

Professor Jitendra Malik

Arthur J. Chick Professor, Department of EECS
University of California at Berkeley, CA 94720
Email: malik@cs.berkeley.edu, Phone: (510) 642-7597

Field of Specialization

Computer Vision, Computational Modeling of Human Vision, Computational Biology, Computer Graphics

Education

B.S. in Electrical Engineering, Indian Institute of Technology, Kanpur, 1980.
Ph.D. in Computer Science, Stanford University, December 1985.

Experience

Professor, Bioengineering, UC Berkeley, since January 2009.
Chair, Department of EECS, UC Berkeley, 2004–2006.
Chair, Computer Science Division, EECS, UC Berkeley, 2002–2004.
Scientific Director, Yahoo! Research Berkeley, Jan-June 2007 (visiting)
Professor, EECS, UC Berkeley, since July 1996.
Associate Professor, EECS, UC Berkeley, July 1991-June 1996.
Assistant Professor, EECS, UC Berkeley, Jan 1986-June 1991.
Member, Groups in Vision Science and Cognitive Science, UC Berkeley.

Honors and Awards

National Academy of Engineering, 2011.
Arthur J. Chick Endowed Professor of EECS, UC Berkeley, 2002-continuing.
ISI Highly Cited Researcher in Engineering.
Fellow, ACM, 2008.
Longuet-Higgins Prize for a Contribution That Has Stood the Test of Time, IEEE CVPR, 2008
Distinguished Alumnus Award, IIT Kanpur, 2008.
Longuet-Higgins Prize for a Contribution That Has Stood the Test of Time, IEEE CVPR, 2007
Fellow, IEEE, 2005.
SiliconIndia Leadership Award for Academics, 2002.
Miller Research Professor, UC Berkeley, 2001.
Diane S. McEntyre Award for Excellence in Teaching, CS Div., UC Berkeley, 2000.
Honorable mention for Best Industry-Related Paper at ICPR, 1994.
Rosenbaum Fellow, Newton Institute of Math. Sciences, Cambridge, 1993.
Presidential Young Investigator Award 1989.
IBM Faculty Development Award 1986-88.
IBM Fellowship for Doctoral Study in Computer Science 1983-85.
Best Graduating Student in Electrical Engineering, IIT Kanpur 1980.
One of the top ten students in the Indian School Certificate Exam. 1974.
Keynote talks at major conferences (various).

Synergistic Activities

Governing Body, International Institute of Information Technology, Bangalore, 2006-continuing.

Technical Advisory Board, Microsoft Research India, 2005-continuing.
General Chair, IEEE CVPR 2010.
Board of Trustees, International Computer Science Institute 2002-2005
Organizer, MSRI Program on Image Analysis, Jan–May 2005
Editorial Board, Journal of Vision 2001-2004
Editorial Board, International Journal of Computer Vision, 2002-continuing.
Editorial Board, Foundations and Trends in Computer Graphics and Vision, 2005-continuing
Editor, International Journal of Computer Vision, 2000-2002
Program Chair, International Conf. Computer Vision 2003.
General Chair, IEEE CVPR 2000.
Associate Editor, IEEE Trans. on PAMI 1994-96.
Program committees for major conferences in computer vision, graphics (various)

Selected Keynote or Plenary Lectures

British Machine Vision Conference, Sept 1995. “Smart Cars and Smart Roads”
5th Annual German-American Frontiers of Science Symposium, Potsdam, Germany, June 10-13, 1999 , “Computational Models of Visual Grouping”
DAGM-99 (German Conf. on AI and PR), Sept 16, 1999 , “ Region Based Image Retrieval”
NAS Workshop on the Interface of Three Areas of Computer Science with the Mathematical Sciences, April 29, 2000, “Computational Vision”
Information Society Technologies, IST 2000 Conference, Nice, Nov. 2000 “Convergence of Vision and Graphics”
Int. Conf. on Image Analysis and Processing 2001, Palermo, Italy, Sept 26, 2001, “ Visual Grouping and Object Recognition,”
Int. Symposium on Multimedia Mediation Systems, Tokyo, March 2002 , “Recognizing Objects and Actions in Images and Video”
NAS Workshop on Role of Mathematical Sciences in Homeland Defense, Washington, April 2002, “Recognizing Objects and Actions in Images and Video”
MSR Asia Faculty Summit, Beijing, Nov. 8, 2004, “Computer Science Education at UC Berkeley”
Workshop on “Computing in the 21st Century”, Beijing China, Nov. 9, 2004.
Scandinavian Conference on Image Analysis, 2007, June 10, 2007, “Recognizing objects and activities in images and video”
Google Tech Talk, Mar 6, 2008, “Looking At People”
Adobe Distinguished Lecture Series, Aug 5, 2008, “From Pixels to Perception: Computational Models of Visual Grouping”
ACM SIGKDD, Las Vegas Aug 27, 2008 “The Future of Image Search”
CCPR (Chinese Conference on Pattern Recognition) , Oct. 22, 2010, “Detecting and Segmenting Objects in Images”

Selected publications (from nearly 150):

Journals

1. J. Malik, “Interpreting line drawings of curved objects”, *International Journal of Computer Vision*, 1(1) 1987, pp. 73-103.

