoustics, Speech, and Signal Processing*, volume 3, pages 21–24, Montreal, May 2004.
- [396] A. Herbulot, S. Jehan-Besson, M. Barlaud, and G. Aubert. Shape gradient for image segmentation using mutual information. In *International Conference on Image Processing*, Singapore, October 2004.
- [397] G. Hermosillo, C. Chef d’Hotel, and O. Faugeras. A Variational Approach to Multi-Modal Image Matching. Technical Report RR-4117, INRIA, 2001.
- [398] G. Hermosillo, C. Chef d’hotel, and O. Faugeras. Variational Methods for Multi-modal Image Matching. *The International Journal of Computer Vision*, 50:329–343, 2002.
- [399] M. Hintermüller and W. Ring. A second order shape optimization approach for image segmentation. *SIAM Journal on Applied Mathematics*, 64(2):442–467, 2003.
- [400] A. Hirani and T. Totsuka. Combining Frequency and Spatial Domain Information for Fast Interactive Image Noise Removal. In *SIGGRAPH 96*, pages 269–276, 1996.
- [401] T. Hofmann and J. Buhmann. Pairwise data clustering by deterministic annealing. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 19(1):1–14, 1997.
- [402] D. Hogg. Model-based vision: a program to see a walking person. *Journal in Image and Vision Computing*, 1(1):5–20, 1983.
- [403] L. Hong and G. Chen. Segment-based stereo matching using graph cuts. In *CVPR04*, pages I: 74–81, 2004.
- [404] H. Hoppe, T. DeRose, T. Duchamp, J. McDonald, and W. Stuetzle. Surface reconstruction from unorganized points. In *ACM SIGGRAPH*, 1992.
- [405] B. Horn. Obtaining shape from shading information. In P. Winston, editor, *The Psychology of Computer Vision*. McGraw-Hill, New York, 1975.
- [406] B. Horn. The Curve of Least Energy. *ACM Transactions on Mathematical Software*, 9:441–460, 1982.
- [407] B. Horn. *Robot Vision*. MIT Press, 1986.
- [408] B. Horn and M. Brooks. *Shape from Shading*. MIT Press, 1989.
- [409] B. Horn and B. Schunck. Determinating Optical Flow. *Artificial Intelligence*, 17:185–203, 1981.
- [410] I. Howard and B. Rogers. *Binocular Vision and Stereopsis*. Oxford Univ. Press, 1995.

- [411] E. Hsu and S. Mori. Analytical expression for the NMR apparent diffusion coefficients in an anisotropy system and a simplified method for determining fiber orientation. *Magn. Reson. Med.*, 34:194–200, 1995.
- [412] X. Huang, D. Metaxas, and T. Chen. Metamorphs: Deformable shape and texture models. In *IEEE Conference in Computer Vision and Pattern Recognition*, volume 1, pages 496–503, 2004.
- [413] X. Huang, N. Paragios, and D. Metaxas. Registration of Structures in Arbitrary Dimensions: Implicit Representations, Mutual Information & Free-Form Deformations. Technical Report DCS-TR-0520, Division of Computer & Information Science, Rutgers University, 2003.
- [414] R. Hummel and S. Zucker. On the foundations of relaxation labeling processes. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 6:267–287, 1983.
- [415] D. Huttenlocher, J. Noh, and W. Rucklidge. Tracking non-rigid objects in complex scenes. In *IEEE International Conference on Computer Vision*, pages 93–101, 1993.
- [416] H. Igehy and L. Pereira. Image Replacement through Texture Synthesis. *IEEE International conference on Image Processing*, 3:186–189, 1997.
- [417] M. Irani and P. Anandan. Video indexing based on mosaic representations. *Proceedings of the IEEE*, 86(5):905–921, May 1998.
- [418] M. Irani and P. Anandan. Factorization with uncertainty. In *European Conference on Computer Vision*, pages 539–553, Dublin, 2000.
- [419] M. Isard and A. Blake. Visual tracking by stochastic propagation of conditional density. In *European Conference on Computer Vision*, pages 343–356, 1996.
- [420] M. Isard and A. Blake. C-conditional density propagation for visual tracking. *International Journal of Computer Vision*, 29(1):5–28, August 1998.
- [421] M. Isard and A. Blake. ICondensation: Unifying low-level and high-level tracking in a stochastic framework. In *European Conference on Computer Vision*, pages 893–908, 1998.
- [422] M. Isard and A. Blake. A mixed-state Condensation tracker with automatic model switching. In *IEEE International Conference on Computer Vision*, pages 107–112, 1998.
- [423] M. Isard and J. MacCormick. Bramble: A bayesian multiple-blob tracker. In *IEEE International Conference on Computer Vision*, pages II: 34–41, Vancouver, Canada, July 2001.
- [424] H. Ishikawa. Exact optimization for Markov Random Fields with convex priors. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 25(10):1333–1336, October 2003.
- [425] H. Ishikawa and D. Geiger. Occlusions, discontinuities, and epipolar lines in stereo. In *5th European Conference on Computer Vision*, pages 232–248, 1998.
- [426] H. Ishikawa and D. Geiger. Segmentation by grouping junctions. In *IEEE Conference on Computer Vision and Pattern Recognition*, pages 125–131, 1998.
- [427] A. Jackson, B. Lautrup, P. Johansen, and M. Nielsen. Products of random matrices. *Phys. Rev. E*, 66:article 66124, 2002.
- [428] B. Jähne, H. Haussecker, H. Spies, D. Schmundt, and U. Schurr. Study of dynamical processes with tensor-based spatiotemporal image processing techniques. In

- H. Burkhardt and B. Neumann, editors, *European Conference on Computer Vision*, pages 322–335, Freiburg, 1998. Springer.
- [429] A. Jain and R. Dubes. *Algorithms for Clustering Data*. Prentice-Hall, 1988.
- [430] E. Jaynes. On the rationale of maximum-entropy methods. *Proc IEEE*, 70(939), 1982.
- [431] S. Jehan-Besson, M. Barlaud, and G. Aubert. Video object segmentation using eulerian region-based active contours. In *International Conference on Computer Vision*, Vancouver, Canada, October 2001.
- [432] S. Jehan-Besson, M. Barlaud, and G. Aubert. DREAM²S: Deformable regions driven by an eulerian accurate minimization method for image and video segmentation. *International Journal of Computer Vision*, 53(1):45–70, 2003.
- [433] S. Jehan-Besson, M. Barlaud, G. Aubert, and O. Faugeras. Shape gradients for histogram segmentation using active contours. In *International Conference on Computer Vision*, pages 408–415, Nice, France, October 2003.
- [434] R. Jensen. Uniqueness of Lipschitz Extensions: Minimizing the Sup Norm of the Gradient. *Arch. Rat. Mech. Anal.*, 123:51–74, 1993.
- [435] A. Jepson and M. Black. Mixture models for optical flow computation. In *IEEE Computer Vision and Pattern Recognition, CVPR-93*, pages 760–761, New York, June 1993.
- [436] A. Jepson, D. Fleet, and T. El-Maraghi. Robust online appearance models for visual tracking. In *IEEE Conference on Computer Vision and Pattern Recognition*, pages 415–422, 2001.
- [437] J. Jia and C. Kang. Inference of segmented color and texture description by tensor voting. *IEEE-TPAMI*, 26(6):771–786, 2004.
- [438] J. Jia, T. Wu, Y. Tai, and C. Tang. Video repairing: Inference of foreground and background under severe occlusion. In *Proc. CVPR*, 2004.
- [439] H. Jin, S. Soatto, and A. Yezzi. Multi-view Stereo Beyond Lambert. In *IEEE Conference on Computer Vision and Pattern Recognition*, pages 171–178, 2003.
- [440] H. Johnson and G. Christensen. Consistent Landmark and Intensity-Based Image Registration. *IEEE Transactions on Medical Imaging*, 21:450–469, 2002.
- [441] L. Jonasson, X. Bresson, P. Hagmann, O. Cuisenaire, R. Meuli, and J.P. Thiran. White matter fiber tract segmentation in DT-MRI using geometric flows. *Medical Image Analysis*, 2004. In press.
- [442] S. Joshi and M. Miller. Landmark Matching via Large Deformation Diffeomorphisms. *IEEE Transactions on Image Processing*, 9:1357–1370, 2000.
- [443] O. Juan, R. Kerivan, and G. Postelnicu. Stochastic mean curvature motion in computer vision: stochastic active contours. *INRIA Report*, 2004.
- [444] B. Julesz. Visual pattern discrimination. *IEEE Transactions on Information Theory*, 8(2):84–92, 1962.
- [445] P. Jutinen. Absolutely Minimizing Lipschitz Extensions on a Metric Space. *Annales Academiae Scientiarum Fennicae Mathematica*, 27:57–67, 2002.
- [446] T. Kailath. *Linear systems*. Prentice Hall, Inc., 1980.
- [447] I. Kakadiaris and D. Metaxas. 3D Human body model acquisition from multiple views. *International Journal of Computer Vision*, 30(3):191–218, 1998.

- [448] I. Kakadiaris and D. Metaxas. Model-based estimation of 3D human motion. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 22(12):1453–1459, 2000.
- [449] I. Kakadiaris, D. Metaxas, and R. Bajcsy. Inferring 2D object structure from the deformation of apparent contours. *Computer Vision and Image Understanding*, 65(2):129–147, 1997.
- [450] S. Kakutani. Markov Processes and the Dirichlet Problem. *Proceeding of the Japanese Academy*, 21:227–233, 1945.
- [451] S.-B. Kang, R. Szeliski, and J. Chai. Handling occlusions in dense multi-view stereo. In *IEEE Conference on Computer Vision and Pattern Recognition*, 2001. Expanded version available as MSR-TR-2001-80.
- [452] S.-B. Kang, M. Uyttendaele, S. Winder, and R. Szeliski. High dynamic range video. *ACM Transactions on Graphics*, 22(3):319–325, July 2003.
- [453] G. Kanizsa. *Gramática de la Visión*. Paidós, 1986.
- [454] H. Karcher. Riemann center of mass and mollifier smoothing. *Communications on Pure and Applied Mathematics*, 30:509–541, 1977.
- [455] M. Kass, A. Witkin, and D. Terzopoulos. Snakes: Active Contour Models. In *IEEE International Conference in Computer Vision*, pages 261–268, 1987.
- [456] M. Kass, A. Witkin, and D. Terzopoulos. Snakes: Active Contour Models. *International Journal of Computer Vision*, 1:321–332, 1988.
- [457] M. Kaus, J. von Berg, J. Weese, W. Niessen, and V. Pekar. Automated segmentation of the left ventricle in cardiac. *Medical Image Analysis*, 8(3):245–254, 9 2004.
- [458] D. Kendall. Shape manifolds, procrustean metrics and complex projective spaces. *Bulletin of London Mathematics Society*, 16, 1984.
- [459] D. Kendall, D. Barden, T. Carne, and H. Le. *Shape and shape theory*. Wiley, Chichester, 1999.
- [460] C. Kenney and J. Langan. A new image processing primitive: reconstructing images from modified flow fields. Technical report, University of California Santa Barbara, 1999.
- [461] S. Khan and M. Shah. Consistent labeling of tracked objects in multiple cameras with overlapping fields of view. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 25(10):1355–1360, October 2003.
- [462] S. Kichenassamy, A. Kumar, P. Olver, A. Tannenbaum, and A. Yezzi. Gradient flows and geometric active contour models. In *IEEE International Conference in Computer Vision*, pages 810–815, 1995.
- [463] S. Kichenassamy, A. Kumar, P. Olver, A. Tannenbaum, and A. Yezzi. Conformal curvature flows: from phase transitions to active contours. *Archive for Rational Mechanics and Analysis*, 134:275–301, 1996.
- [464] J. Kim, J. Fisher, M. Cetin, A. Yezzi, and A. Willsky. Incorporating complex statistical information in active contour-based image segmentation. In *International Conference on Image Processing*, pages 655–658, 2003.
- [465] J. Kim, J. Fisher, A. Yezzi, M. Cetin, and A. Willsky. Non-Parametric Methods for Image Segmentation using Information Theory and Curve Evolution. In *IEEE International Conference on Image Processing*, 2002.

