

## **Professor Jitendra Malik**

Arthur J. Chick Professor, Department of EECS  
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## **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**

Chair, Department of EECS, UC Berkeley, 2016-2017  
Visiting Research Scientist, Google, 2015-2016  
Member, Committee on Budget and interdepartmental Relations, 2013-2014  
Associate Dean for New Academic Initiatives, College of Engineering, 2010-2012  
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**

ACM-AAAI Allen Newell Award, 2016.  
National Academy of Sciences, 2015.  
Helmholtz Prize (1) for a Contribution That Has Stood the Test of Time, ICCV, 2001  
Helmholtz Prize (2) for a Contribution That Has Stood the Test of Time, ICCV, 2001  
Best student paper award, IEEE CVPR 2016 (adviser)  
King-Sun Fu Prize of the International Association of Pattern Recognition, 2014.  
IEEE PAMI-TC Distinguished Researcher in Computer Vision, 2013.  
American Academy of Arts and Sciences, 2013.  
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, 1998  
Distinguished Alumnus Award, IIT Kanpur, 2008.  
Longuet-Higgins Prize for a Contribution That Has Stood the Test of Time, IEEE CVPR, 1997  
Fellow, IEEE, 2005.  
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.

### **Synergistic Activities**

Chair, Search Committee, Section 5 (Computer Science), NAE, 2016-  
Member, Peer Committee, Section 5 (Computer Science), NAE, 2013-2015  
Selection Committee, Sloan Research Fellowships in Computer Science, 2012-2018.  
Governing Body, International Institute of Information Technology, Bangalore, 2006-2016.  
Technical Advisory Board, Microsoft Research India, 2005-2011.  
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)

### **PhD Theses Supervised (with current positions)**

Paul Kube, *On Image Texture*, 1988.(UC San Diego)  
Pietro Perona, *Finding Texture and Brightness Boundaries in Images*, 1990. (Caltech)  
Niklas Nordstrom, *Variational Edge Detection*, 1990. (Percipo, Inc.)  
Ziv Gigus, *Object Recognition from Line Drawings*, 1991.  
David G. Jones, *Computational Models of Binocular Vision*, 1991.(McMaster)  
Clark Olson, *Fast Object recognition by Selectively Examining Hypotheses*, 1994. (UW Bothell)  
Joseph Weber, *The Measurement and Use of Visual Motion*, 1994.(TiVo)  
Ruth Rosenholtz, *Local Shape from Texture*, 1994. (MIT)  
Paul Debevec, *Modeling and Rendering Architecture from Photographs*, 1996.(USC ICT)  
Jianbo Shi, *Perceptual Organization and Image Segmentation*, 1998.(U Penn)  
Christoph Bregler, *Computational Models of Human Motion*, 1998. (Google)  
Gregory J. Klein, *Deformable Models for Volume Feature Tracking*, 1999.  
Charles C. Carson, *Region-based Image Querying and Classification*, 1999.(Yahoo!)  
Yizhou Yu, *Modeling and Editing Real Scenes with Image-Based Techniques*, 2000. (Hong Kong)  
Thomas K. Leung, *Visual Texture Analysis*, 2000.(Google)  
Serge Belongie, *Image Segmentation and Shape Matching for Object Recognition*, 2000.(Cornell Tech)  
David Martin, *An empirical approach to Grouping and Segmentation*, 2002. (Google)  
Alyosha Efros, *Data-driven Approaches for Texture and Motion*, 2003. (UC Berkeley)

Laura Walker Renninger, *Parts, Objects and Scenes: Computational Models and Psychophysics*, 2003. (Smith Kettlewell Eye Research Institute)

Gregory Mori, *Detecting and Localizing Human Figures*, 2004. (Simon Fraser University)

Andras Ferencz, *Finding Good Features for Object Recognition*, 2005. (Mobileye Vision Technologies)

Charless Fowlkes, *Measuring the Ecological Validity of Grouping and Figure-Ground Cues*, 2005. (UC Irvine)

Alexander Berg, *Shape Matching and Object Recognition*, 2005. (UNC Chapel Hill)

Xiaofeng Ren, *Probabilistic Models for Mid-Level Vision*, 2006. (Amazon)

Hao Zhang, *Adapting Learning techniques for Visual Recognition*, 2007. (Two Sigma)