2. J. Malik and D. Maydan, "Recovering three dimensional shape from a single image of curved objects," *IEEE Trans. on Pattern Analysis and Machine Intelligence* **11** (6), pp. 555-566, June 1989. Also in *Shape from Shading*, B.K.P. Horn and M.J. Brooks (eds.) MIT Press, 1989.
3. Z. Gigus and J. Malik, "Computing the aspect graph for line drawings of polyhedral objects," *IEEE Trans. on Pattern Analysis and Machine Intelligence*, **12** (2), February 1990, pp. 113-122. Also in *Computer Vision: Advances and Applications* R. Kasturi and R.C. Jain (eds.) IEEE Computer Society Press, 1991.
4. J. Malik and P. Perona, "Preattentive texture discrimination with early vision mechanisms," *Journal of Optical Society of America A*, **7** (2), May 1990, pp. 923-932. Also in *Computer Vision: Advances and Applications* R. Kasturi and R.C. Jain (eds.) IEEE Computer Society Press, 1991.
5. P. Perona and J. Malik, "Scale space and edge detection using anisotropic diffusion," *IEEE Trans. on Pattern Analysis and Machine Intelligence*, **12** (7), July 1990, pp. 629-639.
6. D. Jones and J. Malik, "Computational framework for determining stereo correspondence from a set of linear spatial filters," *Image and Vision Computing* **10**(10), December 1992, pp. 699-708.
7. J. Weber and J. Malik, "Robust computation of optical flow in a multi-scale differential framework," *International Journal of Computer Vision*, **14**(1), Jan 1995, pp. 67-81.
8. J. Weber and J. Malik, "Rigid Body Segmentation and Shape Description from dense optical flow under weak perspective," *IEEE Trans. on Pattern Analysis and Machine Intelligence*, February 1997, pp. 139-143.
9. J. Malik and R. Rosenholtz, "Computing local surface orientation and shape from texture for curved surfaces," *International Journal of Computer Vision*, **23**(2), June 1997, pp. 149-168.
10. D. Forsyth, J. Malik and R. Wilensky, "Searching for Digital Pictures," *Scientific American*, **276**(6), June 1997, pp. 88-93.
11. R. Rosenholtz and J. Malik, "Surface Orientation from texture: Isotropy or Homogeneity (Or Both)?," *Vision Research*, **37**(16), Aug 1997, pp. 2283-2293.
12. B. Coifman, D. Beymer, P. McLauchlan and J. Malik, "A Real-time Computer Vision System for vehicle tracking and traffic surveillance," *Transportation Research C* **6C** (4), Aug 1998, 271-288.
13. Camillo J. Taylor, Jana Kosecka, Robert Blasi and Jitendra Malik, "A Comparative Study of Vision-Based Lateral Control Strategies for Autonomous Highway Driving," *IJRR*, **18**(5), May 1999, pp. 442-453.
14. J. Malik, B.L. Anderson and C.E. Charowhas, "Stereoscopic occlusion junctions," *Nature Neuroscience*, **2**(9), Sept. 1999, pp.840-843
15. Joachim M. Buhmann, Jitendra Malik, and Pietro Perona, "Image recognition: Visual grouping, recognition, and learning," *PNAS* **1999**;96 14203-14204

16. J. Shi and J. Malik, "Normalized Cuts and Image Segmentation," *IEEE Trans. on Pattern Analysis and Machine Intelligence*, 22(8), August 2000, pp. 888-905
17. J. Malik, S. Belongie, T. Leung, J. Shi, "Contour and Texture Analysis for Segmentation," *International Journal of Computer Vision*, 43(1), 7-27, June 2001.
18. T. Leung and J. Malik, "Representing and Recognizing the Visual Appearance of Materials using Three-dimensional Textons," *International Journal of Computer Vision*, 43(1), 29-44, June 2001.
19. Y. Yu, A. Ferencz and J. Malik, "Extracting Objects from Range and Radiance Images," *IEEE Trans. on Visualization and Computer Graphics*, 7(4), 351-364, 2001.
20. S. Belongie, J. Malik and J. Puzicha, "Shape Matching and Object Recognition using Shape Contexts," *IEEE Trans. on Pattern Analysis and Machine Intelligence*, 24(4), April 2002, pp. 509-522.
21. C. Carson, S. Belongie, H. Greenspan, J. Malik, "Blobworld: Image Segmentation Using Expectation-Maximization and its Application to Image Querying," *IEEE Trans. on Pattern Analysis and Machine Intelligence*, 24(8), Aug. 2002, pp.1026 - 1038.
22. C. Fowlkes, S. Belongie, F. Chung, J. Malik, "Spectral Grouping Using The Nyström Method," *IEEE Trans. on Pattern Analysis and Machine Intelligence*, 26(2), Feb. 2004, pp.214-225.
23. C. Bregler, J. Malik and K. Pullen. "Twist-based Acquisition and Tracking of Animal and Human Kinematics," *International Journal of Computer Vision*, 56(3), 179-194, Feb/March 2004.
24. D. Martin, C. Fowlkes, J. Malik. "Learning to Detect Natural Image Boundaries Using Local Brightness, Color and Texture Cues", *IEEE Trans. on Pattern Analysis and Machine Intelligence*, 26(5), May 2004, pp. 530-549.
25. L. Walker Renninger and J. Malik, "When is scene recognition just texture recognition?", *Vision Research*, 44, 2004, pp. 2301-2311.
26. G. Mori, S. Belongie and J. Malik, "Efficient Shape Matching Using Shape Contexts," *IEEE Trans. on Pattern Analysis and Machine Intelligence*, 27(11), Nov. 2005, pp.1832- 1837.
27. G. Mori and J. Malik, "Recovering 3D human body configurations using shape contexts", *IEEE Trans. on Pattern Analysis and Machine Intelligence*, 28(7), July 2006, pp. 1052 - 1062.
28. C. Luengo-Hendriks, S. Keränen, C. Fowlkes, L. Simirenko, G. Weber, C. Henriquez, D. Kaszuba, B. Hamann, M. Eisen, J. Malik, D. Sudar, M. Biggin D. Knowles, "3D Morphology and Gene Expression in the Drosophila Blastoderm at Cellular Resolution I: Data Acquisition Pipeline", *Genome Biology*, 7:R123, 2006.
29. S. Keränen, C. Fowlkes, C. Luengo Hendriks, D. Sudar, D. Knowles, J. Malik, M. Biggin, "3D Morphology and Gene Expression in the Drosophila Blastoderm at Cellular Resolution II: Dynamics", *Genome Biology*, 7:R124, 2006.