- [466] J. Kim and H. Kim. GA-based image restoration by isophote constraint optimization. In *Proceedings of EURASIP*, 2003.
- [467] G. Kimeldorf and G. Wahba. Some Results on Tchebycheffian Spline Functions. *Journal of Mathematical Analysis and Applications*, 33(1):82–95, 1971.
- [468] B. Kimia, I Frankel, and A.M. Popescu. Euler spiral for shape completion. In K. Boyer and S. Sarker, editors, *Perceptual Organization for Artificial Vision Systems*, pages 289–310. Kluwer Academic Publishers, 2000.
- [469] R. Kimmel, A. Amir, and A. Bruckstein. Finding shortest paths on surfaces using level sets propagation. *IEEE Trans. on PAMI*, PAMI-17(6):635–640, June 1995.
- [470] R. Kimmel and A. Bruckstein. “Global shape-from-shading”. *CVGIP: Image Understanding*, pages 360–369, 1995.
- [471] R. Kimmel and A. Bruckstein. Tracking level sets by level sets: a method for solving the shape from shading problem. *Computer Vision, Graphics and Image Understanding*, 62:47–58, 1995.
- [472] R. Kimmel, N. Kiryati, and A. Bruckstein. Distance maps and weighted distance transforms. *Journal of Mathematical Imaging and Vision*, 6:223–233, May 1996. Special Issue on Topology and Geometry in Computer Vision.
- [473] R. Kimmel, R. Malladi, and N. Sochen. Images as Embedded Maps and Minimal Surfaces: Movies, Color, Texture, and Volumetric Medical Images. *IJCV*, 39:111–129, 2000.
- [474] R. Kimmel and J. Sethian. Optimal algorithm for shape from shading and path planning. *JMIV*, 14(2):237–244, 2001.
- [475] D. King. *The Commissar Vanishes*. Henry Holt and Company, 1997.
- [476] C. Kipnis and C. Landim. *Scaling Limits of Interacting Particle Systems*. Springer-Verlag, 1999.
- [477] D. Kirsanov and S. Gortler. A discrete global minimization algorithm for continuous variational problems. *Harvard Computer Science Technical Report*, TR-14-04, July 2004, (also submitted to a journal).
- [478] E. Klassen, A. Srivastava, W. Mio, and S. Joshi. Analysis of planar shapes using geodesic paths on shape spaces. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 26(3):372–383, 2004.
- [479] R. Klette, R. Kozera, and K. Schlüns. Shape from shading and photometric stereo methods. Technical Report CITR-TR-20, University of Auckland, New Zealand, 1998.
- [480] D-C. Knill and W. Richards. *Perception as Bayesian Inference*. Cambridge University Press, 1996.
- [481] R. Koch, M. Pollefeys, and L. Van Gool. Multi viewpoint stereo from uncalibrated video sequences. In *Computer Vision – ECCV’98, LNCS, Vol.1406*, pages 55–71. Springer-Verlag, 1998.
- [482] J. Koenderink. *Solid Shape*. MIT Press, 1990.
- [483] K. Koffka. *Principles of Gestalt Psychology*. Harcourt, Brace, and World, New York, 1935.
- [484] A. Kokaram. On missing data treatment for degraded video and film archives: a survey and a new bayesian approach. *IEEE Transactions on Image Processing*, 13:397–415, 2004.

- [485] A. Kokaram, R. Morris, W. Fitzgerald, and P. Rayner. Detection of Missing Data in Image Sequences. *IEEE Transactions on Image Processing*, 11:1496–1508, 1995.
- [486] A. Kokaram, R. Morris, W. Fitzgerald, and P. Rayner. Interpolation of Missing Data in Image Sequences. *IEEE Transactions on Image Processing*, 11:1509–1519, 1995.
- [487] D. Koller, K. Daniilidis, and H.H. Nagel. Model-based object tracking in monocular image sequences of road traffic scenes. *International Journal Computer Vision*, 10(3):257–281, 1993.
- [488] V. Kolmogorov. *Graph Based Algorithms for Scene Reconstruction from Two or More Views*. PhD thesis, Cornell University, September 2003.
- [489] V. Kolmogorov and R. Zabih. Visual correspondence with occlusions using graph cuts. In *IEEE International Conference on Computer Vision*, pages 508–515, 2001.
- [490] V. Kolmogorov and R. Zabih. Multi-camera Scene Reconstruction via Graph Cuts. In *European Conference on Computer Vision*, volume 3, pages 82–96, 2002.
- [491] V. Kolmogorov and R. Zabih. What energy functions can be minimized via graph cuts? *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 26(2):147–159, February 2004.
- [492] V. Kolmogorov, R. Zabih, and S. Gortler. Generalized multi-camera scene reconstruction using graph cuts. In *International Workshop on Energy Minimization Methods in Computer Vision and Pattern Recognition*, July 2003.
- [493] R. Kozer. Uniqueness in shape from shading revisited. *JMIV*, 7:123–138, 1997.
- [494] S. Kullback. *Information Theory and Statistics*. John Wiley and Sons, New York, 1959.
- [495] H. Kunita. *Stochastic Flows and Stochastic Differential Equations*. Cambridge University Press, 1990.
- [496] K. Kutulakos and C. Dyer. Recovering shape by purposive viewpoint adjustment. *International Journal of Computer Vision*, 12(2-3):113–136, April 1994.
- [497] K. Kutulakos and S. Seitz. A theory of shape by space carving. In *IEEE International Conference on Computer Vision*, pages 307–314, 1999.
- [498] K. Kutulakos and S. Seitz. A Theory of Shape by Space Carving. *International Journal of Computer Vision*, 38:199–218, 2000.
- [499] V. Kwatra, A. Schodl, I. Essa, and A. Bobick. GraphCut textures: image and video synthesis using graph cuts. In *ACM Transactions on Graphics (SIGGRAPH)*, volume 22, July 2003.
- [500] O. Ladyzhenskaya. *The Mathematical Theory of Viscous Incompressible Flow*. Gordon and Breach Science Publishers, New York-London, 1963.
- [501] E. Lane. A Treatise on Projective Differential Geometry. In *University of Chicago Press*, 1941.
- [502] A. Laurentini. The Visual Hull Concept for Silhouette-Based Image Understanding. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 16:150–162, 1994.
- [503] H. Le and D. Kendall. The Riemannian structure of Euclidean shape spaces: a novel environment for statistics. *The Annals of Statistics*, 4216:1225–1271, 1993.
- [504] H. Le and A. Kume. The fréchet mean shape and the shape of the means. *Adv. Appl. Prob. (SGSA)*, 32:101–113, 2000.

- [505] D. Le Bihan, E. Breton, D. Lallemand, P. Grenier, E. Cabanis, and M. Laval-Jeantet. MR imaging of intravoxel incoherent motions: Application to diffusion and perfusion in neurologic disorders. *Radiology*, 161:401–407, 1986.
- [506] K. Lee and C. Kuo. Shape from shading with a generalized reflectance map model. *CVIU*, 67(2):143–160, 1997.
- [507] C. Lenglet, R. Deriche, and O. Faugeras. Inferring white matter geometry from diffusion tensor MRI: Application to connectivity mapping. In *ECCV*, pages 127–140, 2004.
- [508] C. Lenglet, M. Rousson, and R. Deriche. Segmentation of 3D probability density fields by surface evolution: Application to diffusion MRI. In *MICCAI*, pages 18–25, 2004.
- [509] C. Lenglet, M. Rousson, R. Deriche, and O. Faugeras. Statistics on multivariate normal distributions: A geometric approach and its application to diffusion tensor MRI. Research Report 5442, INRIA, Sophia Antipolis, June 2004.
- [510] C. Lenglet, M. Rousson, R. Deriche, and O. Faugeras. Toward Segmentation of 3D Probability Density Fields by Surface Evolution: Application to Diffusion MRI. Technical Report 5243, INRIA, 2004.
- [511] T. Leung and J. Malik. Contour Continuity in Region-Based Image Segmentation. In H. Burkhardt and B. Neumann, editors, *Proc. Euro. Conf. Computer Vision, volume 1, Freiburg (Germany)*, pages 544–559. Springer-Verlag, 1998.
- [512] M. Leventon and W. Grimson. Multi-modal Volume Registration Using Joint Intensity Distributions. In *First International Conference on Medical Image Computing and Computer-Assisted Intervention*, Lecture Notes in Computer Science. Springer, 1998.
- [513] M. Leventon, W. Grimson, and O. Faugeras. Statistical Shape Influence in Geodesic Active Contours. In *IEEE Conference on Computer Vision and Pattern Recognition*, pages I:316–322, 2000.
- [514] A. Levin, A. Zomet, S. Peleg, and Y. Weiss. Seamless image stitching in the gradient domain. In *Eighth European Conference on Computer Vision*, volume IV, pages 377–389, Prague, May 2004.
- [515] A. Levin, A. Zomet, and Y. Weiss. Learning how to inpaint from global image statistics. In *Proc. of International Conference on Computer Vision*, pages 305–312, 2003.
- [516] M. Levoy, K. Pulli, B. Curless, S. Rusinkiewicz, D. Koller, L. Pereira, M. Ginzton, S. Anderson, J. Davis, J. Ginsberg, J. Shade, and D. Fulk. The Digital Michelangelo Project: 3D Scanning of Large Statues. In *Computer Graphics (SIGGRAPH) 2000*, pages 269–276, 1996.
- [517] M. Lhuillier and L. Quan. Surface Reconstruction by Integrating 3D and 2D Data of Multiple Views. In *IEEE International Conference on Computer Vision*, 2003.
- [518] G. Li. Robust regression. In D. Hoaglin, F. Mosteller, and J. Tukey, editors, *Exploring Data Tables, Trends, and Shapes*. Wiley, 1985.
- [519] G. Li and S. Zucker. A differential geometric approach to stereo correspondence. In *Second IEEE Workshop on Variational, Geometric, and Level Set Methods in Computer Vision*, 2003.
- [520] S. Li. *Markov Random Field Modeling in Computer Vision*. Springer-Verlag, 1995.

- [521] M. Lin and C. Tomasi. Surfaces with occlusions from layered stereo. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 26(8):1073–1078, August 2004.
- [522] P.-L. Lions, E. Rouy, and A. Tourin. Shape-from-shading, viscosity solutions and edges. *Numer. Math.*, 64:323–353, 1993.
- [523] J. Liu and R. Chen. Sequential Monte Carlo methods for dynamic systems. *Journal of the American Statistical Association*, 93(443):1032–1044, 1998.
- [524] L. Ljung. *System identification: theory for the user*. Prentice-Hall, Inc., 2nd edition, 1999.
- [525] H. Longuet-Higgins and K. Prazdny. The interpretation of a moving retinal image. *Proceedings of the Royal Society, B*-208:385–397, 1980.
- [526] W. Lorensen and H. Cline. Marching cubes: a high resolution 3D surface construction algorithm. In *ACM SIGGRAPH*, volume 21, pages 163–170, 1987.
- [527] C. Lorenz and N. Krahnstover. Generation of point-based 3D statistical shape models for anatomical objects. *Computer Vision and Image Understanding*, 77(2):175–191, February 2000.
- [528] M. Lorenzo-Valdes, G. Sanchez-Ortiz, A. Elkington, R. Mohiaddin, and D. Rueckert. Segmentation of 4D cardiac MR images using a probabilistic atlas and the em algorithm. *Medical Image Analysis*, 8(3):255–265, 2004.
- [529] J. Lötjönen, S. Kivistö, J. Koikkalainen, D. Smutek, and K. Lauerma. Statistical shape model of atria, ventricles and epicardium from short- and long-axis MR images. *Med Imag Anal*, 8(3):371–386, September 2004.
- [530] D. Lowe. Robust model-based motion tracking through the integration of search and estimation. *International Journal Computer Vision*, 8(2):113–122, 1992.
- [531] D. Lowe. Object recognition from local scale-invariant features. In *Proc. ICCV'99*, pages 1150–1157, 1999.
- [532] D. Lowe. Distinctive image features from scale-invariant keypoints. *International Journal of Computer Vision*, 60(2):91–110, November 2004.
- [533] B. Lucas and T. Kanade. An Iterative Image Registration Technique with an Application to Stereo Vision. In *International Joint Conference on Artificial Intelligence*, pages 674–679, 1981.
- [534] F. Maes, A. Collignon, D. Vandermeulen, G. Marchal, and P. Suetens. Multimodality image registration by maximization of mutual information. *IEEE Transactions on Medical Imaging*, 16(2):187–198, 1997.
- [535] R. Malladi and J. Sethian. A Real-Time Algorithm for Medical Shape Recovery. In *IEEE International Conference in Computer Vision*, pages 304–310, Bombay, India, 1998.
- [536] R. Malladi, J. Sethian, and B. Vemuri. A Topology Independent Shape Modeling Scheme. In *Proc. Int'l Society for Optical Engineering*, volume 2031, pages 246–258, 1993.
- [537] R. Malladi, J. Sethian, and B. Vemuri. Evolutionary fronts for topology independent shape modeling and recovery. In *European Conference on Computer Vision*, pages 1–13, 1994.