Andrea Frome, *Learning Distance Functions for Exemplar-Based Object Recognition*, 2007. (Clarifai)

Michael Maire, *Contour Detection and Image Segmentation*, 2009. (TTI Chicago)

Ashley Eden, *Finding Lost Children*, 2010. (Google)

Lubomir Bourdev, *Poselets and Their Applications in High-Level Computer Vision*, 2011. (startup)

Chetan Nandakumar, *Invariance in Human Visual Perception*, 2011 (startup)

Subhransu Maji, *Algorithms and Representations for Visual Recognition*, 2011. (Univ. of Massachusetts, Amherst)

Chunhui Gu, *Recognition Using Regions*, 2012. (Google)

Jonathan Barron, *Shapes, Paint, and Light*, 2013. (Google)

Bharath Hariharan, *Beyond Bounding Boxes: Precise Localization of Objects in Images*, 2015, (Facebook)

Georgia Gkioxari, *Contextual Visual Recognition from Images and Videos*, 2016, (Facebook)

## Publications

### 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. Charles 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*, 35(1), 2013, pp.66-77.
43. M. Tao, J. Malik and R. Ramamoorthi, "Sharpening Out of Focus Images using High-Frequency Transfer", *Comput. Graph. Forum* 32(2), 2013, pp. 489-498.
44. P. Ochs, J. Malik and T. Brox, "Segmentation of Moving Objects by Long Term Video Analysis", *IEEE Trans. on PAMI*, 36(6), 2014, pp.1187-1200.
45. M. Shatsky, P. Arbelaez, B.G. Han, D. Typke, S. Brenner, J. Malik and R. Glaeser. "Automated particle correspondence and accurate tilt-axis detection in tilted-image pairs". *Journal of Structural Biology*, 187, 2014, pp.66-75.
46. S. Gupta, P. Arbelaez, R. Girshick and J. Malik, "Indoor Scene Understanding with RGB-D Images: Bottom-up Segmentation, Object Detection and Semantic Segmentation," *International Journal of Computer Vision*, 112(2):133-149, 2015.
47. J. T. Barron and J. Malik, "Shape, Illumination and Reflectance from Shading", *IEEE Trans. on PAMI*, 37(8), 2015, pp.1670-1687.

48. Ross B. Girshick, Jeff Donahue, Trevor Darrell, Jitendra Malik, "Region-Based Convolutional Networks for Accurate Object Detection and Segmentation". *IEEE Trans. Pattern Anal. Mach. Intell.* 38(1): 142-158 (2016)
49. J. T. Barron and J. Malik, "Intrinsic Scene Properties from a Single RGB-D Image", *IEEE Trans. Pattern Anal. Mach. Intell.* 38(4): 690-703 (2016)
50. Michael W. Tao, Jong-Chyi Su, Ting-Chun Wang, Jitendra Malik, Ravi Ramamoorthi: Depth Estimation and Specular Removal for Glossy Surfaces Using Point and Line Consistency with Light-Field Cameras. *IEEE Trans. Pattern Anal. Mach. Intell.* 38(6): 1155-1169 (2016)
51. J. Malik, P. Arbelaez, J. Carreira, K. Fragkiadaki, R.B. Girshick, G. Gkioxari, S. Gupta, B. Hariharan, A. Kar, S. Tulsiani: The three R's of computer vision: Recognition, reconstruction and reorganization. *Pattern Recognition Letters* 72: 4-14 (2016)
52. J. Pont-Tuset, P. Arbelaez, J. Barron, F. Marques, J. Malik: Multiscale Combinatorial Grouping for Image Segmentation and Object Proposal Generation, *IEEE Trans. Pattern Anal. Mach. Intell.* 39(1):128-140, 2017.
53. M. Tao, P.P. Srinivasan, S. Hadap, S. Rusinkiewicz, J. Malik, R. Ramamoorthi: Shape Estimation from Shading, Defocus, and Correspondence Using Light-Field Angular Coherence , *IEEE Trans. Pattern Anal. Mach. Intell.*39(3):546-560, 2017.
54. S. Tulsiani\*, A.Kar\*, J. Carreira, J. Malik: Learning Category-Specific Deformable 3D Models for Object Reconstruction, *IEEE Trans. Pattern Anal. Mach. Intell.* 39(4):627-639., 2017.
55. B. Hariharan, P. Arbelaez, R. Girshick, J. Malik: Object Instance Segmentation and Fine-Grained Localization Using Hypercolumns, *IEEE Trans. Pattern Anal. Mach. Intell.* 39(4): 719-731, 2017.
56. J. Malik: Technical Perspective: What led computer vision to deep learning? *Commun. ACM* 60(6): 82-83, 2017.