30. C.C. Fowlkes, D.R. Martin, J. Malik, “Local Figure/Ground Cues are Valid for Natural Images”, *Journal of Vision*, 7(8):2, 1-9, <http://journalofvision.org/7/8/2/>, 2007.
31. A. Ferencz, E.G. Learned-Miller and J. Malik, “Learning to Locate Informative Features for Visual Identification”, *International Journal of Computer Vision*, 77:3-24, 2008
32. X. Ren, C.C. Fowlkes and J. Malik, “Learning Probabilistic Models for Contour Completion in Natural Images”, *International Journal of Computer Vision*, 77:47-63, 2008
33. Charless C. Fowlkes, Cris L. Luengo Hendriks, Soile V.E. Keränen, Gunther H. Weber, Oliver Rubel, Min-Yu Huang, Sohail Chatoor, Angela H. DePace, Lisa Simirenko, Clara Henriquez, Amy Beaton, Richard Weiszmann, Susan Celniker, Bernd Hamann, David W. Knowles, Mark D. Biggin, Michael B. Eisen, and Jitendra Malik, “A Quantitative Spatiotemporal Atlas of Gene Expression in the *Drosophila* Blastoderm”, *Cell*, Vol 133, 364-374, 18 April 2008
34. G. Weber, O. Rubel, M. Huang, A. DePace, C.Fowlkes, S. Keranen, C. Luengo Hendriks, H. Hagen, D. Knowles, J. Malik, M.D. Biggin and B. Hamann, “Visual Exploration of Three-dimensional Gene Expression Using Physical Views and Linked Abstract Views”, *IEEE/ACM Trans. on Computational Biology and Bioinformatics*, vol. 6, no. 2, pp. 296-309, April-June, 2009.
35. C. Nandakumar and J. Malik, “Understanding rapid category detection via multiply degraded images”, *Journal of Vision*, 9(6):19, 1-8, <http://journalofvision.org/9/6/19/>, doi:10.1167/9.6.19, 2009.
36. O. Rubel, G. Weber, M. Huang, E. Bethel, M. Biggin, C.Fowlkes, C. Luengo Hendriks, S. Keranen, M. Eisen, D. Knowles, J. Malik, H. Hagen and B. Hamann, “Integrating Data Clustering and Visualization for the Analysis of 3D Gene Expression Data”, *IEEE/ACM Trans. on Computational Biology and Bioinformatics*. 7(1), 2010, pp 64-79. doi:10.1109/TCBB.2008.49 .
37. Maxim Shatsky, Richard J. Hall, Eva Nogales, Jitendra Malik and Steven Brenner, “Automated multi-model reconstruction from single-particle electron microscopy data”, *Journal of Structural Biology*, 170(1), April 2010, pp 98-108. doi:10.1016/j.jsb.2010.01.007
38. T. Brox and J. Malik, “Large Displacement Optical Flow: Descriptor Matching in Variational Motion Estimation,” *IEEE Trans. on PAMI*, 33(3), March 2011, pp. 500-513.
39. P. Arbelaez, M. Maire, C. Fowlkes and J.Malik, “Contour Detection and Hierarchical Image Segmentation,” *IEEE Trans. on PAMI*, 33(5), May 2011, pp. 898-916.
40. C. Nandakumar, A. Torralba and J.Malik, “How little do we need for 3-D shape perception,” *Perception*, 40, 2011, pp. 257-271.
41. P. Arbelaez, B.G. Han, D. Typke, J. Lim, R.M. Glaeser and J. Malik, “Experimental evaluation of support vector machine based and correlation based approaches to automatic particle selection,” *Journal of Structural Biology*, 175(3), September 2011, pp. 319-328.
42. S. Maji, A. Berg and J. Malik, “Efficient Classification for Additive Kernel SVMs, ”, *IEEE Trans. on PAMI*, 2012 (in press)

Book Chapters

1. J. Malik and P. Perona, "Finding Boundaries in Images," in *Neural Networks for Perception*, Human and Machine Perception, Vol. 1, H. Wechsler (ed.), Academic Press, 1992, pp. 315-344
2. J. Malik and R. Rosenholtz, "A Computational Model of Shape from Texture", Higher Order Processing in the Visual System, CIBA Foundation Symposium 184, pp. 272-283.
3. P. Perona, T. Shiota, and J. Malik, "Anisotropic Diffusion," in *Geometry-Driven Diffusion in Computer Vision*, Bart M. ter Haar Romeny (Ed.), Kluwer Academic Publishers, 1994, pp. 73-92.
4. D. Weinshall and J. Malik, "Review of Computational Models of Stereopsis," in *Early Vision and Beyond*, Thomas V. Papathomas (Ed.), MIT Press, 1994, pp. 33-42.
5. J. Malik, J. Shi, S. Belongie, and T. Leung, "Grouping in the normalized cut framework", in *Shape, contour and grouping in computer vision* Forsyth, D.A.; Mundy, J.L.; di Gesu, V.; Cipolla, R.(eds.) Springer-Verlag, 1999. p. 155-64
6. J. Malik, S. Belongie, T. Leung, J. Shi, "Contour and image analysis for segmentation," "Perceptual Organization for Artificial Vision Systems," Kim L. Boyer and Sudeep Sarkar (eds.), Kluwer Academic Publishers, Boston, 2000, pp. 139-172.
7. D. Jacobs, J. Malik, R. Nevatia, "Breakout session report: Principles and methods," in "Perceptual Organization for Artificial Vision Systems," Kim L. Boyer and Sudeep Sarkar (eds.), Kluwer Academic Publishers, Boston, 2000, pp. 17-28.
8. S. Belongie, G. Mori and J. Malik, "Matching with Shape Contexts," in "Statistics and Analysis of Shapes," Hamid Krim and Anthony Yezzi (eds.) Birkhauser, 2006, pp.81-105.
9. A. Frome and J. Malik, "Object Recognition using Locality Sensitive Hashing of Shape Contexts," in "Nearest-Neighbor Methods in Learning and Vision: Theory and Practice," G. Shakhnarovich, T. Darrell and P. Indyk (eds.), 2006, pp. 221-248.
10. A.C. Berg and J. Malik, "Shape Matching and Object Recognition," in "Toward Category-Level Object Recognition," J. Ponce et.al.(eds), 2006, Springer LNCS 4170, pp.483-507,2006.

