

CURRICULUM VITAE
(Sept. 24, 2018)

A. BIOGRAPHICAL INFORMATION

1. Personal

Name: Allan Douglas Jepson
Date of Birth: November 23, 1954
Citizenship: Canadian
University Address: Department of Computer Science
University of Toronto
Toronto, Ontario M5S 3H5
University Phone: (416) 978-6488, Fax: (416) 978-1455
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2. Degrees

Ph.D. Applied Mathematics, California Institute of Technology
Thesis: Part I: Asymptotic Boundary Conditions for
Ordinary Differential Equations.
Part II: Numerical Hopf Bifurcation.
Advisor: Professor H.B. Keller
Date: Sept. 1980
B.Sc. Mathematics (Honours), University of British Columbia (1976)

3. Employment

July '91-date Professor
July '87-June '91 Associate Professor
Department of Computer Science, University of Toronto
July.'88-July '89 Visiting Associate Professor
Brain and Cognitive Sciences Department
Massachusetts Institute of Technology
Sept.'82-June '87 Assistant Professor
Department of Computer Science, University of Toronto
Sept.80-Aug.82 Post-doctoral Research Associate
(with Professor J.B. Keller)
Department of Mathematics, Stanford University

4. Honours

Lifetime Research Achievement Award, Canadian Image Processing and Pattern Recognition Society (CIPPRS), 2016.
Associate of Canadian Institute for Advanced Research, Nov. 2004 - June 2009.

Scholar of Canadian Institute for Advanced Research, 1989 - Nov. 1995.
Associate of Canadian Institute for Advanced Research, 1986 - June 1989.

B. ACADEMIC HISTORY

6a. Research Endeavours

Computer vision; in particular the estimation of layered image models, perceptual inference, and preference-based vision.

6b. Research Grants

NSERC Discovery	\$28,000 x 5 yrs.	2012-18
NSERC Discovery	\$375,000.	2005-12
NSERC RTI (co-PI)	\$51,800.	2004
NSERC Operating	\$75,000/yr.	2001-04
CITO	\$80,000.	2001-02
NSERC CRD	\$20,000.	2001-02
IMAX	\$20,000.	2001-02
Xerox Grant	\$21,000/yr.	2000-02
NSERC Operating	\$66,990/yr.	1999-01
NSERC Operating	\$63,800/yr.	1998-99
NSERC Operating	\$58,000/yr.	1997-98
Xerox Grant	\$21,000/yr.	1997-00
NSERC Operating	\$38,000/yr.	1993-97
ITRC,	\$150,000.	1993-95
ITRC,	\$80,000.	1991-93
NSERC Operating	\$34,442/yr.	1990-93
NSERC Operating	\$28,303/yr.	1988-90
NSERC Operating	\$21,920/yr.	1987-88
NSERC Operating	\$ 7,986/yr.	1984-87
NSERC Operating	\$ 3,000	1983-84
Connaught (UofT)	\$16,000	1982-84

6c. Awards

Outstanding Reviewer Award, ICCV, Nov. 2011.
Best Reviewer Award, IEEE CVPR June 2011.
Best Paper Runner-up Award, IEEE CVPR 2001.
Dr. R.D. James Medal in Mathematics, 1976

6d. Patents

A.D. Jepson, D.J. Fleet, and T. El-Maraghi, Robust on-line appearance models for visual motion analysis and visual tracking, U.S. Patent No. 7,093,202, Aug. 15, 2006.

A.D. Jepson, D.J. Fleet, and T. El-Maraghi, Robust appearance models for visual motion analysis and tracking, European Patent EP1318477, Mar. 22, 2006.

A.D. Jepson, D.J. Fleet, and M.J. Black, Visual motion analysis method for detecting arbitrary numbers of moving objects in image sequences, U.S. Patent No. 6,954,544, Oct. 11, 2005.

M.J. Black and A.D. Jepson, Apparatus and method for identifying and tracking objects with view-based representations, U.S. Patent No. 6,526,156, Feb. 25, 2003.

M.J. Black and A.D. Jepson, Image segmentation system and method, European Patent EP0748110, Nov. 13, 2002.

M.J. Black and A.D. Jepson, Image segmentation using robust mixture models, U.S. Patent No. 5,802,203, June 7, 1995.

D. J. Heeger and A.D. Jepson, Method and apparatus for image processing to obtain three dimensional motion and depth, U.S. Patent No. 4,980,762, Dec. 1990.