- [538] R. Malladi, J. Sethian, and B. Vemuri. Shape Modeling with Front Propagation: A Level Set Approach. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 17:158–175, 1995.
- [539] R. Malladi, J. Sethian, and B. Vemuri. A Fast Level Set Based Algorithm for Topology-independent Shape Modeling. *J. Math. Imaging and Vision*, 6(2/3):269–289, 1996.
- [540] S. Mallat. *A Wavelet Tour of Signal Processing*. Academic Press, San Diego, second edition, 1999.
- [541] J. Mangin, C. Poupon, C. Clark, D. Le Bihan, and I. Bloch. Distortion correction and robust tensor estimation for MR diffusion imaging. *Medical Image Analysis*, 6(3):191–198, 2002.
- [542] R. Mann, A. Jepson, and J. Siskind. Computational perception of scene dynamics. *Computer Vision and Image Understanding*, 65(2):113–128, 1997.
- [543] S. Mann and R. Picard. Virtual bellows: Constructing high-quality images from video. In *First IEEE International Conference on Image Processing*, volume I, pages 363–367, Austin, November 1994.
- [544] R. March and M. Dozio. A Variational Method for the Recovery of Smooth Boundaries. *Image Vision Computing*, 15:705–712, 1997.
- [545] B. Markussen. A statistical approach to large deformation diffeomorphisms. In *CVPR04*, pages available on the CD–rom (GMBV workshop), 2004.
- [546] A. Marquina and S. Osher. Explicit Algorithms for a New Time Dependent Model Based on Level Set Motion for Nonlinear Deblurring and Noise Removal. *SIAM J. Sci. Comp.*, 22:387–405, 2000.
- [547] P. Martin, P. Réfrégier, F. Goudail, and F. Guéroult. Influence of the noise model on level set active contour segmentation. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 26(6):799–803, June 2004.
- [548] R. Martin. A metric for ARMA processes. *IEEE Transactions on Signal Processing*, 48(4):1164–1170, 2000.
- [549] W. Martin and J. Aggarwal. Volumetric descriptions of objects from multiple views. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 5(2):150–158, March 1983.
- [550] G. Martinez, I. Kakadiaris, and D. Magruder. Teleoperating ROBONAUT: A case study. In *British Machine Vision Conference*, Cardiff, UK, September 2-5 2002.
- [551] S. Masnou. *Filtrage et Desocclusion d’Images par Méthodes d’Ensembles de Niveau*. PhD thesis, Université Paris-Dauphine., 1998.
- [552] S. Masnou. Disocclusion: a Variational Approach using Level Lines. *IEEE Transactions on Image Processing*, 11:68–76, 2002.
- [553] S. Masnou and J. Morel. Level-lines based Disocclusion. In *Proc. 5th IEEE Int. Conf. on Image Process.*, pages 259–263, Chicago, IL, 1998.
- [554] U. Massari. Frontiere Orientate di Curvatura Media Assegnata in l^p . *Rend. Sem. Mat. Univ. Padova*, 53:37–52, 1975.
- [555] G. Matheron. Les nivellements. Technical report, Centre de Morphologie Mathématique, 1997.

- [556] J. Maver and R. Bajcsy. Occlusions as a guide for planning the next view. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 15(5):417–433, May 1993.
- [557] T. McGraw, B. Vemuri, Y. Chen, M. Rao, and T. Mareci. DT-MRI denoising and neuronal fiber tracking. *Medical Image Analysis*, 8:95–111, 2004.
- [558] T. McInerney and D. Terzopoulos. A dynamic finite element surface model for segmentation and tracking in multidimensional medical images with application to cardiac 4d image analysis. *Computerized Medical Imaging and Graphics*, 19(1), 1995.
- [559] J. Meehan. *Panoramic Photography*. Watson-Guptill, 1990.
- [560] C.-H. Menq, H.-T. Yau, and G.-Y. Lai. Automated Precision Measurement of Surface Profile in CAD-Directed Inspection. *IEEE Transactions on Robotics and Automation*, 8:268–278, 1992.
- [561] R. Merris. Laplacian Matrices of Graphs: A Survey. *Linear Algebra and its Applications*, 197,198:143–176, 1994.
- [562] D. Metaxas. *Physics-Based Deformable Models*. Kluwer Academic Publishers, 1996.
- [563] F. Meyer. Algorithmes à base de files d’attente hiérarchique. Technical Report NT-46/90/MM, Centre de Morphologie Mathématique, 1990.
- [564] F. Meyer. From connected operators to levelings. In H. Heijmans and J. Roerdink, editors, *Mathematical Morphology and its Applications to Image and Signal Processing*, pages 191–199. Kluwer, 1998.
- [565] F. Meyer. Levelings, image simplification filters for segmentation. *J. of Mathematical Imaging and Vision*, 20:59–72, 2004.
- [566] F. Meyer and P. Maragos. Nonlinear scale-space representation with morphological levelings. *J. Visual Commun. and Image Representation*, 11:245–265, 2000.
- [567] Y. Meyer. *Oscillating Patterns in Image Processing and in some Nonlinear Evolution Equations*. AMS, 2001. (Lewis Memorial Lectures).
- [568] Y. Meyer. *Oscillating Patterns in Image Processing and Nonlinear Evolution Equations*, volume 22 of *University Lecture Series*. AMS, Providence, 2001.
- [569] K. Mikolajczyk and C. Schmid. A performance evaluation of local descriptors. In *IEEE Computer Society Conference on Computer Vision and Pattern Recognition*, volume II, pages 257–263, Madison, WI, June 2003.
- [570] D. Milgram. Computer methods for creating photomosaics. *IEEE Transactions on Computers*, C-24(11):1113–1119, November 1975.
- [571] M. Miller, S. Joshi, and G. Christensen. *Brain Warping*, pages 131–155. Academic Press, 1998.
- [572] W. Mio and A. Srivastava. Elastic string models for representation and analysis of planar shapes. In *Proc. of IEEE Computer Vision and Pattern Recognition*, 2004.
- [573] W. Mio, A. Srivastava, and X. Liu. Learning and bayesian shape extraction for object recognition. In *European Conf. on Computer Vision*, volume 3024 of *LNCS*, pages 62–73, Prague, 2004. Springer.
- [574] S. Mitchell, J. Bosch, B. Lelieveldt, R. van der Geest, J. Reiber, and M. Sonka. 3-D active appearance models: segmentation of cardiac MR and ultrasound images. *IEEE Transactions on Medical Imaging*, 21(9):1167–78, September 2002.

- [575] S. Mitchell, B. Lelieveldt, R. van der Geest, H. Bosch, J. Reiber, and M. Sonka. Cardiac segmentation using active appearance models. *IEEE Trans. Med. Imaging*, 20:415–423, 2001.
- [576] N. Mitra, N. Gelfand, H. Pottmann, and L. Guibas. Registration of Point Cloud Data from a Geometric Optimization Perspective. In *Proceedings of the Eurographics Symposium on Geometry Processing*, 2004.
- [577] T. Mitsunaga and S. Nayar. Radiometric self calibration. In *IEEE Computer Society Conference on Computer Vision and Pattern Recognition*, volume 1, pages 374–380, Fort Collins, June 1999.
- [578] A. Mittal and L. Davis. M₂tracker: A multi-view approach to segmenting and tracking people in a cluttered scene. *International Journal of Computer Vision*, 51(3):189–203, February 2003.
- [579] M. Moakher. A differential geometric approach to the geometric mean of symmetric positive-definite matrices. *SIAM Journal on Matrix Analysis and Applications*, 2004. In press.
- [580] T. Moeslund and E. Granum. A Survey of Computer Vision-Based Human Motion Capture. *Computer Vision and Image Understanding*, 81(3):231–268, 2001.
- [581] B. Mohar. Isoperimetric Numbers of Graphs. *Journal of Combinatorial Theory, Series B*, 47:274–291, 1989.
- [582] L. Moisan. Affine Plane Curve Evolution: A Fully Consistent Scheme. *IEEE Transactions on Image Processing*, 7:411–420, 1998.
- [583] S. Mori, B.J. Crain, V.P. Chacko, and P.C.M. Van Zijl. Three-dimensional tracking of axonal projections in the brain by magnetic resonance imaging. *Annals of Neurology*, 45(2):265–269, 1999.
- [584] P. Mrázek and J. Weickert. Rotationally invariant wavelet shrinkage. In B. Michaelis and G. Krell, editors, *Pattern Recognition*, volume 2781 of *Lecture Notes in Computer Science*, pages 156–163, Berlin, 2003. Springer.
- [585] P. Mrázek, J. Weickert, and G. Steidl. Correspondences between wavelet shrinkage and nonlinear diffusion. In L. D. Griffin and M. Lillholm, editors, *Scale-Space Methods in Computer Vision*, volume 2695 of *Lecture Notes in Computer Science*, pages 101–116, Berlin, 2003. Springer.
- [586] P. Mrázek, J. Weickert, and G. Steidl. Diffusion-inspired shrinkage functions and stability results for wavelet denoising. Technical Report 96, Dept. of Mathematics, Saarland University, Saarbrücken, Germany, October 2003. Submitted to *International Journal of Computer Vision*.
- [587] P. Mrázek, J. Weickert, G. Steidl, and M. Welk. On iterations and scales of nonlinear filters. In O. Drbohlav, editor, *Proc. Eighth Computer Vision Winter Workshop*, pages 61–66, Valtice, Czech Republic, February 2003. Czech Pattern Recognition Society.
- [588] D. Mumford. Mathematical theories of shape: do they model perception? In *Geometric Methods in Computer Vision*, pages 2–10, 1991.
- [589] D. Mumford. Elastica and Computer Vision. In C. Bajaj, editor, *Algebraic geometry and its applications*, pages 491–506. Springer-Verlag, 1994.
- [590] D. Mumford and J. Shah. Boundary detection by minimizing functionals. In *IEEE Conference on Computer Vision and Pattern Recognition*, pages 22–26, 1985.

- [591] D. Mumford and J. Shah. Optimal Approximation by Piecewise Smooth Functions and Associated Variational Problems. *Communications on Pure and Applied Mathematics*, 42:577–685, 1989.
- [592] D. Murray and A. Basu. Motion tracking with an active camera. *IEEE Trans. on Pattern Analysis and Machine Intelligence*, 16(5):449–459, 1994.
- [593] H. Nagel. On the estimation of optical flow: relations between different approaches and some new results. *Artificial Intelligence*, 33:299–324, 1987.
- [594] National Aeronautics and Space Administration. Man systems integration standards. Technical report, National Aeronautics and Space Administration, 1987.
- [595] S. Negahdaripour. Revised definition of optical flow: integration of radiometric and geometric clues for dynamic scene analysis. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 20(9):961–979, 1998.
- [596] R. Nelson and R. Polana. Qualitative recognition of motion using temporal texture. *CVGIP Image Understanding*, 56(1):78–89, 1992.
- [597] O. Nestares and D. Fleet. Likelihood functions for general error-in-variables problems. In *IEEE International Conference on Image Processing*, page submitted, Barcelona, Spain, 2003.
- [598] O. Nestares, D. Fleet, and D. Heeger. Likelihood functions and confidence bounds for total-least-squares estimation. In *IEEE Conference on Computer Vision and Pattern Recognition*, volume 1, pages 523–530, Hilton Head, 2000.
- [599] J. Neumann and Y. Aloimonos. Spatio-Temporal Stereo Using Multi-Resolution Subdivision Surfaces. *The International Journal of Computer Vision*, 47:181–193, 2002.
- [600] M. Nielsen and P. Johansen. A pde solution of brownian warping. In *ECCV 2004, Volume IV*, pages 180–191. Springer verlag, 2004.
- [601] M. Nielsen, P. Johansen, A. Jackson, and B. Lautrup. Brownian warps. In *MICCAI 02*, volume 2489 of *LNCS*. Springer, 2002.
- [602] M. Nikolova. Minimizers of cost-functions involving nonsmooth data-fidelity terms. *SIAM J. Numer. Anal.*, 40:965–994, 2002.
- [603] D. Nister. An efficient solution to the five-point relative pose problem. In *Proc. CVPR'03, Vol.2*, pages 195–202, 2003.
- [604] M. Nitzberg, D. Mumford, and T. Shiota. *Filtering, Segmentation, and Depth*. Springer-Verlag, Berlin, 1993.
- [605] J. Ogden, E. H. Adelson, J. Bergen, and P. Burt. Pyramid based computer graphics. *RCA Engineer*, 30:4–15, 1985.
- [606] T. Okatani and K. Deguchi. On classification of singular points for global shape from shading. In *ACCV'98*, volume 1351, pages 48–55, 1998.
- [607] M. Okutomi and T. Kanade. A multiple baseline stereo. *IEEE Trans. on Pattern Analysis and Machine Intell.*, 15(4):353–363, 1993.
- [608] J. Oliensis. Shape from shading as a partially well-constrained problem. *CVGIP: Image Understanding*, 54(2):163–183, 1991.
- [609] J. Oliensis. Uniqueness in shape from shading. *IJCV*, 2(6):75–104, 1991.
- [610] P. Olver. Joint Invariant Signatures. *Foundations on Computational Mathematics*, 1(1):3–67, Feb 2001.