## 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).
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161. Ashvin Nair, Dian Chen, Pulkit Agrawal, Phillip Isola, Pieter Abbeel, Jitendra Malik, Sergey Levine: Combining self-supervised learning and imitation for vision-based rope manipulation. ICRA 2017: 2146-2153
162. Amir R. Zamir, Te-Lin Wu, Lin Sun, William B. Shen, Bertram E. Shi, Jitendra Malik, Silvio Savarese: Feedback Networks. CVPR 2017: 1308-1317
163. Saurabh Gupta, James Davidson, Sergey Levine, Rahul Sukthankar, Jitendra Malik: Cognitive Mapping and Planning for Visual Navigation. CVPR 2017: 2616-2625
164. Shubham Tulsiani, Tinghui Zhou, Alexei A. Efros, Jitendra Malik: Multi-View Supervision for Single-View Reconstruction via Differentiable Ray Consistency. CVPR 2017, 2626-2634
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## Invited talks

### 1988-1989

“Representing constraints for inferring 3-D scene structure from monocular cues,” Workshop on Vision and Three-dimensional representation, University of Minnesota, May 24-26, 1989.

### 1989-1990

“Finding Texture Boundaries by Nonlinear Spatial Filtering”, Indo-United States Workshop on Spectral Analysis in One or Two Dimensions, New Delhi, November 29, 1989.

“Finding Texture Boundaries Using Early Vision Mechanisms”, National Academy of Sciences/ National Research Council Committee on Vision Meeting, Irvine, Jan 19, 1990.

“Finding Image Boundaries”, Intelligence Artificielle: Quelle Realite, IA 90 Workshop, Rabat, Morocco, June 1, 1990.

### 1991-92

“Multi-channel filtering as a substrate for early visual processing”, ESPRIT INSIGHT conference, Nice, France, June 20, 1991.

“Detecting Curvilinear Structure in Images”, ETH Zurich, July 4, 1991.

“Stereopsis from Orientation and Spatial Frequency Disparity”, ETH Zurich, July 5, 1991.

“Stereopsis from Orientation and Spatial Frequency Disparity”, Harvard, Sept. 18, 1991.

“Stereopsis from Orientation and Spatial Frequency Disparity”, MIT, Sept. 23, 1991.

“Stereopsis from Orientation and Spatial Frequency Disparity”, U Mass, Amherst, Oct. 4, 1991.  
“Stereopsis from Orientation and Spatial Frequency Disparity”, NYU, Oct 11, 1991.  
“Stereopsis from Orientation and Spatial Frequency Disparity”, Yale, Oct 16, 1991.  
“Multi-channel filtering as a first stage in visual processing”, CMU, Oct 20, 1992.  
“Stereopsis from Orientation and Spatial Frequency Disparity”, CMU, Oct 21, 1991.  
“Multi-channel filtering as a first stage in visual processing”, Opt. Soc. of Am. meeting, San Jose, November 6, 1992.  
“Stereopsis from Orientation and Spatial Frequency Disparity”, Caltech, Feb 20, 1992.

### **1992-93**

“Processing of texture information”, Cold Spring Harbor Course on Computational Neuroscience, July 20, 1992.  
“Stereopsis from orientation and spatial frequency disparity” , Sarnoff Research Center, July 23, 1992.  
“Vision for Intelligent vehicles”, Asilomar VLSI Conference, Feb 8, 1993.  
“On Image Texture,” Robotics Institute, CMU, March 5, 1993  
“Computer Vision: Estimating 3-D scene Properties from 2-D images”, Neyman Seminar, Dept. of Statistics, April 7, 1993.  
“Orientation and Spatial Frequency Disparities” NATO workshop on Binocular Stereopsis and Optical Flow, York University, June 25, 1993.