Conference Proceedings

1. J. Malik and S.K.Jain, "An Editor for Micro-78", *Proc. of Computer Society of India*, 1980.
2. J. Malik and T.O.Binford, "Representation of time and sequences of events", *Proc. of the ARPA Image Understanding Workshop*, September 1982, pp. 112-114.
3. H.H. Baker, T.O. Binford, J. Malik and J.F.Meller, "Progress in stereo mapping", *Proc. of the ARPA Image Understanding Workshop*, June 1983, pp. 327-335.
4. J. Malik and T.O.Binford, "Reasoning in time and space", *Proc. of the Eighth International Joint Conference on AI*, Karlsruhe, August 1983, pp. 343-345.

5. J. Malik and T.O.Binford, "A theory of line drawing interpretation", *Proc. of the ARPA Image Understanding Workshop*, October 1984, pp. 188-194.
6. J. Malik, "Labelling line drawings of curved objects", *Proc. of the ARPA Image Understanding Workshop*, December 1985, pp. 209-218.
7. J. Malik, "Recovering three dimensional shape from a single image of curved objects", *Proc. of the Tenth International Joint Conference on AI*, Milan, August 1987, pp 734-737.
8. P. Perona and J. Malik, "Scale space and edge detection using anisotropic diffusion," *Proc. of the IEEE Workshop on Computer Vision*, Miami, November 1987, pp. 16-22.
9. J. Malik, "Representing constraints for inferring 3-D structure," *Proc. of the AAAI Symposium on Computational Vision*, Stanford University, March 1988, pp. 96-99.
10. Z. Gigus and J. Malik, "Computing the aspect graph for line drawings of polyhedral objects," *Proc. of the IEEE Conference on Robotics and Automation*, Philadelphia, April 1988, pp. 1560-1566, also in *Proc. of the IEEE Conf. on Computer Vision and Pattern Recognition*, Ann Arbor, June 1988, pp. 654-661.
11. P. Perona and J. Malik, "A network for multiscale image segmentation," *Proc. of IEEE International Symposium on Circuits and Systems*, Helsinki, June 1988, pp. 2565-2568.
12. J. Malik and P.Perona, "A computational model of texture segmentation," *Proc. of IEEE Conference on Computer Vision and Pattern Recognition*, San Diego, June 1989, pp. 326-332.
13. J. Malik and P.Perona, "Predictions from a computational model of texture perception compared with psychophysical data," *Image Understanding and Machine Vision*, 1989 Technical Digest Series, Vol. 14, Optical Society of America, June 1989, pp. 44-47.
14. J. Malik and P. Perona, "Finding texture boundaries by nonlinear spatial filtering," *Indo-US Workshop on Spectral Analysis in One or Two Dimensions*, New Delhi, November 1989.
15. P. Perona and J. Malik, "Detecting and localizing edges composed of steps, peaks and roofs," *Third International Conference on Computer Vision* Osaka, December 1990, pp. 52-57.
16. P. Perona and J. Malik, "Boundary detection using quadratic filters: performance criteria and experimental assessment," *Proc. SPIE Conf Machine Vision and Robotics*, Florida, April 1992.
17. D. Jones and J. Malik, "A computational framework for determining stereo correspondence from a set of linear spatial filters," *Proc. Second European Conference on Computer Vision*, Santa Margherita Ligure, Italy, May 1992, published as G. Sandini (ed.) *Lecture Notes in Computer Science* **588**, Springer Verlag, pp. 395-410.
18. D. Jones and J. Malik, "Determining three-dimensional shape from orientation and spatial frequency disparities," *Proc. Second European Conference on Computer Vision*, Santa

- Margherita Ligure, Italy, May 1992, published as G. Sandini (ed.) Lecture Notes in Computer Science **588**, Springer Verlag, pp. 661-669.
19. J. Weber and J. Malik, "Robust computation of optical flow in a multi-scale differential framework," *Proc. Fourth International Conference on Computer Vision, Berlin, May 1993*, pp. 12-20.
 20. J. Malik and R. Rosenholtz, "A differential method for computing local shape-from-texture for planar and curved surfaces," *Proc. of IEEE CVPR, New York, June 1993*, pp. 267-273.
 21. J. Malik and R. Rosenholtz, "Recovering surface curvature and orientation from texture distortion: a least squares algorithm and sensitivity analysis," *Proc. of Third European Conf. on Computer Vision*, Stockholm, May 1994, published as Jan-Olaf Eklundh (ed.) Lecture Notes in Computer Science **800**, Springer Verlag, pp. 353-364.
 22. D. Koller, J. Weber and J. Malik, "Robust Multiple Car Tracking with Occlusion Reasoning" *Proc. of Third European Conf. on Computer Vision*, Stockholm, May 1994, published as Jan-Olaf Eklundh (ed.) Lecture Notes in Computer Science **800**, Springer Verlag, pp. 189-198.
 23. T. Huang, D.Koller, J.Malik, G. Ogasawara, B. Rao, S. Russell and J. Weber, "Automatic Symbolic Traffic Scene Analysis using belief networks," *Proc. of the Twelfth National conference on Artificial Intelligence, AAAI-94*, Seattle, July 1994, Vol. 2, pp.966-972
 24. D. Koller, J. Weber, T. Huang, J. Malik, G. Ogasawara, B. Rao and S. Russell, "Towards Robust Automatic Traffic Scene Analysis in Real-Time", *Proc Int. Conf. on Pattern Recognition*, Jerusalem, Israel, October 9-13, 1994
 25. D. Koller, J. Weber and J. Malik, "Towards realtime visual based tracking in cluttered traffic scenes," *Proc. of the Intelligent Vehicles '94 Symposium*, Paris, France, October 24-26, 1994
 26. D. Koller, Q.T. Luong and J. Malik, "Using Binocular Stereopsis for Lane Following and Lane Changing Maneuvers," *Proc. of the Intelligent Vehicles '94 Symposium*, Paris, France, October 24-26, 1994
 27. D. Forsyth, A. Zisserman and J. Malik, "Distinctive Representations for the Recognition of Curved Surfaces Using Outlines and Markings," *Proc. of the NSF/ARPA Workshop on 3D Object Representation for Computer Vision*, Dec 5-7, 1994.
 28. Q.T. Luong, J. Weber, D. Koller and J. Malik, "An integrated Stereo-based approach to automatic vehicle guidance," *Fifth Int. Conf. on Computer Vision, Cambridge, Mass, June 1995*, pp. 52-57.
 29. J. Weber and J. Malik, "Rigid Body Segmentation and Shape Description from dense optical flow under weak perspective," *Fifth Int. Conf. on Computer Vision, Cambridge, Mass, June 1995*, pp. 251-256.
 30. J. Malik, J. Weber, Q.T. Luong and D. Koller, "Smart Cars and Smart Roads," *Proc. of British Machine Vision Conference*, September 1995, pp. 367-382. (invited paper).