- [611] B. O’Neill. *Elementary Differential Geometry*. Academic Press, London, 1966.
- [612] E. Ong and M. Spann. Robust optical flow computation based on least-median-of-squares regression. *International Journal of Computer Vision*, 31:51–82, 1999.
- [613] C. Oost, B. Lelieveldt, M. Uzumcu, H. Lamb, J. Reiber, and M. Sonka. Multi-view active appearance models: Application to X-ray LV angiography and cardiac MRI. In *Information Processing in Medical Imaging – IPMI*, number 2732 in Lecture Notes in Computer Science, pages 234–45, 2003.
- [614] J. O’Rourke. *Art Gallery Theorems and Algorithms*. Oxford University Press, August 1987.
- [615] S. Osher, M. Burger, D. Goldfarb, J. Xu, and W. Yin. An Iterative Regularization Method for Total Variation Based Image Restoration. *UCLA CAM Report*, 04-13, 2004.
- [616] S. Osher and R. Fedkiw. *The Level Set Method and Dynamic Implicit Surfaces*. Springer, 2002.
- [617] S. Osher and N. Paragios. *Geometric Level Set Methods in Imaging, Vision and Graphics*. Springer Verlag, 2003.
- [618] S. Osher and J. Sethian. Fronts propagating with curvature-dependent speed : Algorithms based on the Hamilton-Jacobi formulation. *Journal of Computational Physics*, 79:12–49, 1988.
- [619] S. Osher, A. Sole, and L. Vese. Image Decomposition and Restoration Using Total Variation Minimization and the H^{-1} Norm. *Multiscale Model. Simul.*, 1:349–370, 2003.
- [620] E. Özarıslan and T. Mareci. Generalized diffusion tensor imaging and analytical relationships between diffusion tensor imaging and high angular resolution diffusion imaging. *Magnetic Resonance Medicine*, 50:955–965, 2003.
- [621] E. Özarıslan, B. Vemuri, and T. Mareci. Fiber orientation mapping using generalized diffusion tensor imaging. In *Proc. of IEEE International Symposium on Biomedical Imaging (ISBI)*, pages 1036–1039, 2004.
- [622] N. Paragios. *Geodesic Active Regions and Level Set Methods: Contributions and Applications in Artificial Vision*. PhD thesis, I.N.R.I.A./University of Nice-Sophia Antipolis, 2000. <http://www.inria.fr/RRRT/TU-0636.html>.
- [623] N. Paragios and R. Deriche. A PDE-based Level Set approach for Detection and Tracking of moving objects. In *IEEE International Conference in Computer Vision*, pages 1139–1145, 1998.
- [624] N. Paragios and R. Deriche. Geodesic Active Contours and Level Sets for the Detection and Tracking of Moving Objects. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 22:266–280, 2000.
- [625] N. Paragios and R. Deriche. Geodesic Active Regions: A New Framework to Deal with Frame Partition Problems in Computer Vision. *Journal of Visual Communication and Image Representation*, 13:249–268, 2002.
- [626] N. Paragios and R. Deriche. Geodesic Active Regions Level Set Methods for Supervised Texture Segmentation. *International Journal of Computer Vision*, 46(3):223–247, 2002.

- [627] N. Paragios, O. Mellina-Gottardo, and V. Ramesh. Gradient Vector Flow Fast Geodesic Active Contours. In *IEEE International Conference in Computer Vision*, pages I:67–73, 2001.
- [628] N. Paragios and M. Rousson. Shape analysis towards model-based segmentation. In S. Osher and N. Paragios, editors, *Geometric Level Set Methods in Imaging Vision and Graphics*. Springer Verlag, 2003.
- [629] N. Paragios, M. Rousson, and V. Ramesh. Distance Transforms for Non-Rigid Registration. *Computer Vision and Image Understanding*, 23:142–165, 2003.
- [630] P. Parent and S. Zucker. Trace inference, curvature consistency and curve detection. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 11(8):823–839, August 1989.
- [631] J. Park, D. Metaxas, A. Young, and L. Axel. Deformable models with parameter functions for cardiac motion analysis. *IEEE Transactions on Medical Imaging*, 15(3), 1996.
- [632] G. Parker and D. Alexander. Probabilistic monte carlo based mapping of cerebral connections utilising whole-brain crossing fiber information. In *Information Processing in Medical Imaging*, pages 684–696, Ambleside UK, 2003.
- [633] G. Parker, J. Schnabel, M. Symms, D. Werring, and G. Baker. Nonlinear smoothing for reduction of systematic and random errors in diffusion tensor imaging. *Magn. Reson. Med.*, 11:702–710, 2000.
- [634] K. Patwardhan and G. Sapiro. Projection based image and video inpainting using wavelets. In *Proceedings International Conference on Image Processing, ICIP*, pages 857–860, 2003.
- [635] X. Pennec. Probabilities and statistics on Riemannian manifolds: A geometric approach. Research Report 5093, INRIA, Sophia Antipolis, January 2004.
- [636] X. Pennec, P. Fillard, and N. Ayache. A Riemannian framework for tensor computing. Research Report 5255, INRIA, Sophia Antipolis, July 2004.
- [637] X. Pennec and J.-P. Thirion. A Framework for Uncertainty and Validation of 3-D Registration Methods Based on Points and Frames. *International Journal of Computer Vision*, 25:203–229, 1997.
- [638] A. Pentland. Local shading analysis. *PAMI*, 6:170–187, 1984.
- [639] P. Perez, M. Gangnet, and A. Blake. Poisson image editing. In *Proc. SIGGRAPH 03, ACM*, pages 313–318, 2003.
- [640] P. Perez, C. Hue, J. Vermaak, and M. Gangnet. Color-based probabilistic tracking. In *European Conference on Computer Vision*, 2002.
- [641] P. Perez, J. Vermaak, and A. Blake. Data fusion for visual tracking with particles. *Proc. IEEE*, 92(3):495–513, 2004.
- [642] P. Perona and J. Malik. Scale space and edge detection using anisotropic diffusion. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 12:629–639, 1990.
- [643] G. Peyre and L. Cohen. Geodesic re-meshing and parameterization using front propagation. In *Proc. IEEE Workshop on Variational and Level Set Methods in Computer Vision*, Nice, France, October 2003.
- [644] R. Peyret and T.D. Taylor. *Computational methods for fluid flow*. Springer Verlag, 1993.

- [645] P. Phillips, S. Sarkar, I. Robledo, P. Grother, and K. Bowyer. The gait identification challenge problem: data sets and baseline algorithm. In *Proceedings of the 15th International Conference on Pattern Recognition*, pages I: 385–388, 2002.
- [646] E. Pichon, G. Sapiro, and A. Tannenbaum. *Lecture Notes in Control and Information Sciences*, chapter Segmentation of Diffusion Tensor Imagery, pages 239–247. Springer-Verlag, 2003.
- [647] C. Pierpaoli and P. Basser. Toward a quantitative assessment of diffusion anisotropy. *Magnetic Resonance Medicine*, 36:893–906, 1996.
- [648] R. Pito. A solution to the next best view problem for automated surface acquisition. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 21(10):1016–1030, October 1999.
- [649] S. Pizer, S. Joshi, T. Fletcher, M. Styner, G. Tracton, , and J. Chen. Segmentation of single-figure objects by deformable M-reps. In *Medical Image Computing & Computer Assisted Interventions – MICCAI*, number 2208 in Lecture Notes in Computer Science, pages 862–871, 2001.
- [650] Z. Pizlo and A. Rosenfeld. Recognition of Planar Shapes from Perspective Images using Contour Based Invariants. *Center for Automation Research, CAR-TR-528*, December 1990.
- [651] J. Pluim, J. Maintz, and M. Viergever. Image registration by maximization of combined mutual information and gradient information. In *Proceedings of MICCAI*, Lecture Notes in Computer Science, pages 567–578. Springer, 2000.
- [652] J. Pluim, J. Maintz, and M. Viergever. Mutual-information-based registration of medical images: a survey. *MedImg*, 22(8):986–1004, August 2003.
- [653] S. Pollard, J. Mayhew, and J. Frisby. PMF: A stereo correspondence algorithm using a disparity gradient limit. *Perception*, 14:449–470, 1985.
- [654] M. Pollefeys, R. Koch, and L. Van Gool. Self-calibration and metric reconstruction in spite of varying and unknown internal camera parameters. In *Proc. ICCV'98*, pages 90–95, 1998.
- [655] M. Pollefeys, R. Koch, and L. Van Gool. A simple and efficient rectification method for general motion. In *Proc. ICCV'99*, pages 496–501, 1999.
- [656] M. Pollefeys, F. Verbiest, and L. Van Gool. Surviving dominant planes in uncalibrated structure and motion recovery. In *Computer Vision - ECCV 2002, LNCS, Vol. 2351*, pages 837–851, 2002.
- [657] J.-P. Pons, R. Keriven, and O. Faugeras. Modelling Dynamic Scenes by Registering Multi-View Image Sequences. Technical Report 5321, INRIA, 2004.
- [658] J. Portilla and E. Simoncelli. A parametric texture model based on joint statistics of complex wavelet coefficients. *International Journal of Computer Vision*, 40(1):49–71, 2000.
- [659] C. Poupon. *Détection des faisceaux de fibres de la substance blanche pour l'étude de la connectivité anatomique cérébrale*. PhD thesis, Ecole Nationale Supérieure de Télécommunications de Paris, 1999.
- [660] C. Poupon, J. Mangin, C. Clark, V. Frouin, J. Regis, D. LeBihan, and I. Block. Towards inference of human brain connectivity from MR diffusion tensor data. *Med. Image Anal.*, 5:1–15, 2001.