### **1993-94**

“The visual processing of texture,” Stockholm Workshop on computational Vision, Sweden, Aug 5, 1993.  
Several presentations at the Newton Institute of Mathematical Sciences, Cambridge, during July-December 1993.  
“A Computational Model for Shape from Texture,” CIBA Foundation symposium on higher order processing in the visual system, London, Oct 21, 1993.  
“A Computational Model for Shape from Texture,” Smith Kettlewell Foundation, San Francisco, March 17, 1994.  
“Towards recognition of textured objects,” Syracuse, April 9, 1994.  
“Computational vision: Issues and Perspectives”, Interval Corporation, June 10, 1994  
“On shape from texture”, Scuola Normale, Pisa, June 28, 1994.

### **1994-95**

Invited series of lectures on Computational Vision, Inst. Research in Cognitive Science, Univ. of Pennsylvania, Feb 6–10, 1995

### **1995-96**

“Smart Cars and Smart Roads” Plenary talk, British Machine Vision Conference, Sept 1995.  
“Vision and Control” Panel presentation, NSF Workshop on Biology and Control, Nov 1995.

### **1997-1998**

“Finding objects in large collections of images” , SRI, Aug 21.  
Interval seminar, Sept 17

“Finding objects in large collections of images”, Human Computer Interaction seminar, Stanford, Oct 3.

Neyman seminar, Statistics Dept., UC Berkeley, Oct 22

“Computational Mechanisms of Visual Grouping”, Psychology Dept., UC Berkeley, Nov. 7

“Computational Mechanisms of Visual Grouping”, Psychology Dept., Harvard Univ., Nov. 10

“Computational Mechanisms of Visual Grouping”, MIT LIDS colloquium, Nov. 25

Finding objects in large collections of images, Digital Library meeting, Berkeley, Jan 6

“Computational Mechanisms of Visual grouping”, NECI/NYU workshop, New York City, Feb 20

Philips Multimedia Research Center, Feb 25

“Recovering Geometric, Photometric, and Kinematic Properties from Images”, Image Based Rendering Workshop, Stanford, Mar 23

“Computational Mechanisms of Visual Grouping”, AI Colloquium, Stanford, Apr 9

“Graph partitioning and matching problems in computer vision”, DIMACS workshop on Large Scale Optimization, May 27

“Computational Mechanisms of Visual Grouping”, International workshop on Shape, Contour and Grouping, Palermo, Italy, May 29

“Learning to recognize objects in large image collections using color and texture” (keynote talk in Workshop on Learning in Computer Vision), Freiburg, Germany, June 6

### **1998-1999**

“Visual Grouping, Graph Partitioning, and Eigenvalue Problems”, MTNS, Padova, July 7

“Computational mechanisms of visual grouping”, Weizmann Inst, Israel, July 14

“Computational mechanisms of visual grouping”, Hebrew Univ, Jerusalem, Israel, July 15

Video Analysis, Intel Corporation, Sept 24.

“Finding Objects In Images”, ETH Zurich Symposium on Computer Vision and Mental Images, Nov 23

“Computational Mechanisms of Visual Grouping”, DIMACS, New Jersey, March 21.

“Computational Mechanisms of Visual Grouping”, Bodian Seminar, Johns Hopkins, April 12.

“Computational Models of Visual Grouping”, 5th Annual German American Frontiers of Science Symposium, Potsdam, Germany, June 10-13

“Recovering Photometric Properties Of Scenes From Images”, Workshop on Photometric Modeling, CVPR, June 22

“Computational Mechanisms of Visual Grouping”, Gatsby CNS unit, London, June 29

### **1999-2000**

“Computational Mechanisms of Visual Grouping”, Cambridge, July 1, 1999

“Computational Mechanisms of Visual Grouping”, Workshop on Computational Vision and speech recognition: Statistical foundations and applications, Anogia, Crete, July 4, 1999

“Region Based Image Retrieval”, Keynote talk, DAGM-99 (German conference on AI and PR), Sept 16, 1999

“Computational Mechanisms of Visual Grouping”, Max Planck Institute, Tuebingen, Sept 17, 1999

“Cue Combination And Aggregation In Grouping”, ICCV Perceptual Organization workshop Sept 20, 1999

“Recent Advances in Visual Grouping and Their Implications for Models of Object Recogni-

tion”, ICCV workshop on generic object recognition, Sept 26, 1999.

“Visual Grouping and Recognition”, Dept Colloquium, Princeton University, Nov 17, 1999.

“Computational Mechanisms of Visual Grouping”, Cognitive Science Colloquium, UC Berkeley, Dec 3, 1999.