31. Weber, J.; Koller, D.; Luong, Q.-T.; Malik, J. “New results in stereo-based automatic vehicle guidance,” *Proc. of Intelligent Vehicles 95*, September 1995, pp. 530-535.
32. J. Malik, “On binocularly viewed occlusion junctions,” *Fourth European Conference on Computer Vision, Cambridge, UK, April 1996*, Vol 1, pp. 167-174
33. T. Leung and J. Malik, “Detecting, localizing and grouping repeated scene elements from an image,” *Fourth European Conference on Computer Vision, Cambridge, UK, April 1996*, Vol 1, pp. 546-555.
34. C.J. Taylor, P.E. Debevec and J. Malik, “Reconstructing polyhedral models of architectural scenes from photographs,” *Fourth European Conference on Computer Vision, Cambridge, UK, April 1996*, Vol 2, pp. 659-668.
35. P.E. Debevec, C.J. Taylor, and J. Malik, “Modeling and Rendering Architecture from Photographs: A hybrid geometry- and image-based approach,” *Computer Graphics (SIG-GRAPH '96 Proceedings)*(1996),pp. 11-20
36. D.A. Forsyth, J. Malik, M.M. Fleck, H. Greenspan, T. Leung, S. Belongie, C. Carson, C. Bregler, “Finding Pictures of Objects in Large Collections of images,” *Object Representation in Computer Vision II*, Proc. of ECCV'96 International Workshop, Springer Verlag Lecture Notes in Computer Science 1144 (1996), pp. 335-360
37. J. Malik, D.A. Forsyth, M.M. Fleck, H. Greenspan, T. Leung, C. Carson, S. Belongie, C. Bregler, “Finding Objects in Image databases by grouping,” *Proc. of IEEE International Conference on Image Processing*, Lausanne, Sept 1996, pp. 761-764, Vol. 2
38. D. Beymer and J. Malik, “Tracking Vehicles in Congested Traffic,” *Proc. of Intelligent Vehicles 96*, September 1996, pp 130-135.
39. Taylor, C.J., Malik, J., Weber, J. “A real-time approach to stereopsis and lane-finding,” *Proc. of Intelligent Vehicles 96*, September 1996, pp. 207-212.
40. C. Bregler and J. Malik, “Learning Appearance Based Models: Mixtures of Second Moment Experts” *Advances in Neural Information Processing Systems 9: Proc. of the 1996 Conference*, MIT Press, 1997, pp. 845-851
41. T. Leung and J. Malik, “On Perpendicular Texture, or: why do we see more flowers in the distance,” *Proc. of IEEE CVPR, Puerto Rico*, June 1997, pp. 807-813.
42. J. Shi and J. Malik, “Normalized Cuts and Image Segmentation,” *Proc. of IEEE CVPR, Puerto Rico*, June 1997, pp 731-737.
43. D. Beymer, P. McLauchlan, B. Coiffman and J. Malik, “A Real-time Computer Vision System for Measuring Traffic Parameters,” *Proc. of IEEE CVPR, Puerto Rico*, June 1997, pp 495-501.
44. C. Carson, S. Belongie, H. Greenspan and J. Malik, “Region-based image querying,” *Proc. IEEE Workshop on Content-Based Access of Image and Video Libraries, San Juan, Puerto Rico, June 1997*, pp. 42-9.

