

Curriculum Vitae
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EDUCATION:

Massachusetts Institute of Technology, June, 1992: Ph.D. in
Media Arts and Sciences.
Thesis: "Steerable Filters and Local Analysis of Image Structure".
Cornell University, June 1981: M.S. Applied Physics.
Stanford University, June 1979: M.S. Electrical Engineering.
Stanford University, June 1979: B.S. Physics, with Distinction and
Departmental Honors.

EXPERIENCE:

Professor, Dept. of Electrical Engineering and Computer Science (EECS),
Massachusetts Institute of Technology, Cambridge, MA July 2005 - present.
(Assoc. Prof. with tenure, July 2004 – July, 2005;
Assoc. Prof. without tenure, Sept. 2001 – July, 2004).
Member of Computer Science and Artificial Intelligence Laboratory (CSAIL).
Lead research group studying computer vision, machine learning, and computer
graphics. Computer vision research focus: Object recognition, scene understanding, and exploiting
visual context. Image processing research focus: statistical models for images, super-resolution, and
image deblurring. Raise research funds to support group of 4 – 5 students and 2 – 3 post-doctoral
researchers or visiting professors. Publish conference and journal articles on computer vision, image
processing, and computational photography. Teach electrical engineering and computer science
courses. Serve on Personnel Committee, reviewing the promotion and tenure cases for all EECS
department faculty. Associate Director for CSAIL in 2010.

Senior Research Scientist, Mitsubishi Electric Research Labs. (MERL).
Cambridge, MA 11/92 – 9/2001.

Associate Director 11/2000 – 9/2001.

Research on fundamental and applied problems in computer vision and machine
learning. Studied belief propagation in Markov networks; contributed new message-passing
algorithms and characterized existing ones. Published training-based method for low-level vision
problems, including a state-of-the-art super-resolution technique. Developed Bayesian approaches
for several vision problems, including color constancy, disambiguating shading and reflectance, and
the 3-d interpretation of human motion. Placed the generic viewpoint assumption in a Bayesian
framework, allowing quantitative application to vision problems. Explored bilinear models for two-
factor problems in vision, graphics, and classification. The style-adaptive categorization techniques
improve performance; work was awarded Outstanding Paper prize, CVPR 1997. Devised,
debugged, and supervised programming of real-time methods to recognize hand gestures, control a

television set remotely by hand signals, and control interactive games. Resulting demonstrations opened business negotiations with Nintendo, leading to high-volume sales of Mitsubishi Electric "artificial retina" chips in Nintendo GameBoy Camera. Member, MERL Director's Advisory Committee. Collaborated with researchers and supervised student interns and programmers. Promoted to Associate Director, a half-time management position. Oversee university funding, supervise members of technical staff, share in lab strategic planning.

Research Assistant and Research Scientist, Media Lab, MIT. 9/88 - 11/92.

Thesis advisor: Prof. Edward H. Adelson.

Research in computational vision. Developed "steerable filters," a class of oriented filters with broad application in image processing and computer vision. Devised multi-scale, orientation-tuned image decomposition (the steerable pyramid) and showed applications for shape-from-shading and noise removal. Designed algorithms which detect shading, occluding contours, and transparency, in simple scenes. Developed novel computer graphic motion display technique, allowing continuous display of instantaneous velocities.

Foreign Expert, Taiyuan University of Technology Computer Center,

Taiyuan, Shanxi, Peoples' Republic of China. 9/87 - 7/88.

Helped start-up image processing laboratory. Suggested and directed student projects. Outlined software organization; supervised video camera and videoprinter calibration; tested hardware and software. Studied applications of neural networks in image processing under research grant from Polaroid. Taught image processing and technical English classes.

Principal Engineer, Polaroid Corporation. 9/81 - 9/87.