“Computational Vision”, National Academy of Sciences workshop on the Interface of Three Areas of Computer Science with the Mathematical Sciences, April 29, 2000.

### **2000-2001**

“Ecological Statistics of Gestalt Grouping Factors” Natural Stimulus Statistics, Cold Spring Harbor Laboratory, Oct 25, 2000

“Convergence of Vision and Graphics” Information Society Technologies, IST 2000 Conference, Nice, Nov. 2000

“Visual Grouping and Recognition”, UCLA Jon Postel Distinguished Lecture, Nov. 9, 2000

“Visual Grouping and Recognition”, Georgia Tech GVU colloquium, Jan 25, 2001

### **2001-2002**

“Ecological Statistics of grouping cues in natural images”, Invited Address, Scale Space '01 workshop, Vancouver, July 7, 2001.

“Lectures on biologically motivated approaches to computer vision,” DIKU, Copenhagen, Aug 6-10, 2001

“Shape Matching for Content Based Image Retrieval,” MMCBIR 2001, INRIA Rocquencourt, Sept. 24, 2001

“ Visual Grouping and Object Recognition,” Int. Conf. On Image Analysis and Processing 2001, Palermo, Italy, Sept 26, 2001

“Shape Matching and Recognition using shape contexts”, Workshop on Shape-based Retrieval and Analysis of 3D models, Princeton, Oct 29, 2001

“Visual Grouping and Recognition”, Columbia Lectures in Computer Science, Dec. 3, 2001

“Visual Grouping and Recognition”, Lecture Series in honor of Azriel Rosenfeld, Univ. of Maryland, Jan 30, 2002.

“Visual Grouping and Object Recognition”, Stanford Computer Forum Workshop on Computer Vision, March 2002

“Recognizing Objects and Actions in Images and Video”, Int. Symposium on Multimedia Mediation Systems, Tokyo, March 2002

“Recognizing Objects and Actions in Images and Video”, Natl. Academy of Sciences Workshop on Role of Mathematical Sciences in Homeland Defense, Washington, April 2002

### **2002-2003**

“Recognizing Objects and Actions in Images and Video”, Distinguished Lecture, UC San Diego, February 10, 2003

“Recognizing Objects and Actions in Images and Video”, Mittag-Leffler Institute, Stockholm, March 2003

“Ecological Statistics and visual grouping”, Mittag-Leffler Institute, Stockholm, March 2003

### **2003-2004**

“Recognizing Objects and Actions”, University of Arizona, Tucson, Oct 3, 2003

## **2004-2005**

“Dense Feature Correspondences make recognition easy”, Sicily Object Recognition Workshop, Oct 11, 2004

“Computer Science Education at UC Berkeley”, Microsoft Research Asia Faculty Summit, Beijing, Nov. 8, 2004

Keynote talk, Workshop on “Computing in the 21st Century” Beijing China, Nov. 9, 2004.

“Recognition and Synthesis of human actions from Video”, Invited Talk, 9th Intl. Fall Workshop on Vision, Modeling and Visualization, Stanford, November 17, 2004

“Ecological Statistics of Perceptual Organization” Cognitive & Linguistic Sciences Colloquium, Brown University, Nov. 29, 2004

“Recognizing Objects and Actions in Images and Video”, Distinguished Colloquium, Univ. of Pennsylvania, Nov. 30, 2004

“Recognizing Objects and Actions”, EECS Department, MIT, Dec 1, 2004

“Recognizing Objects and Actions in Images and Video”, Evans & Sutherland Distinguished Lecture, University of Utah, Feb 23, 2005.

Lectures in the MSRI Program on Vision, Spring 2005 (various)

“Ecological Statistics of Perceptual Organization”, Computational Vision in Neural and Machine systems, Centre for Vision Research, York University, June 15, 2005

## **2005-2006**

Oxyopia, School of Optometry, UC Berkeley, Oct 28, 2005, “Perceptual Organization and Natural Image Statistics”

Computer Science Colloquium, ETH Zurich, Nov. 7, 2005, “Recognizing Objects and Actions in Images and Video”

Exxon-Mobil Pattern Recognition and Image Analysis Workshop, Dec. 2005

Computer Vision Distinguished Speaker Series, University of Central Florida, Jan 25, 2006, “Recognizing Objects and Actions in Images and Video”