45. P.E. Debevec and J. Malik, "Recovering High Dynamic Range Radiance Maps from Photographs," *Computer Graphics (SIGGRAPH '97 Proceedings)*(1997), pp. 369-378.
46. J. Kosecka, R. Blasi, C.J. Taylor and J. Malik, " Vision-based lateral control of vehicles," *Proc. of IEEE Conference on Intelligent Transportation Systems. ITSC '97, Boston, MA, USA, Nov. 1997.* pp. 900-5.
47. P.F. McLauchlan and J. Malik, " Vision for longitudinal vehicle control," *Proc. of IEEE Conference on Intelligent Transportation Systems. ITSC '97, Boston, MA, USA, Nov. 1997.* pp. 918-23.
48. J. Shi and J. Malik, "Motion Segmentation and Tracking Using Normalized Cuts," *Proc. of Sixth International Conf. on Computer Vision, Bombay, Jan 1998,* pp. 1154-1160.
49. S. Belongie, C.Carson, H. Greenspan and J. Malik, "Color- and Texture-Based Image Segmentation Using EM and Its Application to Content-Based Image Retrieval," *Proc. of Sixth International. Conf. on Computer Vision, Bombay, Jan 1998,* pp. 675-682.
50. J. Kosecka, R. Blasi, C.J. Taylor and J. Malik, " A comparative study of vision-based lateral control strategies for autonomous highway driving," *Proc. IEEE International Conference on Robotics and Automation, Leuven, Belgium, May 1998,* Vol. 3, pp. 1903-8.
51. Debevec, P.E.; Taylor, C.J.; Malik, J.; Levin, G.; Borshukov, G.; Yu, Y.;"Image-based modeling and rendering of architecture with interactive photogrammetry and view-dependent texture mapping," *Proceedings of the 1998 IEEE International Symposium on Circuits and Systems, 1998. ISCAS '98. Volume 5, 31 May-3 June 1998* Page(s):514 - 517 vol.5
52. J. Shi and J. Malik, "Self Inducing Relational Distance and its application to Image Segmentation," *Proc. of Fifth European Conference on Computer Vision, Freiburg, Germany, June 1998,* Vol. 1, pp. 528-543.
53. T. Leung and J. Malik, "Contour Continuity in region based image segmentation," *Proc. of Fifth European Conference on Computer Vision, Freiburg, Germany, June 1998,* Vol. 1, pp. 544-559.
54. S. Belongie and J. Malik, "Finding Boundaries in Natural Images: A New Method using Point Descriptors and Area Completion," *Proc. of Fifth European Conference on Computer Vision, Freiburg, Germany, June 1998,* Vol. 1, pp. 751-766.
55. C. Bregler and J. Malik, " Tracking people with twists and exponential maps," *Proc. of IEEE Conference on Computer Vision and Pattern Recognition, Santa Barbara, CA, USA, June 1998.* pp. 8-15.
56. Y. Yu and J. Malik, "Recovering Photometric Properties of Architectural Scenes from Photographs," *Computer Graphics (SIGGRAPH '98 Proceedings)*(1998), pp. 207-217.
57. J. Shi, S. Belongie, T. Leung, J. Malik "Image and video segmentation: the normalized cut framework", *Proc. IEEE International Conference on Image Processing ICIP98, Chicago, IL, USA, 4-7 Oct. 1998.* p. 943-7 vol.1.

58. Y. Yu, P. Debevec, J. Malik and T. Hawkins, "Inverse Global Illumination: Recovering Reflectance Models of Real Scenes from Photographs," *Computer Graphics (SIGGRAPH '99 Proceedings)*(1999), pp. 215-224.
59. J. Malik, S. Belongie, J. Shi and T. Leung, "Textons, Contours and Regions: Cue Integration in Image Segmentation," *Proc. of Seventh International Conference on Computer Vision, Kerkyra, Greece, Sept 20-27, 1999*, pp. 918-925.
60. T. Leung and J. Malik, "Recognizing surfaces using three-dimensional textons," *Proc. of Seventh International Conference on Computer Vision, Kerkyra, Greece, Sept 20-27, 1999*, pp. 1010-1017.
61. Jitendra Malik, Chad Carson, Serge Belongie, "Region-Based Image Retrieval", DAGM-Symposium 1999: 152-154
62. C. Carson, M. Thomas, S. Belongie, J.M. Hellerstein and J. Malik, "Blobworld: a system for region-based image indexing and retrieval". *Proc. of 3rd International Conference on Visual Information Systems, VISUAL '99, Amsterdam, Netherlands, 2-4 June 1999*, published as Springer- Verlag Lecture Notes in Computer Science **1614**, p. 509-16
63. S. Belongie and J. Malik, "Matching with Shape Contexts," *IEEE Workshop on Content-based Access of Image and Video Libraries*, June 2000 pp. 20-26
64. S. Belongie, J. Malik and J.Puzicha, "Shape Context: A new descriptor for shape matching and object recognition," *Advances in Neural Information Processing Systems 13: Proc. of the 2000 Conference*, MIT Press, 2001
65. S. Belongie, J. Malik and J. Puzicha, "Matching Shapes," *Proc. of Eighth International Conference on Computer Vision, Vancouver, Canada, July 9-12, 2001*, Vol. 1, pp. 454-461.
66. D. Martin, C. Fowlkes, D. Tal and J. Malik, "A Database of Human Segmented Natural Images and its Application to Evaluating Segmentation Algorithms and Measuring Ecological Statistics," *Proc. of Eighth International Conference on Computer Vision, Vancouver, Canada, July 9-12, 2001*, Vol. 2, pp. 416-423.
67. Malik, J., "Visual grouping and object recognition" *Proceedings 11th International Conference on Image Analysis and Processing*, 2001. 26-28 Sept. 2001 Page(s):612 - 621
68. C. Fowlkes, S. Belongie and J. Malik, "Efficient Spatiotemporal Grouping using the Nyström Method," *Proc. of IEEE CVPR, Hawaii, Dec. 8-14, 2001*, Vol. 1, pp. 231-238.
69. A. Berg and J. Malik, "Geometric Blur for Template Matching," *Proc. of IEEE CVPR, Hawaii, Dec. 8-14, 2001*, Vol. 1, pp. 607-614.
70. G. Mori, S. Belongie and J. Malik, "Shape contexts enable efficient retrieval of similar shapes," *Proc. of IEEE CVPR, Hawaii, Dec. 8-14, 2001*, Vol. 1, pp. 723-730.
71. C. Fowlkes, Q. Shan, S. Belongie and J. Malik, "Extracting Global Structure from Gene Expression Profiles", *CAMDA '01*, Oct. 2001