- [661] E. Prados, F. Camilli, and O. Faugeras. A viscosity method for Shape-From-Shading without boundary data. Technical Report RR-5296, INRIA, 2004.
- [662] E. Prados and O. Faugeras. A mathematical and algorithmic study of the Lambertian SFS problem for orthographic and pinhole cameras. Technical Report RR-5005, INRIA, 2003.
- [663] E. Prados and O. Faugeras. “Perspective Shape from Shading” and viscosity solutions. In *ICCV’03*, volume 2, pages 826–831, 2003.
- [664] E. Prados and O. Faugeras. Unifying approaches and removing unrealistic assumptions in Shape from Shading: Mathematics can help. In *ECCV’04*, 2004.
- [665] E. Prados, O. Faugeras, and E. Rouy. Shape from shading and viscosity solutions. In *ECCV’02*, volume 2351, pages 790–804, 2002.
- [666] W. H. Press, S. Teukolsky, W. Vetterling, and B. Flannery. *Numerical Recipes in C: The Art of Scientific Computing*. Cambridge University Press, 2nd edition, 2002.
- [667] H. Ragheb and E. Hancock. A probabilistic framework for specular shape-from-shading. *Pattern Recognition*, 36:407–427, 2003.
- [668] A. Rahimi, B. Dunagan, and T. Darrell. Simultaneous calibration and tracking with a network of non-overlapping sensors. In *IEEE International Conference on Computer Vision and Pattern Recognition*, pages I: 187–194, 2004.
- [669] S. Rane, M. Bertalmio, and G. Sapiro. Structure and Texture Filling-in of Missing Image Blocks in Wireless Transmission and Compression Applications. *IEEE Transactions on Image Processing*, 12:296 – 303, 2003.
- [670] C. Rao. Information and accuracy attainable in the estimation of statistical parameters. *Bull. Calcutta Math. Soc.*, 37:81–91, 1945.
- [671] M. Reed and P. Allen. Constraint-based sensor planning for scene modeling. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 22(12):1460–1467, December 2000.
- [672] J. Rehg and T. Kanade. Visual tracking of high dof articulated structures: an application to human hand tracking. In J.-O. Eklundh, editor, *European Conference on Computer Vision*, pages 35–46. Springer-Verlag, 1994.
- [673] I. Reid and D. Murray. Tracking foveated corner clusters using affine structure. In *IEEE International Conference on Computer Vision*, pages 76–83, 1993.
- [674] J. Rieger and K. Rohr. Semi-algebraic solids in 3-space: A survey of modelling schemes and implications for view graphs. *Image and Vision Computing*, 12(7):395–410, 1994.
- [675] J. Rissanen. Modeling by shortest data description. *Automatica*, 14:465–471, 1978.
- [676] J. Rissanen. *Stochastic Complexity in Statistical Inquiry*, (2nd edition). World Scientific Press, 1998.
- [677] E. Rivlin and I. Weiss. Local Invariants for Recognition. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 17(3):226–238, March 1995.
- [678] A. Roche, G. Malandain, X. Pennec, and N. Ayache. The correlation ratio as a new similarity measure for multimodal image registration. In *Proceedings of MICCAI*, volume 1496 of *Lecture Notes in Computer Science*, pages 1115–1124. Springer, 1998.

- [679] M. Rodríguez Florido, C.-F. Westin, and J. Ruiz-Alzola. Dt-mri regularization using anisotropic tensor field filtering. In *IEEE 2004 International Symposium on Biomedical Imaging*, pages 15–18, Arlington, VA, EEUU, April 2004.
- [680] R. Ronfard. Region-based strategies for active contour models. *International Journal of Computer Vision*, 13:229–251, 1994.
- [681] J. Rosen. The Gradient Projection Method for Nonlinear Programming. Part I. Linear Constraints. *SIAM*, 8(1):181–217, March 1960.
- [682] V. Roth, J. Laub, M. Kawanabe, and J. Buhmann. Optimal cluster preserving embedding of nonmetric proximity data. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 25(12):1540–1551, Dezember 2003.
- [683] C. Rother, V. Kolmogorov, and A. Blake. Grabcut - interactive foreground extraction using iterated graph cuts. In *ACM Transactions on Graphics (SIGGRAPH)*, August 2004.
- [684] M. Rousson. *Cues integrations and front evolutions in image segmentation*. PhD thesis, Université de Nice-Sophia Antipolis, 2004.
- [685] M. Rousson and R. Deriche. A Variational Framework for Active and Adaptive Segmentation of Vector Valued Images. Technical Report 4515, INRIA, France, 2002.
- [686] M. Rousson and R. Deriche. A variational framework for active and adaptive segmentation of vector valued images. In *IEEE Workshop on Motion and Video Computing*, pages 56–61, Orlando, Florida, 2002.
- [687] M. Rousson, C. Lenglet, and R. Deriche. Level Set and Region Based Surface Propagation for Diffusion Tensor MRI Segmentation. In *Computer Vision Approaches to Medical Image Analysis and Mathematical Methods in Biomedical Image Analysis Workshop*, pages 87–98, 2004.
- [688] M. Rousson and N. Paragios. Shape Priors for Level Set Representations. In *European Conference on Computer Vision*, pages II:78–93, Copenhagen, Denmark, 2002.
- [689] M. Rousson, N. Paragios, and R. Deriche. Implicit Active Shape Models for 3D Segmentation in MR Imaging. In *Medical Imaging Computing and Computer-Assisted Intervention*, 2004.
- [690] E. Rouy and A. Tourin. A Viscosity Solutions Approach to Shape-from-Shading. *SIAM Journal on Numerical Analysis*, 29:867–884, 1992.
- [691] S. Rowe and A. Blake. Statistical mosaics for tracking. *Journal in Image and Vision Computing*, 14:549–564, 1996.
- [692] S. Roy. Stereo without epipolar lines: A maximum-flow formulation. *International Journal of Computer Vision*, 34(2/3):147–162, August 1999.
- [693] S. Roy and I. Cox. A maximum-flow formulation of the n-camera stereo correspondence problem. In *IEEE Proc. of Int. Conference on Computer Vision*, pages 492–499, 1998.
- [694] S. Roy and V. Govindu. MRF solutions for probabilistic optical flow formulations. In *International Conference on Pattern Recognition (ICPR)*, September 2000.
- [695] L. Rudin, S. Osher, and E. Fatemi. Nonlinear Total Variation Based Noise Removal. *Physica D*, 60:259–268, 1992.

- [696] D. Rueckert, A. Frangi, and J. Schnabel. Automatic construction of 3D statistical deformation models of the brain using non-rigid registration. *IEEE Transactions on Medical Imaging*, 22(8):1014–25, August 2003.
- [697] S. Rusinkiewicz and M. Levoy. Efficient Variants of the ICP Algorithm. In *Proceedings of the 3rd International Conference on 3-D Digital Imaging and Modeling*, pages 224–231, 2001.
- [698] P. Saisan, G. Doretto, Y. Wu, and S. Soatto. Dynamic texture recognition. In *IEEE Conference on Computer Vision and Pattern Recognition*, volume 2, pages 58–63, 2001.
- [699] H. Saito, S. Baba, M. Kimura, S. Vedula, and T. Kanade. Appearance-based virtual view generation of temporally varying events from multi-camera images in the 3d room. In *Proc. Second International Conference on 3-D Digital Imaging and Modeling (3DIM99)*, pages 516–525, October 1999.
- [700] P. Salembier and J. Serra. Flat zones filtering, connected operators and filters by reconstruction. *IEEE Transactions on Image Processing*, 3(8):1153–1160, August 1995.
- [701] C. Samson, L. Blanc-Feraud, G. Aubert, and J. Zerubia. A Level Set Model for Image Classification. *International Journal of Computer Vision*, 40:187–197, 2000.
- [702] G. Sapiro. *Geometric Partial Differential Equations in Image Processing*. Cambridge University Press, 2001.
- [703] G. Sapiro and A. Bruckstein. The Ubiquitous Ellipse. *Acta Applicandae Mathematicae*, 38(2):139–147, 1995.
- [704] G. Sapiro and D. Ringach. Anisotropic diffusion of multivalued images with applications to color filtering. *IEEE Transactions on Image Processing*, 5:1582–1585, 1996.
- [705] G. Sapiro and A. Tannenbaum. On invariant curve evolution and image analysis. *Indiana Journal of Mathematics*, 42:51–87, 1993.
- [706] G. Sapiro and A. Tannenbaum. On affine planar curve evolution. *J. Funct. Anal.*, 119:79–120, 1994.
- [707] J. Sato and R. Cippola. Affine Integral Invariants for Extracting Symmetry Axes. *Image and Vision Computing*, 15(8):627–635, Aug 1997.
- [708] J. Sato and R. Cippola. Quasi Invariant Parameterizations and Matching of Curves in Images. *International Journal of Computer Vision*, 28(2):117–136, June-July 1998.
- [709] H. Sawhney and R. Kumar. True multi-image alignment and its application to mosaicing and lens distortion correction. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 21(3):235–243, March 1999.
- [710] H. Sawhney, R. Kumar, G. Gendel, J. Bergen, D. Dixon, and V. Paragano. Videobrush: Experiences with consumer video mosaicing. In *IEEE Workshop on Applications of Computer Vision*, pages 56–62, Princeton, October 1998.
- [711] D. Scharstein and R. Szeliski. A Taxonomy and Evaluation of Dense Two-Frame Stereo Correspondence Algorithms. *The International Journal of Computer Vision*, 47:7–42, 2002.
- [712] C. Schmid, R. Mohr, and C. Bauckhage. Evaluation of interest point detectors. *International Journal of Computer Vision*, 37(2):151–172, June 2000.

- [713] C. Schmid and A. Zisserman. The geometry and matching of lines and curves over multiple views. *International Journal of Computer Vision*, 40(3):199–233, 2000.
- [714] C. Schnorr. Determining optical flow for irregular domains by minimising quadratic functionals of a certain class. *International Journal of Computer Vision*, 6(1):25–38, 1991.
- [715] C. Schnörr. Computation of discontinuous optical flow by domain decomposition and shape optimization. *IJCV*, 8(2):153–165, 1992.
- [716] A. Schödl, R. Szeliski, D. Salesin, and I. Essa. Video textures. In *Proceedings of SIGGRAPH*, pages 489–498, 2000.
- [717] I. Schoenberg. The Finite Fourier Series and Elementary Geometry. *Amer. Math. Monthly*, 57:390–404, 1950.
- [718] S. Sclaroff and J. Isidoro. Active blobs. In *IEEE International Conference on Computer Vision*, 1998.
- [719] T. Sederberg and S. Parry. Free-form deformation of solid geometric models. In *Proceedings of the 13th Annual Conference on Computer Graphics*, pages 151–160, 1986.
- [720] M. Segal, C. Korobkin, R. van Widenfelt, J. Foran, and P. Haerberli. Fast Shadows and Lighting Effects Using Texture Mapping. *Computer Graphics*, 26:249–252, 1992.
- [721] S. Seitz and C. Dyer. Photorealistic scene reconstruction by voxel coloring. In *IEEE International Conference on Computer Vision and Pattern Recognition*, pages 1067–1073, June 1997.
- [722] S. Seitz and C. Dyer. Photorealistic Scene Reconstruction by Voxel Coloring. *The International Journal of Computer Vision*, 35:151–173, 1999.
- [723] J. Serra. *Image Analysis and Mathematical Morphology*. Academic Press, 1982.
- [724] J. Serra. *Image Analysis and Mathematical Morphology. II: Theoretical Advances*. Academic Press, London, 1988.
- [725] J. Serra. Set connections and discrete filtering. In M. Couprie G. Bertrand and L. Perroton, editors, *Discrete Geometry for Computer Imagery*, Lecture Notes in Computer Science 1568, pages 191–207. Springer, 1999.
- [726] J. Serra and P. Salembier. Connected Operators and Pyramids. In *Proc. SPIE Image Algebra Math. Morphology, SPIE 2030*, pages 65–76, San Diego, CA, 1993.
- [727] J. Sethian. A Review of the Theory, Algorithms, and Applications of Level Set Methods for Propagating Interfaces. *Cambridge University Press*, pages 487–499, 1995.
- [728] J. Sethian. *Level Set Methods*. Cambridge University Press, 1996.
- [729] J. Sethian. Fast Marching Methods. *SIAM Review*, 41:199–235, 1999.
- [730] J. Sethian. *Level Set Methods and Fast Marching Methods*. Cambridge University Press, second edition, 1999.
- [731] J. Sethian and A. Vladimirsky. Ordered upwind methods for static hamilton–jacobi equations: Theory and algorithms. *SIAM J. of Numerical Analysis*, 41(1):325–363, 2003.
- [732] A. Shaashua and S. Ullman. Structural saliency: The detection of globally salient structures using a locally connected network. In *International Conference on Computer Vision*, pages 321–327, 1988.