Developed image processing and enhancement algorithms for electronic cameras and printers. Work used computer simulation, digital signal processing, color theory, and knowledge of visual perception and electronic imaging systems. Co-inventor, Polaroid Palette: designed and wrote prototype software and added new product ideas for the computer graphics recorder, a successful product. Developed new interpolation technique which gives higher resolution color images from CCD cameras. Polaroid reduced the algorithm to a chip and used it in the PDC-2000 digital camera, released in 1996; algorithm is said to bring competitive advantage in image quality to the camera. Analyzed Fourier spectrum of 1-CCD color images; results used in camera development. Studied image processing techniques to reduce photographic grain noise. Initiated and led department "quality circle" groups (addressing product quality and work environment). Organized weekly general interest lectures by invited speakers (2 years). Supervised an engineer. Promoted twice.

Research Assistant, Cornell University. 9/79-9/80, 1/81-6/81.

Research on the digital processing of electron microscope images. Applied image processing techniques to scanning transmission electron microscope images of tobacco mosaic virus. Selected image processing system to be purchased for bio-physics experiment involving low light-level video imaging.

Teaching Assistant, Cornell University. 9/80 - 12/80.

Gave lectures for the weekly recitation section of a Junior year physics class in classical mechanics. Helped students individually; graded problem sets.

Undergrad. Res. Assistant, Stanford Center for Radar Astronomy 6/77-6/79.

Research for Voyager Jupiter-Saturn Mission. Developed computer program to find radio-paths through oblate planet atmospheres; results were used to point spacecraft antenna for successful radio science experiment during Jupiter fly-by. Analyzed expected frequency spectrum of Saturn fly-by to determine necessary receiver bandwidth.

TEACHING:

MIT: 6.899, Learning and Inference in Vision; 6.869 Computer Vision; 6.865, Computational Photography; recitations for: 6.003, Signals and Systems; 6.348, Algorithms for Inference; 6.341, Digital Signal Processing; 6.UAT, Preparation for the Undergraduate Advanced Project.

Harvard Extension School, Introduction to Applied Computer Science (co-taught with Joe Marks), Spring, 1998 -- 2001.

PROFESSIONAL ACTIVITIES:

Conference Program Co-Chair: Computer Vision and Pattern Recognition (CVPR), 2013.

Symposium Organizer: Workshop on Computational Photography, Neural Information Processing Systems (NIPS) 2008, co-organizer (with Bernhard Schoelkopf).

Guest Editor: Special issue on Machine Learning for Vision, International Journal of Computer Vision, April, 2008.

Conference Program Co-Chair: International Conference on Computer Vision, (ICCV), 2005.

Guest Editor: Special issue on Graphical Models in Computer Vision, IEEE Trans. Pattern Analysis and Machine Intelligence, July, 2003.

Associate Editor: IEEE Trans. Pattern Analysis and Machine Intelligence (1999-2002).

Member, IEEE PAMI TC Awards Committee (decides best paper award recipients, 1999-2003).

Editorial Board: Pattern Analysis and Applications (1997-1999).

Conference Program Committees:

Intl. Conference on Computer Vision, ICCV (area chair, 2001, 2003).

Computer Vision and Pattern Recognition, CVPR (program committee 1999, tutorials chair, 2003, area chair, 2000, 2007, 2009, 2010).

Neural Information Processing Systems, NIPS (area chair for vision, 2000, 2001).

Intl. Conf. On Face and Gesture Recognition, FG (1996, 1998, 2000).

SIGGRAPH (2002, 2003, 2006, 2007).

AWARDS:

Outstanding Paper Award Runner-up (co-author), Computer Vision and Pattern Recognition (CVPR) 2009.
Best Poster Award, Computer Vision and Pattern Recognition (CVPR) 2008,
Outstanding Student Paper Award (co-author), Neural Information Processing Systems (NIPS) 2006.
Best Poster Award, Computer Vision and Pattern Recognition (CVPR) 2004.
Outstanding Paper Prize, Computer Vision and Pattern Recognition (CVPR) 1997.
Mitsubishi Electric R&D General Manager's Award, 1996.