72. X. Ren and J. Malik, "A Probabilistic Multi-scale model for Contour Completion Based on Image Statistics," Proc. of 7th ECCV, May 2002, Vol. 1, Springer LNCS 2350, pp. 312-327.
73. S. Belongie, C. Fowlkes, F. Chung and J. Malik, "Spectral Partitioning with Indefinite Kernels Using the Nyström Extension," Proc. of 7th ECCV, May 2002, Vol. 3, Springer LNCS 2352, pp. 531-542.
74. G. Mori and J. Malik, "Estimating Human Body Configurations Using Shape Context Matching," Proc. of 7th ECCV, May 2002, Vol. 3, Springer LNCS 2352, pp. 666-680.
75. H. Zhang, J. Malik, "Learning a discriminative classifier using shape context distances," Proc. of IEEE Conference on Computer Vision and Pattern Recognition, June 2003, Pages:I-242 - I-247
76. G. Mori, J. Malik, "Recognizing objects in adversarial clutter: breaking a visual CAPTCHA," Proc. of IEEE Conference on Computer Vision and Pattern Recognition, June 2003. , Pages:I-134 - I-141
77. C. Fowlkes, D. Martin, J. Malik, "Learning affinity functions for image segmentation: combining patch-based and gradient-based approaches," Proc. of IEEE Conference on Computer Vision and Pattern Recognition, June 2003. , Pages:II - 54-61
78. A.A. Efros, A.C. Berg, G. Mori, J. Malik, "Recognizing action at a distance," Proc. of Ninth IEEE International Conference on Computer Vision, Oct. 2003, Pages:726 - 733
79. X. Ren, J. Malik, "Learning a classification model for segmentation," Proc. of Ninth IEEE International Conference on Computer Vision, Oct. 2003, Pages:10 - 17
80. Z. Kim, J. Malik, "Fast vehicle detection with probabilistic feature grouping and its application to vehicle tracking," Proc. of Ninth IEEE International Conference on Computer Vision, Oct 2003, Pages:524 - 531
81. Z. Kim, J. Malik, "High-quality vehicle trajectory generation from video data based on vehicle detection and description," Proc. of IEEE Intelligent Transportation Systems, Oct 2003, Volume: 1, Pages:176 - 182
82. A. Frome, D. Huber, R. Kolluri, T. Buelow, J. Malik, "Recognizing Objects in Range Data Using Regional Point Descriptors", Proc. of Eighth European Conference on Computer Vision, Prague, 2004, Springer Verlag LNCS 3023, pp. 224-237
83. G. Mori, X. Ren, A.A. Efros, J. Malik, "Recovering Human Body Configurations: Combining Segmentation and Recognition," Proc. of IEEE Conference on Computer Vision and Pattern Recognition, June-July 2004, Pages:II-326-333 vol.2
84. A. Ferencz, E. Learned-Miller and J. Malik, "Learning Hyper-features for Visual Identification", Proc. of NIPS 2004, pp. 425-432.
85. L. Walker Renninger, J. Coughlan, P. Verghese and J. Malik, "An Information Maximization Model of Eye Movements", Proc. of NIPS 2004, pp. 1121-1128.

86. Fowlkes, C.C.; Luengo Hendriks, C.L.; Keranen, S.V.E.; Biggin, M.D.; Knowles, D.W.; Sudar, D.; Malik, J.; “Registering Drosophila embryos at cellular resolution to build a quantitative 3D atlas of gene expression patterns and morphology” Computational Systems Bioinformatics Conference, 2005. IEEE 2005 Page(s):354 - 357 Digital Object Identifier 10.1109/CSBW.2005.118
87. A. Berg, T.L. Berg and J. Malik, “Shape Matching and Object recognition using Low Distortion Correspondences”, Proc. of CVPR 2005, Vol. 1, pp. 26-33
88. A. Ferencz, E.G. Learned-Miller and J. Malik, “Building a classification cascade for visual identification from one example”, Proc. of ICCV 2005, Vol. 1, pp. 286-293
89. X. Ren, A. Berg and J. Malik, “Recovering Human Body Configurations using Pairwise Constraints between Parts”, Proc. of ICCV 2005, Vol. 1, pp. 824-831
90. X. Ren, C. Fowlkes and J. Malik, “Scale-Invariant Contour Completion using Conditional Random Fields”, Proc. of ICCV 2005, Vol. 2, pp. 1214-1221
91. X. Ren, C. Fowlkes and J. Malik, “Cue Integration for Figure/Ground Labeling”, Proc. of NIPS 2005, pp. 1121-1128
92. X. Ren, C. Fowlkes and J. Malik, “Figure/Ground Assignment in Natural Images”, Proc. of Ninth ECCV, May 2006, Vol. 2, pp. 614-627, Springer Verlag LNCS 3952
93. H. Zhang, A.C. Berg, M. Maire and J. Malik, “SVM-KNN: Discriminative Nearest Neighbor Classification for Visual Category Recognition”, Proc. of CVPR 2006, Vol. 2, pp.2126-2136
94. E. Borenstein and J. Malik, “Shape Guided Object Segmentation”, Proc. of CVPR 2006, Vol. 1, pp. 969-976
95. O. Rübel, G. Weber, S. Keränen, C. Fowlkes, C. Luengo Hendriks, N.Y. Shah, M.D. Biggin, H. Hagen, D.W. Knowles, J. Malik, D. Sudar and B. Hamann. “PointCloudXplore: Visual Analysis of 3D Gene Expression Data Using Physical Views and Parallel Coordinates”, in Proc. of EuroVis. 2006
96. A. Frome, Y. Singer and J. Malik, “Image Retrieval and Classification using Local Distance Functions”, Proc. of NIPS 2006, pp. 417-424
97. X. Ren and J. Malik, “Tracking as Repeated Figure/Ground Segmentation”, Proc. of CVPR 2007, June 2007, doi 10.1109/CVPR.2007.383177
98. A.C. Berg, F. Grabler and J. Malik, “Parsing Images of Architectural Scenes”, Proc. of ICCV 2007, Oct 2007, Digital Object Identifier 10.1109/ICCV.2007.4409091
99. A. Frome, Y. Singer, F. Sha and J. Malik, “Learning Globally-Consistent Local Distance Functions for Shape-Based Image Retrieval and Classification”, Proc. of ICCV 2007, Oct 2007, Digital Object Identifier 10.1109/ICCV.2007.4408839
100. M. Maire, P. Arbelaez, C. Fowlkes and J. Malik, “Using Contours to Detect and Localize Junctions in Natural Images”, Proc. of CVPR 2008, June 2008