- [733] J. Shah. A Common Framework for Curve Evolution, Segmentation and Anisotropic Diffusion. In *IEEE Conference on Computer Vision and Pattern Recognition*, pages 136–142, 1996.
- [734] Y. Shapira. *Matrix-Based Multigrid: Theory and Applications*, volume 2 of *Numerical Methods and Algorithms*. Kluwer Academic Publishers, 2003.
- [735] E. Sharon, A. Brandt, and R. Basri. Completion Energies and Scale. In *In Proc. IEEE Conf. Comp. Vision and Pattern Recognition (CVPR '97)*, pages 884–890, San Juan, Puerto Rico, 1997.
- [736] E. Sharon and D. Mumford. 2d-shape analysis using conformal mapping. In *Proc. CVPR*, pages 350–357, Washington, D.C., 2004. IEEE Comp. Soc.
- [737] J. Shi and J. Malik. Normalized Cuts and Image Segmentation. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 22:888–905, 2000.
- [738] J. Shi and C. Tomasi. Good features to track. In *Proc. CVPR'94*, pages 593 – 600, 1994.
- [739] H.-Y. Shum and R. Szeliski. Construction of panoramic mosaics with global and local alignment. *International Journal of Computer Vision*, 36(2):101–130, February 2000. Erratum published July 2002, 48(2):151-152.
- [740] K. Siddiqi, Y.-B. Lauziere, A. Tannenbaum, and S. Zucker. Area and Length Minimizing Flow for Shape Segmentation. *IEEE Transactions on Image Processing*, 7:433–443, 1998.
- [741] J. Simon. Differentiation with respect to the domain in boundary value problems. *Numer. Funct. Anal. Optimiz.*, 2:649–687, 1980.
- [742] L. Simon. *Lectures on Geometric Measure Theory*. Proceedings of the Centre for Mathematical Analysis, Australian National University, 1983.
- [743] E. Simoncelli. *Distributed representation and analysis of visual motion*. PhD thesis, Department of Electrical Engineering, MIT, 1993.
- [744] E. Simoncelli, E. Adelson, and D. Heeger. Probability distributions of optical flow. In *IEEE Conference on Computer Vision and Pattern Recognition*, pages 310–315, Maui, 1991.
- [745] E. Simoncelli and J. Portilla. Texture Characterization via Joint Statistics of Wavelet Coefficient Magnitudes. In *Proc. 5th IEEE Int. Conf. on Image Processing*, pages 62–66, Chicago, IL., Oct 4-7, 1998.
- [746] L. Skovgaard. A Riemannian geometry of the multivariate normal model. *Scandinavian Journal of Statistics*, 11:211–233, 1984.
- [747] C. Small. *The Statistical Theory of Shape*. Springer, 1996.
- [748] S. Soatto, G. Doretto, and Y. Wu. Dynamic textures. In *IEEE International Conference in Computer Vision*, volume 2, pages 439–446, 2001.
- [749] S. Soatto, A. Yezzi, and H. Jin. Tales of Shape and Radiance in Multi-view Stereo. In *IEEE International Conference on Computer Vision*, pages 974–981, 2003.
- [750] O. Söderman and B. Jönsson. Restricted diffusion in cylindrical geometry. *J. Magn. Reson. A*, 117:94–97, 1995.
- [751] J. Sokolowski and J. Zolesio. *Introduction to shape optimization*, volume 16 of *Springer series in computational mathematics*. Springer-Verlag, 1992.
- [752] M. Sonka, V. Hlavac, and R. Boyle. *Image Processing, Analysis, and Machine Vision*. PWS, Pacific Grove, CA, 2nd edition, 1998.

- [753] M. Spivak. *A Comprehensive Introduction to Differential Geometry*. Publish or Perish, Houston, 1975.
- [754] M. Srinivasan, S. Zhang, M. Altwein, and J. Tautz. Honeybee navigation: Nature and calibration of the odometer. *Science*, 287(5454):851–853, 2000.
- [755] A. Srivastava, S. Joshi, W. Mio, and X. Liu. Statistical shape analysis: Clustering, learning and testing. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, to appear, 2005.
- [756] L. Staib and S. Duncan. Boundary finding with parametrically deformable models. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 14:1061–1075, 1992.
- [757] C. Stauffer and W. Grimson. Adaptive background mixture models for real-time tracking. In *IEEE Conference on Computer Vision and Pattern Recognition*, pages 246–252, 1999.
- [758] C. Stauffer and W. Grimson. Learning patterns of activity using real-time tracking. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 22(8):747–757, August 2000.
- [759] M. Stegmann. *Generative Interpretation of Medical Images*. PhD thesis, Informatics and Mathematical Modeling Institute, Technical University of Denmark, 2004.
- [760] G. Steidl, J. Weickert, T. Brox, P. Mrázek, and M. Welk. On the equivalence of soft wavelet shrinkage, total variation diffusion, total variation regularization, and SIEs. *SIAM Journal on Numerical Analysis*, 42(2):686–713, 2004.
- [761] A. Steiner, R. Kimmel, and A. Bruckstein. Planar Shape Enhancement and Exaggeration. *Graph Models and Image Processing*, 60(2):112–124, March 1998.
- [762] E. Stejskal and J. Tanner. Spin diffusion measurements: Spin echoes in the presence of a time-dependent field gradient. *Journal of Chemical Physics*, 42:288–292, 1965.
- [763] B. Stenger, A. Thayananthan, P. Torr, and R. Cipolla. Filtering using a tree-based estimator. In *IEEE International Conference on Computer Vision*, 2003.
- [764] C. Stewart. Robust Parameter Estimation in Computer Vision. *SIAM Reviews*, 41:513–537, 1999.
- [765] C. Stewart, C.-L. Tsai, and B. Roysam. The Dual-Bootstrap Iterative Closest Point Algorithm with Application to Retinal Image Registration. *IEEE Transactions on Medical Imaging*, 22:1379–1394, 2003.
- [766] A. Stoddart, S. Lemke, A. Hilton, and T. Renn. Estimating Pose Uncertainty for Surface Registration. *Image and Vision Computing*, 16:111–120, 1998.
- [767] G. Strang. Maximal flow through a domain. *Mathematical Programming*, 26:123–143, 1983.
- [768] C. Strecha, R. Fransens, and L. Van Gool. Wide-baseline stereo from multiple views: A probabilistic account. In *IEEE International Conference on Computer Vision and Pattern Recognition*, volume 2, pages 552–559, 2004.
- [769] C. Strecha, T. Tuytelaars, and L. Van Gool. Dense Matching of Multiple Wide-Baseline Views. In *IEEE International Conference on Computer Vision*, pages 1194–1201, 2003.
- [770] D. Strong and T. Chan. Edge-preserving and Scale-dependent Properties of Total Variation Regularization. *Inv. Probl.*, 19:165–187, 2003.

- [771] C. Studholme, D. Hill, and D. Hawkes. An overlap invariant entropy measure of 3d medical image alignment. *Pattern Recognition*, 32(1):71–86, 1999.
- [772] P. Sturm. Critical motion sequences for monocular self-calibration and uncalibrated euclidean reconstruction. In *Proc. CVPR'97*, pages 1100–1105, 1997.
- [773] J. Sullivan, A. Blake, M. Isard, and J. MacCormick. Object localisation by bayesian correlation. In *IEEE International Conference on Computer Vision*, pages 1068–1075, 1999.
- [774] M. Sussman, P. Smereka, and S. Osher. A Level Set Method for Computing Solutions to Incompressible Two-Phase Flow. *Journal of Computational Physics*, 114:146–159, 1994.
- [775] R. Szeliski. Rapid octree construction from image sequences. *Computer Vision, Graphics and Image Processing: Image Understanding*, 58(1):23–32, July 1993.
- [776] R. Szeliski. Video mosaics for virtual environments. *IEEE Computer Graphics and Applications*, 16(2):22–30, March 1996.
- [777] R. Szeliski. Prediction Error as a Quality Metric for Motion and Stereo. In *IEEE International Conference on Computer Vision*, pages 781–788, 1999.
- [778] R. Szeliski. Image alignment and stitching: A tutorial. Technical Report MSR-TR-2004-92, Microsoft Research, December 2004.
- [779] R. Szeliski and J. Coughlin. Spline-based image registration. *International Journal of Computer Vision*, 22(3):199–218, 1997.
- [780] R. Szeliski and S.-B. Kang. Recovering 3D shape and motion from image streams using nonlinear least squares. *Journal of Visual Communication and Image Representation*, 5(1):10–28, March 1994.
- [781] R. Szeliski and H. Shum. Creating full view panoramic image mosaics and texture-mapped models. *Computer Graphics (SIGGRAPH'97 Proceedings)*, pages 251–258, August 1997.
- [782] R. Szeliski and R. Zabih. An experimental comparison of stereo algorithms. In B. Triggs, A. Zisserman, and R. Szeliski, editors, *Vision Algorithms: Theory and Practice*, number 1883 in LNCS, pages 1–19, Corfu, Greece, September 1999. Springer-Verlag.
- [783] M. Szummer and R. Picard. Temporal texture modeling. In *IEEE International Conference on Image Processing*, volume 3, pages 823–826, 1996.
- [784] E. Tadmor, S. Nezzar, and L. Vese. A Multiscale Image Representation Using Hierarchical (BV, L^2) Decompositions. *Multiscale Model. Simul.*, 2:554–579, 2003.
- [785] H. Tagare, D. O'shea, and D. Groisser. Non-rigid shape comparison of plane curves in images. *J. Math. Imaging Vis.*, 16(1):57–68, 2002.
- [786] P. Tan, S. Lin, L. Quan, and H. Shum. Highlight removal by illumination-constrained inpainting. In *Proceedings International Conference on Computer Vision*, pages 164–169, 2003.
- [787] B. Tang, G. Sapiro, and V. Caselles. Color image enhancement via chromaticity diffusion. *IEEE Transactions on Image Processing*, 10:701–707, 2001.
- [788] A. Tankus, N. Sochen, and Y. Yeshurun. A new perspective [on] Shape-from-Shading. In *ICCV'03*, volume 2, pages 862–869, 2003.

- [789] A. Tankus, N. Sochen, and Y. Yeshurun. Reconstruction of medical images by perspective Shape-from-Shading. In *ICPR'04*, 2004.
- [790] M. Tappen and W. Freeman. Comparison of graph cuts with belief propagation for stereo, using identical mrf parameters. In *IEEE Intl. Conference on Computer Vision (ICCV)*, October 2003.
- [791] K. Tarabanis, P. Allen, and R. Tsai. A survey of sensor planning in computer vision. *IEEE Transactions on Robotics and Automation*, 11(1):86–105, February 1995.
- [792] K. Tarabanis, R. Tsai, and A. Kaul. Computing occlusion-free viewpoints. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 18(3):279–292, March 1996.
- [793] D. Terzopoulos and R. Szeliski. Tracking with Kalman snakes. In A. Blake and A.L. Yuille, editors, *Active Vision*, pages 3–20. MIT, 1992.
- [794] P. Tetali. Random Walks and the Effective Resistance of Networks. *Journal of Theoretical Probability*, 4(1):101–109, 1991.
- [795] K. Thornber and L. Williams. Analytical solution of stochastic completion fields. *Biological Cybernetics*, 75:141–151, 1996.
- [796] K. Thornber and L. Williams. Characterizing the Distribution of Completion Shapes with Corners Using a Mixture of Random Processes. *Pattern Recognition*, 33:543–553, 2000.
- [797] A. Tikhonov. The regularization of ill-posed problems. *Dokl. Akad. Nauk., SSR* 153(1):49–52, 1963.
- [798] S. Timoner. *Compact Representations for Fast Nonrigid Registration of Medical Images*. PhD thesis, Massachusetts Institute of Technology, 2003.
- [799] P. Torr. Bayesian Model Estimation and Selection for Epipolar Geometry and Generic Manifold Fitting. *International Journal of Computer Vision*, 50:271–300, 2002.
- [800] P. Torr, A. Fitzgibbon, and A. Zisserman. Maintaining multiple motion model hypotheses through many views to recover matching and structure. In *Proc. ICCV'99*, pages 485–491, 1998.
- [801] K. Toyama and A. Blake. Probabilistic tracking in a metric space. In *IEEE International Conference on Computer Vision*, pages 50–59, 2001.
- [802] A. Treuille, A. Hertzmann, and S. Seitz. Exemple-Based Stereo with General BRDFs. In *European Conference on Computer Vision*, pages 457–469, 2004.
- [803] B. Triggs. The absolute quadric. In *Proc. CVPR'97*, pages 609–614, 1997.
- [804] B. Triggs, P. McLauchlan, R. Hartley, and Fitzgibbon A. Bundle adjustment – a modern synthesis. In *Vision Algorithms: Theory and Practice, LNCS, Vol. 1883*, pages 298–372. Springer-Verlag, 2000.
- [805] B. Triggs, P. McLauchlan, R. Hartley, and A. Fitzgibbon. Bundle adjustment — a modern synthesis. In *International Workshop on Vision Algorithms*, pages 298–372, Kerkyra, Greece, September 1999.
- [806] A. Trounev and L. Younes. Diffeomorphic matching problems in one dimension: designing and minimizing matching functionals. In *Proc. 6th European Conf. Computer Vision, LNCS, pages 573–587*. Springer, 2000.