REFEREED JOURNAL PUBLICATIONS:

- Biliana Kaneva, Josef Sivic, Antonio Torralba, Shai Avidan and William T. Freeman, *Infinite Images: Creating and Exploring a Large Photorealistic Virtual Space*, Proceedings of the IEEE, volume 98, issue 8, pages 1391 - 1407, 2010.
- Erik B. Sudderth, Alexander T. Ihler, Michael Isard, William T. Freeman, and Alan S. Willsky, *Nonparametric Belief Propagation*, Communications of the ACM, October, 2010.
- T. S. Cho, S. Avidan, and W. T. Freeman, *The Patch Transform*, IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI), vol. 32, issue 8, pages 1489 - 1501, August, 2010.
- A. Levin, S. Hasinoff, P. Green, F. Durand, W. T. Freeman, *4D Frequency Analysis of Computational Cameras for Depth of Field Extension*, SIGGRAPH, ACM Transactions on Graphics, Aug 2009.
- C. Liu, R. Szeliski, S. B. Kang, C. L. Zitnick, and W. T. Freeman, Automatic estimation and removal of noise from a single image, IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), Vol 30, No. 2, pp. 299-314, Feb., 2008.
- A. Levin, P. Sand, T. S. Cho, F. Durand, W. T. Freeman, *Motion-Invariant Photography*, ACM Transactions on Graphics, 27(3), (Proc. SIGGRAPH), August, 2008.
- A. Torralba, R. Fergus, and W. T. Freeman, *80 million tiny images: a large dataset for non-parametric object and scene recognition*. IEEE Transactions on Pattern Analysis and Machine Intelligence, Volume 30 , Issue 11 (November 2008), Pages: 1958-1970.
- E. Sudderth, A. Torralba, W. T. Freeman, and A. Willsky, *Describing visual scenes using transformed objects and parts*, International Journal of Computer Vision, special issue on Machine Learning for Vision, April, 2008.
- B. Russell, A. Torralba, K. Murphy, W. T. Freeman, *LabelMe: a database and web-based tool for image annotation*, Intl. Journal of Computer Vision, special issue on Machine Learning for Vision, April, 2008.
- E. Sudderth and W. T. Freeman, *Signal and image processing with belief propagation*, IEEE Signal Processing Magazine, March, 2008.

- C. Liu, R. Szeliski, S. B. Kang, C. L. Zitnick, and W. T. Freeman, *Automatic estimation and removal of noise from a single image*, IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), Vol. 30, no. 2, Pages 299-314, Feb., 2008
- A. Torralba, K. P. Murphy, and W. T. Freeman *Sharing visual features for multiclass and multiview object detection* IEEE Transactions on Pattern Analysis and Machine Intelligence , vol. 29, no. 5, pp. 854-869, May, 2007.
- N. Joshi, W. Matusik, S. Avidan, H. Pfister, and W. T. Freeman, *Exploring defocus matting: non-parametric acceleration, super-resolution, and off-center matting*, IEEE Computer Graphics and Applications, special issue on Computational Photography, March, 2007.
- A. Levin, R. Fergus, F. Durand, and W. T. Freeman, *Image and depth from a conventional camera with a coded aperture*, ACM Trans. On Graphics (Proc. SIGGRAPH 2007)
- C. Liu, H. Y. Shum and W. T. Freeman, *Face Hallucination: theory and practice*, International Journal of Computer Vision, Vol. 75, no. 1, pp. 115-134, October, 2007.
- D. H. Brainard, P. Longere, P. B. Delahunt, W. T. Freeman, J. M. Kraft, and B. Xiao, *Bayesian model of human color constancy*, Journal of Vision, 6, 1267-1281, <http://journalofvision.org/6/11/10/>, doi:10.1167/6.11.10. 2006.
- M. F. Tappen, W. T. Freeman, and E. H. Adelson, *Recovering Intrinsic Images from a Single Image*, In IEEE Transactions on Pattern Analysis and Machine Intelligence, Volume 27, Issue 9, September 2005, Pages 1459 - 1472
- R. Fergus, B. Singh, A. Hertzmann, S. Roweis, and W. T. Freeman, *Removing camera shake from a single image*, ACM Trans. on Graphics (Proc. SIGGRAPH 2006). July 2006. 25(3):787-794.
- J. S. Yedidia, W. T. Freeman, Y. Weiss, *Constructing Free-Energy Approximations and Generalized Belief Propagation Algorithms*, IEEE Transactions on Information Theory, ISSN; 0018-9448, Vol. 51, Issue 7, pp. 2282-2312, July 2005.
- C. Liu, A. Torralba, W. T. Freeman, F. Durand, and E. A. Adelson, *Motion Magnification*, ACM Transactions on Graphics (Proc. SIGGRAPH 2005). July 2005. 24(3).
- W. T. Freeman, J. B. Tenenbaum, E. Pasztor, *Learning style translation for the lines of a drawing*. ACM Transactions on Graphics, January, 2003.
- William T. Freeman, Thouis R. Jones, and Egon C. Pasztor, *Example-based super-resolution*, IEEE Computer Graphics and Applications, March/April, 2002.
- Y. Weiss and W. T. Freeman, *Correctness of belief propagation in Gaussian graphical models of arbitrary topology*, Neural Computation, 13(10), pp. 2173-2200, 2001.
- W. T. Freeman, E. C. Pasztor, O. T. Carmichael, *Learning Low-Level Vision*, International Journal of Computer Vision, 40(1), pp. 25-47, 2000.