101. S. Maji, A.C. Berg and J. Malik, "Classification Using Intersection Kernel Support Vector Machines is Efficient ", Proc. of CVPR 2008, June 2008
102. P. Arbelaez, M. Maire, C. Fowlkes and J. Malik, "From Contours to Regions: An Empirical Evaluation", Proc. of CVPR 2009, June 2009, pp. 2294-2301
103. T. Brox, C. Bregler and J. Malik, "Large Displacement Optical Flow", Proc. of CVPR 2009, June 2009, pp. 41-48.
104. C. Gu, J. Lim, P. Arbelaez and J. Malik, "Recognition using Regions", Proc. of CVPR 2009, June 2009, pp. 1030-1037.
105. S. Maji and J. Malik, "Object Detection using a Max-Margin Hough Transform", Proc. of CVPR 2009, June 2009, pp. 1038-1045
106. L. Bourdev and J. Malik, "Poselets: Body Part Detectors Trained Using 3D Human Pose Annotations", Proc. of ICCV 2009, Sept. 2009.
107. J. Lim, P. Arbelaez, C. Gu and J. Malik, "Context by Region Ancestry", Proc. of ICCV 2009, Sept. 2009. pp. 1978-1985.
108. B. Ommer and J. Malik, "Multi-Scale Object Detection by Clustering Lines", Proc. of ICCV 2009, Sept. 2009, pp. 484-491.
109. L. Bourdev, S. Maji, T. Brox and J. Malik, "Detecting People Using Mutually Consistent Poselet Activations", Proc. of ECCV 2010, Sept. 2010, LNCS Vol. 6316, pp. 168-181.
110. T. Brox and J. Malik, "Object Segmentation by Long Term Analysis of Point Trajectories ", Proc. of ECCV 2010, Sept. 2010, LNCS Vol. 6315, pp. 282-295.
111. S. Maji, N. Vishnoi and J. Malik, "Biased Normalized Cuts", Proc. of IEEE CVPR 2011.
112. T. Brox, L. Bourdev, S.Maji and J. Malik, "Object Segmentation by Alignment of Poselet Activations to Image Contours", Proc. of IEEE CVPR 2011.
113. P. Sundberg, T. Brox, M.Maire, P. Arbelaez and J. Malik, "Occlusion Boundary Detection and Figure/Ground Assignment from Optical Flow", Proc. of IEEE CVPR 2011.
114. J. Barron and J. Malik, "High-Frequency Shape and Albedo from Shading using Natural Image Statistics", Proc. of IEEE CVPR 2011.
115. S. Maji, L. Bourdev and J. Malik, "Action Recognition from a Distributed Representation of Pose and Appearance", Proc. of IEEE CVPR 2011.
116. L. Bourdev, S. Maji and J. Malik, "Describing People: A Poselet-Based Approach to Attribute Classification", Proc. of ICCV 2011.
117. B. Hariharan, P. Arbelaez, L. Bourdev, S. Maji and J. Malik, "Semantic Contours from Inverse Detectors", Proc. of ICCV 2011.

Abstracts

1. J. Malik and P. Perona, "A computational model of human texture perception," *Invest. Ophthalm. Visual Sci. (Suppl.)*, 30 (3), March 1989, pp. 161.
2. D. Jones and J. Malik, "Computational stereopsis—beyond zero-crossings," *Invest. Ophthalm. Visual Sci. (Suppl.)*, 31 (4), March 1990, pp. 529.
3. D. Jones and J. Malik, "Using orientation and spatial frequency disparities to recover 3-D surface shape—a computational model," *Invest. Ophthalm. Visual Sci. (Suppl.)*, 32 (4), March 1991, pp. 710.
4. P. Perona and J. Malik, "Microbalanced textures are preattentively discriminable," *Invest. Ophthalm. Visual Sci. (Suppl.)*, 32 (4), March 1991, pp. 714.
5. J. Malik and Z. Gigus, "A model for curvilinear segregation," *Invest. Ophthalm. Visual Sci. (Suppl.)*, 32 (4), March 1991, pp. 715.
6. R. Rosenholtz and J. Malik, "An ideal observer model for shape from texture," *Invest. Ophthalm. Vis. Sci. (Suppl.)* 35(4), Mar. 1994, pp. 1668
7. R. Rosenholtz and J. Malik, "Shape from Texture: Isotropy or Homogeneity (or Both) ," *Invest. Ophthalm. Vis. Sci. (Suppl.)* 36(4), Mar. 1995, pp. S185
8. J. Malik and R. Rosenholtz, "Texture is like Motion: Demonstration of a Texture Aperture Effect And Texture Transparency," *Invest. Ophthalm. Vis. Sci. (Suppl.)* 36(4), Mar. 1995, pp. S229
9. D. Martin, C. Fowlkes and J. Malik, "Learning to optimally detect image boundaries using brightness, color and texture," *Proc. of Vision Sciences Society, May 2003* (abstract)
10. J. Malik, "On Binocularly Viewed Occlusion Junctions," *Invest. Ophthalm. Vis. Sci. (Suppl.)* 37(3), Feb 1996, S652
11. L. Walker and J. Malik, "Can convexity explain how humans segment objects into parts," *Proc. of Vision Sciences Society, May 2003*
12. C. Fowlkes, D. Martin and J. Malik, "Ecological Statistics of Grouping by Similarity," *Proc. of Vision Sciences Society, May 2003*
13. C. Fowlkes, D. Martin and J. Malik, "On Measuring the Ecological Validity of Figure-Ground Cues," *Proc. of ECVP, September 2003*
14. D. Martin, C. Fowlkes, L. Walker, J. Malik. "Local Boundary Detection in Natural Images: Matching Human and Machine Performance", *Proc. of ECVP, September 2003*.
15. C. Fowlkes, C. Luengo Hendriks, S. Keranen, M. Biggin, D. Knowles, D. Sudar, J. Malik, "Building Composite Maps of Gene Expression Patterns and Morphology: Registering 3D Representations of Drosophila Embryos", 46th Drosophila Research Conference, San Diego, CA, April 2005