- [807] A. Tsai, A. Willsky, and A. Yezzi. A statistical approach to snakes for bimodal and trimodal imagery. In *IEEE International Conference on Computer Vision*, volume 2, pages 898–903, 1999.
- [808] A. Tsai, A. Yezzi, W. Wells, C. Tempny, D. Tucker, A. Fan, W. Grimson, and A. Willsky. Model-based Curve Evolution Technique for Image Segmentation. In *IEEE Conference on Computer Vision and Pattern Recognition*, volume I, pages 463–468, 2001.
- [809] A. Tsai, A. Yezzi, and A. Willsky. Curve evolution implementation of the Mumford-Shah functional for image segmentation, denoising, interpolation, and magnification. *IEEE Transactions on Image Processing*, 10(8):1169–1186, 2001.
- [810] C.-L. Tsai, A. Majerovics, C. Stewart, and B. Roysam. Disease-Oriented Evaluation of Dual-Bootstrap Retinal Image Registration. In *Proceedings of the 6th International Conference on Medical Image Computing and Computer-Assisted Intervention*, volume II, pages 754–761, 2003.
- [811] D. Tschumperlé and R. Deriche. Diffusion tensor regularization with constraints preservation. In *CVPR*, pages 948–954, 2001.
- [812] D. Tschumperlé and R. Deriche. Regularization of orthonormal vector sets regularization with PDE's and applications. *IJCV*, 50(3):237–252, 2002.
- [813] D. Tschumperlé and R. Deriche. Tensor field visualization with pde's and application to DT-MRI fiber visualization. In *Proc. of IEEE Workshop on VLSM*, pages 256–26, Nice, 2003.
- [814] D. Tschumperlé and R. Deriche. Variational frameworks for DT-MRI estimation, regularization and visualization. In *ICCV*, pages 116–122, 2003.
- [815] J. Tsitsiklis. Efficient Algorithms for Globally Optimal Trajectories. In *33rd Conference on Decision and Control*, pages 1368–1373, 1994.
- [816] k. Tsuda, S. Akaho, and K. Asai. The em algorithm for kernel matrix completion with auxiliary data. *J. Mach. Learn. Res.*, 4:67–81, 2003.
- [817] D. Tuch, T. Reese, M. Wiegell, N. Makris, J. Belliveau, and V. Wedeen. High angular resolution diffusion imaging reveals intravoxel white matter fiber heterogeneity. *Magn. Reson. Med.*, 48:577–582, 2002.
- [818] D. Tuch, R. Weisskoff, J. Belliveau, and V. J. Wedeen. High angular resolution diffusion imaging of the human brain. In *Proc. of the 7th ISMRM*, page 321, Philadelphia, 1999.
- [819] G. Turk and M. Levoy. Zippered Polygon Meshes from Range Images. In *Proc. SIGGRAPH 94, ACM*, pages 311–318, 1994.
- [820] A. Tversky. Features of similarity. *Psychological Review*, 84(4):327–352, 1977.
- [821] S. Ullman. Filling-in the Gaps: the Shape of Subjective Contours and a Model for Their Generation. *Biological Cybernetics*, 75:1–6, 1976.
- [822] S. Ullman. The interpretation of structure from motion. *Proceedings of the Royal Society*, B-203:405–426, 1979.
- [823] S. Uras, F. Girosi, A. Verri, and V. Torre. A computational approach to motion perception. *Biological Cybernetics*, 60:79–97, 1989.
- [824] T. Ushijima and S. Yazaki. Convergence of a crystalline algorithm for the motion of a closed convex curve by a power of curvature $v = k^\alpha$. *SIAM. J. Numer. Anal.*, 37:500–522, 2000.

- [825] M. Uyttendaele, A. Eden, and R. Szeliski. Eliminating ghosting and exposure artifacts in image mosaics. In *IEEE Computer Society Conference on Computer Vision and Pattern Recognition*, volume II, pages 509–516, Kauai, Hawaii, December 2001.
- [826] C. Vachier and L. Vincent. Valuation of image extrema using alternating filters by reconstruction. *Image Algebra and Morphological Processing, San Diego CA, Proc. SPIE*, Jul. 1995.
- [827] H. van Assen, M. Danilouchkine, F. Behloul, H. Lamb, R. van der Geest, J. Reiber, and B. Lelieveldt. Cardiac LV segmentation using a 3D active shape model driven by fuzzy inference. In *Medical Image Computing & Computer Assisted Interventions – MICCAI*, volume 2878 of *Lecture Notes in Computer Science*, pages 535–540. Springer Verlag, Berlin, 2003.
- [828] R. van der Geest, B. Lelieveldt, E. Angelie, M. Danilouchkine, M. Sonka, and J. Reiber. Evaluation of a new method for automated detection of left ventricular contours in time series of magnetic resonance images using an active appearance motion model. *Journal of Cardiovascular Magnetic Resonance*, 6(3):609–617, 2004.
- [829] L. Van Gool, R. Kempenaers, and A. Oosterlinck. Recognition and Semi-differential Invariants. In *International Conference on Pattern Recognition*, pages 454–460, Maui, Hawaii, 1991.
- [830] L. Van Gool, T. Moons, and A. Oosterlinck. Semi-differential Invariants. In J. Mundy and A. Zisserman, editors, *Active Vision*. The MIT Press, 1992.
- [831] G. Van Meerbergen, M. Vergauwen, M. Pollefeys, and L. Van Gool. A hierarchical symmetric stereo algorithm using dynamic programming. *Int. J. Comput. Vision*, 47(1/2/3):275–285, 2002.
- [832] P. Van Overschee and B. De Moor. N4SID: subspace algorithms for the identification of combined deterministic-stochastic systems. *Automatica*, 30(1):75–93, 1994.
- [833] R. Vaz and D. Cygansky. Generation of Affine Invariant Local Contour Feature Data. *Pattern Recognition Letters*, 11:479–483, 1990.
- [834] S. Vedula, S. Baker, and T. Kanade. Spatio-Temporal View Interpolation. In *ACM Eurographics Workshop on Rendering*, pages 1–11, 2002.
- [835] S. Vedula, S. Baker, P. Rander, R. Collins, and T. Kanade. Three-Dimensional Scene Flow. In *IEEE International Conference on Computer Vision*, pages 722–729, 1999.
- [836] S. Vedula, S. Baker, S. Seitz, and T. Kanade. Shape and Motion Carving in 6D. In *IEEE Conference on Computer Vision and Pattern Recognition*, pages 592–598, 2000.
- [837] O. Veksler. *Efficient Graph-based Energy Minimization Methods in Computer Vision*. PhD thesis, Cornell University, Ithaca, NY, August 1999.
- [838] B. Vemuri, Y. Chen, M. Rao, and T. Mareci. Automatic fiber tractograph from dti and its validation. In *Proc. of the 1st IEEE ISBI*, pages 505–508, 2002.
- [839] B. Vemuri, Y. Chen, M. Rao, T. McGraw, Z. Wang, and T. Mareci. Fiber tract mapping in the CNS using DT-MRI. In *VLSM*, pages 81–88, 2001.
- [840] J. Verdera, V. Caselles, M. Bertalmio, and G. Sapiro. Inpainting Surface Holes. In *Proc. IEEE International Conference on Image Processing (ICIP)*, volume II, pages 903–906, Barcelona, Spain, 2003.

- [841] L. Vese and T. Chan. A Multiphase Level Set Framework for Image Segmentation Using the Mumford and Shah Model. *International Journal of Computer Vision*, 50:271–293, 2002.
- [842] L. Vese and S. Osher. Modelling Textures with Total Variation Minimization and Oscillating Patterns in Image Processing. *J. Sci. Computing*, 19:553–572, 2003.
- [843] L. Vese and S. Osher. Modeling Textures with Total Variation Minimization and Oscillating Patterns In Image Processing. *J. Math. Imaging Vision*, 20:7–18, 2004.
- [844] E. Villeger, G. Aubert, and L. Blanc-Feraud. Image Disocclusion Using a Probabilistic Gradient Orientation. *Preprint*, 2004.
- [845] L. Vincent. Morphological area openings and closings for grayscale images. *Shape in Picture, NATO Workshop, Driebergen*, Sept. 1992.
- [846] L. Vincent. Morphological grayscale reconstruction in image analysis: Applications and efficient algorithms. *IEEE Trans. in Image Procesing*, pages 176–201, 1993.
- [847] P. Viola and M. Jones. Rapid object detection using a boosted cascade of simple features. In *IEEE Conference on Computer Vision and Pattern Recognition*, 2001.
- [848] P. Viola, M. Jones, and D. Snow. Detecting pedestrians using patterns of motion and appearance. In *IEEE International Conference on Computer Vision*, pages 734–741, 2003.
- [849] C. Vogel and M. Oman. Iterative methods for total variation denoising. *SIAM Journal on Scientific Computing*, 17:227–238, 1996.
- [850] T. Wada, H. Ukida, and T. Matsuyama. Shape from shading with interreflections under proximal light source-3D shape reconstruction of unfolded book surface from a scanner image. In *ICCV'95*, 1995.
- [851] G. Wahba. *Spline Models for Observational Data*. SIAM, Philadelphia, PA, 1990.
- [852] S. Walden. *The Ravished Image*. St. Martin's Press, New York, 1985.
- [853] J. Wang and E. Adelson. Representing Moving Images with Layers. *IEEE Transactions on Image Processing*, 3:625–638, 1994.
- [854] L. Wang, W. Hu, and T. Tan. Recent developments in human motion analysis. *Pattern Recognition*, 36(3):585–601, March 2003.
- [855] Y. Wang and S.-C. Zhu. A generative method for textured motion: analysis and synthesis. In *European Conference on Computer Vision*, pages 583–598, 2002.
- [856] Y. Wang and S.-C. Zhu. Modeling complex motion by tracking and editing hidden Markov graphs. In *IEEE Conference on Computer Vision and Pattern Recognition*, volume 1, pages 856–863, 2004.
- [857] Z. Wang. *Diffusion Tensor Field Restoration and Segmentation*. PhD thesis, University of Florida, 2004.
- [858] Z. Wang and B. Vemuri. An Affine Invariant Tensor Dissimilarity Measure and its Application to Tensor-valued Image Segmentation. In *CVPR*, pages 228–233, 2004.
- [859] Z. Wang and B. Vemuri. DTI Segmentation using an Information Theoretic Tensor Dissimilarity Measure. *IEEE Transactions on Medical Imaging*, 2004. Submitted.
- [860] Z. Wang and B. Vemuri. Tensor Field Segmentation Using Region Based Active Contour Model. In *Europe. Conf. Comp. Vis.(4)*, pages 304–315, 2004.
- [861] Z. Wang and B. Vemuri. Tensor field segmentation using region based active contour model. In *ECCV*, pages 304–315, 2004.