- Y. Weiss and W. T. Freeman, *On the optimality of solutions of the max-product belief propagation algorithm in arbitrary graphs*, IEEE Trans. Information Theory, Special Issue on Codes on Graphs and Iterative Algorithms, 47:2 pages 723-735. (2001).
- W. T. Freeman, *book review of Biometrics*, Pattern Analysis and Applications, Kluwer, March, 2000.
- J. B. Tenenbaum and W. T. Freeman, *Separating style and content with bilinear models*, Neural Computation, March, 2000.
- H. Kage, W. T. Freeman, Y. Miyake, E. Funatsu, K. Tanaka, and K. Kyuma, *Artificial retina chips as on-chip image processors and gesture-oriented interfaces*, Optical Engineering vol. 38, no. 12, pp. 1979—1988, Dec. 1999.
- W. T. Freeman, P. Beardsley, H. Kage, K. Tanaka, K. Kyuma, C. Weissman. *Computer vision for computer interaction* , SIGGRAPH Computer Graphics magazine, November, 1999.
- W. T. Freeman, D. Anderson, P. Beardsley, C. Dodge, H. Kage, K. Kyuma, Y. Miyake, M. Roth, K. Tanaka, C. Weissman, W. Yerazunis, *Computer vision for interactive computer graphics* , IEEE Computer Graphics and Applications, volume 18, number 3, May--June, pp. 42-53, 1998.
- D. H. Brainard and W. T. Freeman, *Bayesian color constancy*, Journal of the Optical Society of America, A, July, 1997.
- W. T. Freeman, *Exploiting the generic viewpoint assumption*, International Journal of Computer Vision, 20(3), pp. 243 - 261, 1996.
- C. Rich, R. C. Waters, C. Strohecker, Y. Schabes, W. T. Freeman, M. C. Torrance, A. R. Golding, and M. Roth, *Demonstration of an interactive environment for collaboration and learning*, IEEE Computer, Vol. 27, No. 12, Dec. 1994.
- C. Rich, R. C. Waters, Y. Schabes, W. T. Freeman, M. C. Torrance, A. R. Golding, and M. Roth, *An animated online community with artificial agents and spoken interaction*, IEEE MultiMedia, Vol. 1, No. 4, Dec. 1994.
- W. T. Freeman, *The generic viewpoint assumption in a framework for visual perception*, Nature, vol. 368, p. 542 - 545, April 7, 1994.
- E. P. Simoncelli, W. T. Freeman, E. H. Adelson, and D. J. Heeger, *Shiftable multi-scale transforms*, IEEE Trans. Information Theory special issue on wavelets, vol. 38, no. 2, pp. 587 - 607, March, 1992.
- W. T. Freeman and E. H. Adelson, *The design and use of steerable filters*, IEEE Trans. on Pattern Analysis and Machine Intelligence, vol. 13, no. 9, pp. 891 - 906, September, 1991.