IMA Workshop March 06 “Natural Image Statistics Enable us to Quantitatively Model Visual Grouping and Figure-Ground Cues”

NAE West Coast Regional meeting, April 20, 2006

IMA Workshop on Visual Recognition, May 06

## **2006-2007**

Learning in Cognitive Systems Summer School, Berlin, September 18-20 2006, various lectures. Center for Perceptual Systems, UT Austin, Colloquium, Nov 27, 2006, “Probabilistic Models of Perceptual Organization”

Techvista hosted MSR India Jan 23, 2007, Panel on “Making India a Powerhouse in Research”

ECE Colloquium, UC Santa Barbara, Apr 13, 2007, “Recognizing Objects and Actions in Images and Video”

Visual Science Society Symposium, May 11, 2007, “Ecological Statistics of Perceptual organization”

Invited talk, Scandinavian Conference on Image Analysis, 2007, June 10, 2007, “Recognizing objects and activities in images and video”

## **2007-2008**

CITRIS in London, July 2007, The Future of Image Search.

Optical Society of America Fall Vision Meeting 2007, invited talk, Sept 17, 2007, “Modeling object recognition”

CASIS conference, Lawrence Livermore National Laboratory, Keynote talk, Nov 15, 2007, “Recognizing Objects and Actions in Images and Video”

UCSB Bio-image informatics workshop 200, Panel “Benchmarking and Validation of Computer Vision Methods for Bioimage Analysis”

SUNS 08, MIT, Feb 1, 2008, “Perceptual Organization in Images of Natural Scenes”

Indo-Israeli Workshop on Computer Vision, Hyderabad, India, Invited talk, Feb 4, 2008, “Recognizing Objects and Actions in Images and Video”

Google Tech Talk, Mar 6, 2008, “Looking At People”

Neural Computation and Adaptive Perception Workshop, Redwood Center, Berkeley, May 7, 2008, “Perceptual Organization in Images of Natural Scenes”

Object Recognition Workshop, Lake Como, May 18, 2008, “Perceptual Organization in Images of Natural Scenes”

International Workshop on Computer Vision, Venice, May 28, 2008, “Perceptual Organization in Images of Natural Scenes”

HP Imaging and Color Symposium, Berkeley, June 20, 2008, “Contours and Junctions in Natural Images”

Workshop on Algorithms for Massive, Modern Data Sets, MMDS 2008, Stanford, June 27, 2008, “Classification using Intersection Kernel SVMs is Efficient”

## **2008-2009**

Adobe Distinguished Lecture Series, Aug 5, 2008, “From Pixels to Perception: Computational Models of Visual Grouping”

ACM SIGKDD, Las Vegas, Keynote Address, Aug 27, 2008 “The Future of Image Search”

HHMI Janelia Farm Research Campus, Sept 15, 2008 “Visual Grouping: Finding Contours and Regions in Natural Images”

UC Irvine, Distinguished Sepaker Series, Oct 17, 2008 “Parsing Images”

USC Computer Science Colloquium, Oct 30, 2008 “Parsing Images”

International Workshop on Video, Barcelona, May 26, 2009, “ Perceptual Organization and Optical Flow”

International Workshop on Recent Trends in Computer Vision, Kyoto, June 8, 2009, “Recognition Using Regions”

Visual Scene Understanding Workshop, CVPR, Miami, June 25, 2009, “The interaction of bottom-up and top-down processing in visual recognition”

## **2009-2010**

Second International Workshop on Shape Perception in Human and Computer Vision, ECVP, Regensburg, Aug 29, 2009, “The interaction of bottom-up and top-down processing in visual recognition”

2009 BIRS Workshop on Computer Vision and the Internet, Banff, Sept 3, 2009, “Detecting people and identifying their poses in images and video”

2010 Winter School on Machine Learning and Computer Vision, Bangalore, Jan 13, 2010, various lectures.



MIT Brain and Cognitive Science Department Colloquium, Feb 18, 2010, “ Visual Object Recognition”

IIT Bombay, June 29, 2010, “Object Detection and Segmentation in Images”

### **2010-2011**

MSR India, July 8, 2010, “Object Recognition”

IIT Hyderabad, July 13, 2010, “Detecting and Segmenting People in Images”

ECCV workshop, Sept 11, 2010, “Detecting and Segmenting Objects Using Poselets”

CCPR Plenary lecture, Oct. 22, 2010, “Detecting and Segmenting Objects in Images”