- [862] Z. Wang, B. Vemuri, Y. Chen, and T. Mareci. Simultaneous smoothing and estimation of the tensor field from diffusion tensor MRI. In *Proc. of CVPR*, volume 2, Madison, WI, 2003.
- [863] Z. Wang, B. Vemuri, Y. Chen, and T. Mareci. Simultaneous smoothing and estimation of the tensor field from diffusion tensor MRI. In *CVPR*, pages 461–466, 2003.
- [864] Z. Wang, B. Vemuri, Y. Chen, and T. Mareci. A constrained variational principle for direct estimation and smoothing of the diffusion tensor field from complex DWI. *IEEE Transactions on Medical Imaging*, 23(8):930–939, 2004.
- [865] W. Warren. Self-motion: Visual perception and visual control. In *Handbook of Perception and Cognition*, volume 5: Perception of Space and Motion. Academic Press, New York, 1995.
- [866] A. Watson and A. Ahumada. Model of human visual-motion sensing. *Journal of the Optical Society of America A*, 2:322–342, 1985.
- [867] J. Weber and J. Malik. Robust computation of optical-flow in a multiscale differential framework. *International Journal of Computer Vision*, 14(1):67–81, 1995.
- [868] V. Wedeen, T. Reese, Tuchand D., M. Weigel, J. Dou, R. Weisskoffand, and D. Chesler. Mapping fiber orientation spectra in cerebral white matter with fourier transform diffusion MRI. In *Proc. of the 8th ISMRM*, page 82, Denver, 2000.
- [869] L. Wei and M. Levoy. Fast texture synthesis using tree-structured vector quantization. In *Proceedings of SIGGRAPH*, pages 479–488, 2000.
- [870] J. Weickert. *Anisotropic Diffusion in Image Processing*. Teubner, Stuttgart, 1998.
- [871] J. Weickert. Diffusion and Regularization Methods for Tensor-valued Images. In *First SIAM-EMS Conf. Appl. Math. in Our Changing World*, 2001.
- [872] J. Weickert and T. Brox. Diffusion and regularization of vector- and matrix-valued images. *Inverse Problems, Image Analysis, and Medical Imaging. Contemporary Mathematics*, 313:251–268, 2002.
- [873] J. Weickert and G. Kuhne. Fast Methods for Implicit Active Contours. In S. Osher and n. Paragios, editors, *Geometric Level Set Methods in Imaging, Vision and Graphics*, pages 43–58. Springer, 2003.
- [874] A. Weinstein. Almost invariant submanifolds for compact group actions. *Journal of the European Mathematical Society*, 2(1):53–86, 2000.
- [875] I. Weiss. Projective Invariants of Shapes. *Center for Automation Research, University of Mariland*, TR-339, 1988.
- [876] I. Weiss. Noise Resistant Invariants of Curves. *Center for Automation Research, University of Mariland*, CAR-TR-537, 1991.
- [877] I. Weiss. Local Projective and Affine Invariants. *Annals of Mathematics and Artificial Intelligence*, 13(3-4):203–225, 1995.
- [878] Y. Weiss. Smoothness in layers: Motion segmentation using nonparametric mixture estimation. In *IEEE Conference on Computer Vision and Pattern Recognition*, pages 520–526, Puerto Rico, 1997.
- [879] Y. Weiss and E. Adelson. A unified mixture framework for motion segmentation: Incorporating spatial coherence and estimating the number of models. In *IEEE Conference on Computer Vision and Pattern Recognition*, pages 321–326, San Francisco, 1996.

- [880] Y. Weiss and D. Fleet. Velocity likelihoods in biological and machine vision. In R. Rao, B. Olshausen, and M. Lewicki, editors, *Probabilistic models of the brain*. MIT Press, 2002.
- [881] Y. Weiss, E. Simoncelli, and E. Adelson. Motion illusions as optimal percepts. *Nature Neuroscience*, 5(6):598–604, June 2002.
- [882] M. Welk, J. Weickert, and G. Steidl. A four-pixel scheme for singular differential equations. In R. Kimmel, N. Sochen, and J. Weickert, editors, *Scale-Space and PDE Methods in Computer Vision*, Lecture Notes in Computer Science, Berlin, 2005. Springer. To appear.
- [883] W. Wells III, P. Viola, H. Atsumi, S. Nakajima, and R. Kikinis. Multi-modal volume registration by maximization of mutual information. *Medical Image Analysis*, 1:35–52, 1996.
- [884] C-F. Westin, S. Maier, H. Mamata, A. Nabavi, F. Jolesz, and R. Kikinis. Processing and visualization for diffusion tensor MRI. *Medical Image Analysis*, 6(2):93–108, 2002.
- [885] Y. Wexler, E. Shechtman, and M. Irani. Space-time video completion. In *Proc. CVPR*, 2004.
- [886] M. Wheeler, Y. Sato, and K. Ikeuchi. Consensus Surfaces for Modelling 3D Objects from Multiple Range Images. In *Proc. IEEE Int. Conference on Computer Vision*, pages 917–924, 1998.
- [887] R. Whitaker. Volumetric deformable models: active blobs. In *Visualization in Biomedical Computing*, pages 122–134, 1994.
- [888] R. Whitaker. A Level-Set Approach to 3D Reconstruction from Range Data. *International Journal of Computer Vision*, 29:203–231, 1998.
- [889] M. Wiegell, D. Tuch, H. Larson, and V. Wedeen. Automatic Segmentation of Thalamic Nuclei from Diffusion Tensor Magnetic Resonance Imaging. *NeuroImage*, 19:391–402, 2003.
- [890] E. Wilczynski. *Projective Differential Geometry of Curves and Ruled Surfaces*. In *Teubner*, Leipzig, Germany, 1906.
- [891] L. Williams and A. Hanson. Perceptual Completion of Occluded Surfaces. In *Proceedings of the IEEE Computer Vision and Pattern Recognition*, pages 104–112, Seattle, WA, 1994.
- [892] L. Williams and D. Jacobs. Stochastic Completion Fields: A Neural Model of Illusory Contour Shape and Saliency. In *Proceedings of the 5th International Conference on Computer Vision*, pages 408–415, Cambridge, Mass, 1995.
- [893] L. Williams and D. Jacobs. Local Parallel Computation of Stochastic Completion Fields. In *Proc. IEEE Conf. on Computer Vision and Pattern Recognition CVPR '96*, pages 161–168, 1996.
- [894] O. Williams, A. Blake, and R. Cipolla. A sparse probabilistic learning algorithm for real-time tracking. In *IEEE International Conference on Computer Vision*, 2003.
- [895] J. Wills, S. Agarwal, and S. Belongie. What went where. In *CVPR03*, pages I: 37–44, 2003.
- [896] D. Wilson, E. Geiser, and J. Larocca. Automated analysis of echocardiographic apical 4-chamber images. In *Proceedings of the International Society for Optical*

- Engineering in Mathematical Modeling, Estimation, and Imaging*, volume 4121, pages 128–139, 2000.
- [897] M. Worring, A. Smeulders, L. Staib, and J. Duncan. Parameterized feasible boundaries in gradient vector fields. *Computer Vision and Image Understanding*, 63(1):135–144, 1996.
- [898] C. Wren, A. Azarbayejani, T. Darrell, and A. Pentland. Pfunder: Real-time tracking of the human body. *IEEE Trans. on Pattern Analysis and Machine Intelligence*, 19(7):780–785, 1997.
- [899] Z. Wu and R. Leahy. An Optimal Graph Theoretic Approach to Data Clustering: Theory and its Application to Image Segmentation. *IEEE Pattern Analysis and Machine Intelligence*, 11:1101–1113, 1993.
- [900] J. Xiao and M. Shah. Motion layer extraction in the presence of occlusion using graph cut. In *CVPR04*, pages II: 972–979, 2004.
- [901] C. Xu, D. Pham, M. Rettmann, D. Yu, and J. Prince. Reconstruction of the human cerebral cortex from magnetic resonance images. *IEEE Transactions on Medical Imaging*, 18(6):467–480, 1999.
- [902] C. Xu and J. Prince. Generalized gradient vector flow external forces for active contours. *Signal Processing: An International Journal*, 71(2):131–139, 1998.
- [903] N. Xu, R. Bansal, and N. Ahuja. Object segmentation using graph cuts based active contours. In *IEEE Conference on Computer Vision and Pattern Recognition*, volume II, pages 46–53, 2003.
- [904] R. Yang, M. Pollefeys, and G. Welch. Dealing with Textureless Regions and Specular Highlights: A Progressive Space Carving Scheme Using a Novel Photo-consistency Measure. In *IEEE International Conference on Computer Vision*, pages 576–584, 2003.
- [905] L. Yatziv, G. Sapiro, and M. Levoy. Light field completion. In *Proceedings International Conference on Image Processing, ICIP*, 2004.
- [906] Y. Ye and J. Tsotsos. Sensor planning for 3d object search. *Computer Vision and Image Understanding*, 73(2):145–168, February 1999.
- [907] A. Yezzi. Modified curvature motion for image smoothing and enhancement. *IEEE Transactions on Image Processing*, 7:345–352, 1998.
- [908] A. Yezzi, S. Kichenamy, A. Kumar, P. Olver, and A. Tannebaum. A geometric snake model for segmentation of medical imagery. *IEEE Transactions on Medical Imaging*, 16(2):199–209, 1997.
- [909] A. Yezzi, A. Tsai, and A. Willsky. A Statistical Approach to Snakes for Bimodal and Trimodal Imagery. In *IEEE International Conference in Computer Vision*, pages 898–903, 1999.
- [910] A. Yezzi, A. Tsai, and A. Willsky. A statistical approach to snakes for bimodal and trimodal imagery. In *International Conference on Image Processing*, Kobe Japan, 1999.
- [911] Y. You and M. Kaveh. A Regularization Approach to Joint Blur Identification and Image Restoration. *IEEE Trans. Image Process.*, 5:416–427, 1996.
- [912] L. Younes. Computable elastic distances between shapes. *SIAM Journal of Applied Mathematics*, 58:565–586, 1998.

- [913] L. Yuan, F. Wen, C. Liu, and H. Shum. Synthesizing dynamic texture with closed-loop linear dynamic systems. In *European Conference on Computer Vision*, volume 2, pages 603–616, 2004.
- [914] A. Yuille and P. Hallinan. Deformable templates. In A. Blake and A. Yuille, editors, *Active Vision*, pages 20–38. MIT, 1992.
- [915] Y. Zhang and C. Kambhamettu. On 3D Scene Flow and Structure Estimation. In *IEEE Conference on Computer Vision and Pattern Recognition*, pages 778–785, 2001.
- [916] Z. Zhang. Iterative Point Matching for Registration of Free-Form Curves and Surfaces. *International Journal of Computer Vision*, 13:119–152, 1994.
- [917] H-K. Zhao, T. Chan, B. Merriman, and S. Osher. A variational Level Set Approach to Multiphase Motion. *Journal of Computational Physics*, 127:179–195, 1996.
- [918] H.-K. Zhao, S. Osher, and R. Fedkiw. Fast Surface Reconstruction Using the Level Set Method. In *Proc. First IEEE Workshop on Variational and Level Set Methods, in conjunction with Proc. IEEE ICCV 2001*, pages 194–202, 2001.
- [919] J. Zhao and N. Badler. Nonlinear programming for highly articulated figures. *ACM Transactions on Graphics*, 13(4):313 – 336, October 1994.
- [920] T. Zhao and R. Nevatia. Tracking multiple humans in crowded environment. In *IEEE International Conference on Computer Vision and Pattern Recognition*, pages II: 406–413, 2004.
- [921] W. Zhao, R. Chellappa, J. Phillips, and A. Rosenfeld. Face recognition: A literature survey. *ACM Computing Surveys*, pages 399–458, 2003.
- [922] S. Zhu and A. Yuille. Region Competition: Unifying Snakes, Region Growing, and Bayes/MDL for Multiband Image Segmentation. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 18:884–900, 1996.
- [923] X. Zhu, J. Lafferty, and Z. Ghahramani. Combining Active Learning and Semi-Supervised Learning Using Gaussian Fields and Harmonic Functions. In *Proceedings of the ICML 2003 workshop on The Continuum from Labeled to Unlabel Data in Machine Learning and Data Mining*, pages 58–65, 2003.
- [924] Y. Zhu and S. Cochoff. Likelihood maximization approach to image registration. *IEEE Transactions on Image Processing*, 11(12):1417–1426, 2002.
- [925] L. Zhukov, K. Museth, D. Breen, R. Whitaker, and A. Barr. Level set segmentation and modeling of DT-MRI human brain data. *Journal of Electronic Imaging*, 12(1):2003, 125-133.
- [926] W. Ziemer. *Weakly Differentiable Functions*. Springer Verlag, GTM, 120, 1989.
- [927] L. Zollei, J. Fisher, and W. Wells. A unified statistical and information theoretic framework for multi-modal image registration. In *Proceedings of IPMI*, volume 2732 of *Lecture Notes in Computer Science*, pages 366–377. Springer, 2003.
- [928] L. Zollei, J. Fisher, and W. Wells. A unified statistical and information theoretic framework for multi-modal image registration. Technical report, MIT, 2004.
- [929] S. Zucker. Which computation runs in visual cortical columns? In J. Leo van Hemmen and T.J. Sejnowski, editors, *Problems in Systems Neuroscience*. Oxford University Press, 2004.