E. J. Kirkland, W. T. Freeman, M. Ohtsuki, M. S. Isaacson, and B. S. Siegal, *Computer image processing of STEM images of tobacco mosaic virus*, Ultramicroscopy **6**, 367-76 (1981).

V. R. Eschleman, G. L. Tyler and W. T. Freeman, *Deep radio occultations and 'evolute flashes': their characteristics and utility for planetary studies*, Icarus **37**, 612-26 (1979).

REFEREED CONFERENCE PAPERS AND BOOK CHAPTERS:

Samuel W. Hasinoff, Frédo Durand, and William T. Freeman, *Noise-Optimal Capture for High Dynamic Range Photography*, Proc. 23rd IEEE Conference on Computer Vision and Pattern Recognition, CVPR 2010.

Samuel W. Hasinoff, Martyna Jóźwiak, Frédo Durand, and William T. Freeman, *Search-and-Replace Editing for Personal Photo Collections*, Proc. 2nd IEEE International Conference on Computational Photography, ICCP 2010

Taeg Sang Cho, Anat Levin, Frédo Durand, and William T. Freeman, *Motion blur removal with orthogonal parabolic exposures*, Proc. IEEE Intl. Conf. on Computational Photography (ICCP), 2010.

A. Chakrabarti, Todd Zickler and William T. Freeman, *Analyzing Spatially-varying blur*, Proc. IEEE Conf. on Computer Vision and Pattern Recognition (CVPR), June 2010.

L. Zhu, Y. Chen, A. Torralba, A. Yuille and W. T. Freeman, *Latent Hierarchical Structural Learning for Object Detection*, IEEE Conf. on Computer Vision and Pattern Recognition (CVPR), June 2010.

L. Zhu, Y. Chen, A. Torralba, W. T. Freeman, and A. Yuille, *Part and Appearance Sharing: Recursive Compositional Models for Multi-View Multi-Object Detection*, IEEE Conf. on Computer Vision and Pattern Recognition (CVPR), June 2010.

T. S. Cho, S. Avidan and W. T. Freeman, *A Probabilistic Image Jigsaw Puzzle Solver*, IEEE Conf. on Computer Vision and Pattern Recognition (CVPR), June 2010.

T. S. Cho, N. Joshi, C. L. Zitnick, S. B. Kang, R. Szeliski and W. T. Freeman, *A Content-Aware Image Prior*, IEEE Conf. on Computer Vision and Pattern Recognition (CVPR), June 2010.

B. C. Russell, A. A. Efros, J. Sivic, W. T. Freeman, and A. Zisserman, *Segmenting Scenes by Matching Image Composites*, Neural Information Processing Systems (NIPS) 2009.

Long Zhu, Yuanhao Chen, William Freeman, Antonio Torralba, *Nonparametric Bayesian Texture Learning and Synthesis*, Neural Information Processing Systems (NIPS) 2009

Hyun Sung Chang, Yair Weiss, William T. Freeman, *Informative Sensing of Natural Images*, IEEE Int. Conf. Image Processing, Egypt, Nov. 2009.

R. Grosse, M.K. Johnson, E.H. Adelson, and W.T. Freeman, *Ground-truth dataset and baseline evaluations for intrinsic image algorithms*, International Conference on Computer Vision, 2009.

A. Levin, Y. Weiss, F. Durand, and W. T. Freeman, *Understanding and evaluating blind deconvolution algorithms*, IEEE Conf. on Computer Vision and Pattern Recognition (CVPR), June 2009. **Runner-up Best Paper Prize.**

S. W. Hasinoff, K. N. Kutulakos, F. Durand and W. T. Freeman, *Time-constrained Photography*, Proc. 12th IEEE International Conference on Computer Vision (ICCV) 2009

J. Sivic, B. Kaneva, A. Torralba, S. Avidan and W. T. Freeman, *Creating and exploring a large photorealistic virtual space*, First IEEE Workshop on Internet Vision, associated with CVPR 2008.