HHMI Janelia Farm Research Campus, Nov. 15, 2010 “Detecting and Segmenting Objects in Images”

NIPS Deep Learning Workshop, Dec. 10, 2010, “Rich Representations for Learning Visual Recognition”

Colloquium, MPI Tuebingen, Germany, April 11, 2011, “Rich Representations for Learning Visual Recognition”

DAGM Workshop on Unsolved Problems in Pattern Recognition, Heidelberg, April 13, 2011, “Solved, Half-solved and Unsolved Problems in Visual Recognition”

Berkeley-INRIA-Stanford Workshop, May 24, 2011, “Recognizing Objects in Images”

Intel STC Webinar, June 6, 2011, “Parsing the Appearance of People in Images”

### **2011-2012**

ENS/INRIA Visual Recognition and Machine Learning Summer School, Paris, July 27, 2011, “Recent Progress on Visual Recognition”, and “The Future of Visual Recognition”

Intl. Conf. on Contemporary Computing, IIIT, India, Aug. 8, 2011, “Image and Video Understanding”

Frontiers in Computer Vision Workshop, MIT, Aug 21-24, 2011, “History of Computer Vision”, and “The Hilbert Problems of Computer Vision”

### **2012-2013**

International Computer Vision Summer School, Sicily, July 15-21, ”Object Recognition”, and ”Recognition, Reconstruction and Reorganization”

VisionNYC, Oct 22, 2012, “Shape Estimation, Lightness/ Color Constancy & Illumination from a Single Image of an Object”

University of Buffalo Distinguished Colloquium, March 7, 2013, “The Three R’s of Computer Vision: Recognition, Reconstruction and Reorganization”

Stony Brook, March 8, 2013, “The Three R’s of Computer Vision: Recognition, Reconstruction and Reorganization”

Stanford Center for Image Systems Engineering, May 7, 2013, “The Three R’s of Computer Vision: Recognition, Reconstruction and Reorganization”

ETH Zurich, May 13, 2013. “The Three R’s of Computer Vision: Recognition, Reconstruction and Reorganization”

Swiss Vision Day, Zurich, May 15, 2013 “Solved, half-solved and unsolved problems in visual recognition”

### **2013-2014**

INRIA Grenoble

ENS/INRIA Visual Recognition and Machine Learning Summer School, Paris, "The Three R's of Computer Vision : Recognition, Reconstruction and Reorganization", July 24, 2013

German Conference on Pattern Recognition, Saarbrücken, Keynote Lecture, "The Three R's of Computer Vision: Recognition, Reconstruction and Reorganization" , Sept 4 2013

Dertouzos Distinguished Lecture, MIT, October 10, 2013, "The Three R's of Computer Vision: Recognition, Reconstruction and Reorganization"

ICCV 2013 3DRR workshop lecture Dec. 8, 2013

Kavli Futures Symposium Dec. 10, 2013

Cornell Salton Lecture, 2014, "The Three R's of Computer Vision: Recognition, Reconstruction and Reorganization"

### **2014-2015**

K.S. Fu Lecture, ICPR 2014

Allen Institute for AI, Seattle, Invited Lecture, Aug. 11, 2014

A9/Amazon Vision Conference, April 21, 2015, Keynote Talk, "Scene Understanding in the Era of Deep Learning"

CVPR workshops, "3D from a Single Image", and "Scene Understanding Workshop", Invited Talks, June 12, 2015

### **2015-2016**

INNS Deep Learning Workshop Invited Talk, "Scene Understanding in the Era of Deep Learning", Aug 8, 2015

ICCV 2015 Imagenet/COCO Workshop Invited Talk, "The Hilbert Problems of Computer Vision", Dec. 17, 2015

Stanford AI colloquium, Deep Visual Understanding from Deep Learning, April 15, 2016

Society for Information Display Annual Symposium, Invited Talk, Deep Visual Understanding from Deep Learning, May 25, 2016

CVPR VQA Workshop Invited Talk, Embodied Cognition: Linking vision, motor control and language, June 26, 2016

CVPR POCV Workshop Invited Talk, Feedback in Computer Vision, June 26, 2016

CVPR LSUN Workshop Invited Talk, Scene Understanding in RGB-D and RGB images, June 26, 2016

### **2016-2017**

**2017-2018** CVPR workshop talks "Vision for Robotics"