C. Liu, J. Yuen, A. Torralba, J. Sivic, W. T. Freeman, *SIFT Flow: Dense Correspondence across Different Scenes*, European Conference on Computer Vision, ECCV 2008.

A. Levin, W. T. Freeman, and F. Durand, *Understanding camera trade-offs through a Bayesian analysis of light field projections*, European Conference on Computer Vision, ECCV 2008.

C. Liu, W. T. Freeman, E. H. Adelson and Y. Weiss, *Human-assisted motion annotation*. IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2008.

Taeg Sang Cho, Moshe Butman, Shai Avidan, William T. Freeman, *The patch transform and its applications to image editing*, IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2008.

J. Sivic, B. C. Russell, A. Zisserman, W. T. Freeman, and A. A. Efros, *Unsupervised Discovery of Visual Object Class Hierarchies*, IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2008.

Yair Weiss, Hyun Sung Chang and William T. Freeman, *Learning Compressed Sensing*, 45th Allerton Conference on Communication, Control, and Computing, 2007

B. C. Russell, A. Torralba, C. Liu, R. Fergus, W. T. Freeman, *Object Recognition by Scene Alignment*, Advances in Neural Information Processing Systems, 2007.

T. S. Cho, W. T. Freeman and H. Tsao, *A reliable skin mole localization scheme*, IEEE Computer Society Workshop on Mathematical Methods in Biomedical Image Analysis, In the Proceedings of International Conference of Computer Vision Oct. 14-17, 2007

Y. Weiss and W. T. Freeman, *What makes a good model of natural images?*, IEEE Computer Vision and Pattern Recognition (CVPR) 2007.

M. F. Tappen, C. Liu, W. T. Freeman, and E. H. Adelson, *Learning Gaussian Conditional Random Fields for Low-Level Vision*, IEEE Computer Vision and Pattern Recognition (CVPR) 2007.

C. Liu, W.T. Freeman and E.H. Adelson. *Analysis of contour motions*, Advances in Neural Information Processing Systems (NIPS 2006), **Outstanding Student Paper Award**.

E. Sudderth, A. Torralba, W. T. Freeman, and A. Willsky, *Depth from familiar objects: a hierarchical model for 3d scenes*, IEEE Conf. on Computer Vision and Pattern Recognition (CVPR) New York, NY, June, 2006.

C. Liu, W. T. Freeman, R. Szeliski, and S. B. Kang, *Noise estimation from a single image*, IEEE Conf. on Computer Vision and Pattern Recognition (CVPR) New York, NY, June, 2006.

B. C. Russell, , A. Efros, J. Sivic, W. T. Freeman, and A. Zisserman, *Using multiple segmentations to discover objects and their extent in image collections*, IEEE Conf. on Computer Vision and Pattern Recognition (CVPR) New York, NY, June, 2006.

M. Tappen, E. Adelson, and W. T. Freeman, *Estimating Intrinsic Component Images using Non-Linear Regression*. IEEE Conf. on Computer Vision and Pattern Recognition (CVPR) New York, NY, June, 2006.

A. Torralba, K. Murphy, W. T. Freeman, *Shared features for multiclass object detection*, chapter in book: Towards Category-Level Object Recognition. Springer Lecture Notes in Computer Science (invited submission), 2005.

K. Murphy, A. Torralba, D. Eaton, W. T. Freeman, *Object detection and localization using local and global features*, chapter in book: Towards Category-Level Object Recognition. Springer Lecture Notes in Computer Science (invited submission), 2005.

E. Sudderth, A. Torralba, W. Freeman, and A. Willsky *Describing Visual Scenes using Transformed Dirichlet Processes*. Neural Information Processing Systems (NIPS), Vancouver, B.C., Dec. 2005.

J. Sivic, B. Russell, A. A. Efros, A. Zisserman, W. T. Freeman, *Discovering Objects and their Location in Images*, International Conference on Computer Vision (ICCV), Beijing, China, Oct. 2005.

S. Ravela, A. Torralba, W. T. Freeman, *An Ensemble Prior of Image Structure for Cross-modal Inference*, International Conference on Computer Vision (ICCV), Beijing, China, vol. 1, pp. 871-876, Oct. 2005.

E. Sudderth, A. Torralba, W. Freeman, and A. Willsky, *Learning Hierarchical Models of Scenes, Objects, and Parts*, International Conference on Computer Vision (ICCV), Beijing, China, Oct. 2005.

E. Sudderth, M. Mandel, W. Freeman, and A. Willsky, *Distributed Occlusion Reasoning for Tracking with Nonparametric Belief Propagation*, in Advances in Neural Information Processing Systems 17 (NIPS), Vancouver, BC, MIT Press, 2005.

A. Torralba, K. P. Murphy, and W. T. Freeman, *Sharing visual features for multiclass and multiview object detection*, IEEE Conf. on Computer Vision and Pattern Recognition (CVPR) Washington, DC, 2004.

K. Murphy, A. Torralba, and W. T. Freeman, *Using the forest to see the trees: a graphical model relating features, objects, and scenes*, in Advances in Neural Information Processing Systems 16 (NIPS), Vancouver, BC, MIT Press, 2004.

A. T. Ihler, E. B. Sudderth, W. T. Freeman, and A. S. Willsky, *Efficient multiscale sampling from products of Gaussian mixtures*, in Advances in Neural Information Processing Systems 16 (NIPS), Vancouver, BC, MIT Press, 2004.

Antonio Torralba, Kevin P. Murphy, William T. Freeman, *Contextual Models for Object Detection Using Boosted Random Fields*, in Neural Information Processing Systems (NIPS), Vancouver, B.C., Dec. 2004.

G. Dalley, W. T. Freeman, and J. Marks, *Single-frame Text Super-resolution: A Bayesian Approach*, in International Conference on Image Processing (ICIP), Oct. 2004.

M. F. Tappen, B. C. Russell, and W. T. Freeman, *Efficient graphical models for processing images*, IEEE Conf. on Computer Vision and Pattern Recognition (CVPR) Washington, DC, 2004.

E. Sudderth, M. Mandel, W. Freeman, and A. Willsky, *Visual Hand Tracking Using Nonparametric Belief Propagation*. Workshop on Generative Model Based Vision, CVPR, June 2004.

A. Torralba, K. P. Murphy, W. T. Freeman, and M. A. Rubin, *Context-based vision system for place and object recognition*, IEEE Intl. Conference on Computer Vision (ICCV), Nice, France, October, 2003.

M. F. Tappen and W. T. Freeman, *Comparison of graph cuts with belief propagation for stereo, using identical MRF parameters*, IEEE Intl. Conference on Computer Vision (ICCV), Nice, France, October, 2003

M. F. Tappen, B. C. Russell, and W. T. Freeman, *Exploiting the sparse derivative prior for super-resolution and image demosaicing*, 3rd Intl. Workshop on Statistical and Computational Theories of Vision (associated with Intl. Conf. on Computer Vision), Nice, France, October, 2003.

B. Singh, W. T. Freeman, and D. H. Brainard, *Exploiting spatial and spectral image regularities for color constancy*, 3rd Intl. Workshop on Statistical and Computational Theories of Vision (associated with Intl. Conf. on Computer Vision), Nice, France, October, 2003.

W. T. Freeman and H. Zhang, *Shapetime photography*, IEEE Computer Vision and Pattern Recognition (CVPR), Madison, WI, June, 2003.

E. B. Sudderth, A. T. Ihler, W. T. Freeman and A. S. Willsky *Nonparametric Belief Propagation and Facial Appearance Estimation*, IEEE Computer Vision and Pattern Recognition (CVPR), Madison, WI, June, 2003.

A. Torralba and W. T. Freeman, *Properties and Applications of Shape Recipes*, IEEE Computer Vision and Pattern Recognition (CVPR), Madison, WI, June, 2003.

Marshall F. Tappen, William T. Freeman and Edward H. Adelson *Recovering Intrinsic Images from a Single Image* in Advances in Neural Information Processing Systems 15 (NIPS), MIT Press, 2003.

William T. Freeman and Antonio Torralba *Shape Recipes: Scene Representations that Refer to the Image* in Advances in Neural Information Processing Systems 15 (NIPS), MIT Press, 2003.

Joe Marks, William Freeman, and Henry Leitner, *Teaching applied computing without programming: a case-based introductory course for general education*, Proceedings of the thirty-second SIGCSE technical symposium on Computer Science Education, Charlotte, North Carolina, 2001.

M. Bell and W. T. Freeman, *Learning local evidence for shading and reflectance*, , International Conference on Computer Vision, Vancouver, BC, CANADA, 2001.

Alexei A. Efros and W. T. Freeman, *Image quilting for texture synthesis and transfer*, SIGGRAPH 2001, pp. 341 –346, 2001.

J. Yedidia, W. T. Freeman, and Y. Weiss, *Generalized belief propagation*, **Distinguished Paper Track**, Intl. Joint Conf. on Artificial Intelligence (IJCAI), Seattle, 2001.

J. Yedidia, W. T. Freeman, and Y. Weiss, *Generalized belief propagation*, Advances in Neural Information Processing Systems (NIPS) 13, 2001.

J. W. Fisher, T. Darrell, W. T. Freeman and P. Viola, *Learning Joint Statistical Models for Audio-Visual Fusion and Segregation*, to appear in: Advances in Neural Information Processing Systems (NIPS) 13, 2001.

W. T. Freeman, J. A. Haddon, and E. C. Pasztor, *Learning Motion Analysis*, to appear in "Statistical Theories of the Brain", edited by R. Rao, B. Olshausen, and M. Lewicki, MIT Press, 2001.

W. T. Freeman and E. C. Pasztor, *Markov networks for super-resolution*, in Proceedings of 34th Annual Conference on Information Sciences and Systems (CISS 2000), Dept. Electrical Engineering, Princeton University, March, 2000.

- N. R. Howe, M. E. Leventon, W. T. Freeman, *Bayesian reconstruction of 3D human motion from single-camera video*, Adv. in Neural Information Processing Systems (NIPS) 12, edited by S. A. Solla, T. K. Leen, and K-R Muller, 2000.
- Y. Weiss and W. T. Freeman, *Correctness of Belief Propagation in Gaussian Graphical Models of Arbitrary Topology*. Adv. in Neural Information Processing Systems (NIPS) 12, edited by S. A. Solla, T. K. Leen, and K-R Muller, 2000.
- W. S. Yerazunis, D. L. Leigh, W. T. Freeman, R. S. Bardsley, *An Inexpensive, All Solid-state Video and Data Recorder for Accident Reconstruction*. Presented at the 1999 SAE International Congress and Exposition in Detroit, Michigan on March 3, 1999. Published as SAE Technical Paper number 1999-10-1299.
- W. T. Freeman, E. C. Pasztor, *Learning low-level vision*. International Conference on Computer Vision (ICCV), 1999, Corfu, Greece.
- W. T. Freeman, E. C. Pasztor, *Markov networks for low-level vision*. Workshop on Statistical and Computational Theories of Vision, CVPR 1999, <http://www.cis.ohiostate.edu/~szhu/workshop/freeman.html>.
- W. T. Freeman, E. C. Pasztor, *Learning to estimate scenes from images*. Adv. in Neural Information Processing Systems (NIPS) 11, 1999.
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ADDITIONAL INFORMATION:

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Hobbies: drawing, bicycling, playing banjo and guitar.