C. SCHOLARLY AND PROFESSIONAL WORK

Career Publication Count	
Scholarly Books (authored)	0
Scholarly Books (edited)	0
Chapters in Books	15
Papers in refereed journals	35
Papers in refereed conferences	90
Major invited contributions	6
Other conference abstracts/posters/contributions	35
Other publications	18
h-index	48
i10-index	111

7. Refereed Publications

7a. Articles in Journals

- [35] F. Estrada and A. Jepson, Benchmarking image segmentation algorithms, *Int. Journal of Computer Vision*, Vol. 85, No. 2, Nov. 2009, pp. 167-181.
- [34] Gustavo Carneiro, and Allan Jepson, The quantitative characterization of the distinctiveness and robustness of local image descriptors, *Image and Vision Computing*, 27(8), pp. 1143-1156, July 2009.
- [33] G. Carneiro and A.D. Jepson, Flexible spatial configurations of local image features, *IEEE J. of Pattern Analysis and Machine Intelligence*, Vol. 29(12), pp. 2089-2104, Dec. 2007.
- [32] A.D. Jepson, D.J. Fleet and T.F. El-Maraghi, Robust on-line appearance models for visual tracking, *IEEE Transactions on Pattern Analysis and Machine Intelligence*, Vol. 25, No. 10, 2003, pp. 1296-1311.
- [31] D. J. Fleet, M. J. Black, Y. Yacoob, and A. D. Jepson, Design and use of linear models for image motion analysis, *Int. J. of Computer Vision* 36(3), 2000, pp.171-193.
- [30] S. B. Nickerson, P. Jasiobedzki, D. Wilkes, M. Jenkin, E. Miliotis, J. Tsotsos, A. Jepson and O. N. Bains, The ARK project: Autonomous mobile robots for known industrial environments, *Robotics and Autonomous Systems*, Vol. 23, Nos. 1-2, October 1998, pp.83-104.
- [29] M.J. Black and A.D. Jepson, EigenTracking: Robust matching and tracking of articulated objects using a view-based representation, *Int. J. of Computer Vision* 26(1), 1998, pp.63-84. (see also Tech. Rep., Dept. of Comp. Sci., Univ. of Toronto, RBCV-TR-96-50).
- [28] J.K. Tsotsos, G. Verghese, S. Dickinson, M. Jenkin, A. Jepson, E. Miliotis, F. Nuflo, S. Stevenson, M. Black, D. Metaxas, Y. Ye, R. Mann, PLAYBOT: A visually-guided robot to assist physically disabled children in play, *Image & Vision Computing, Special Issue on Vision for the Disabled*, 16(4), 1998, pp.275-292.
- [27] R. Mann, A. Jepson, and J.M. Siskind, Computational perception of scene dynamics, *Comp. Vision and Image Understanding*, Vol. 65, No. 2 (Feb. 1997), pp.113-128.

- [26] M.J. Black and A.D. Jepson, Estimating multiple independent motions in segmented images using parametric models with local deformations, *IEEE PAMI* 18(10) (Oct. 1996), pp. 972-986.
- [25] M.R.M. Jenkin and A.D. Jepson, Recovering local surface structure through local phase difference measurements, *Computer Vision, Graphics, and Image Proc.: Image Understanding*, Vol. 59, No. 1 (1994), pp. 72-93.
- [24] D.J. Fleet and A.D. Jepson, Stability of phase information, *IEEE PAMI*, Vol. 15, No. 12 (1993), pp. 1253-1268.
- [23] A. Jepson and W. Richards, A lattice framework for integrating vision modules, *IEEE Trans. Sys. Man and Cyber.*, Vol. 22 No. 5 (1992), pp 1087-1096.
- [22] D.J. Heeger and A.D. Jepson, Subspace methods for recovering rigid motion, I: Algorithm and implementation, *Inter. J. of Computer Vision*, Vol. 7, No. 2 (Jan. 1992), pp. 95-117.
- [21] A.D. Jepson and D.J. Fleet, Phase singularities in scale-space, *Image and Vision Computing*, Vol. 9, No. 5 (Oct. '91), pp. 338-343.
- [20] T. Fairgrieve and A.D. Jepson, OK Floquet Multipliers, *SIAM J. Numerical Analysis*, Vol. 28, No. 5 (Oct. 1991), pp. 1446-1462.
- [19] A.D. Jepson, A. Spence, and K.A. Cliffe, The numerical solution of nonlinear equations having several parameters. Part III: Equations with Z2-Symmetry, *SIAM J. of Numer. Anal.*, Vol. 28, No. 3 (June 1991), pp.809-832.
- [18] D.J. Fleet, A.D. Jepson, and M. Jenkin, Phase-based disparity measurement, *Computer Vision, Graphics, and Image Processing: Image Understanding*, Vol. 53, No. 2, (March 1991) pp. 198-210.
- [17] M.R.M. Jenkin, A.D. Jepson, and J.K. Tsotsos, Techniques for disparity measurement, *Computer Vision, Graphics, and Image Processing: Image Understanding*, Vol. 53, No. 1, (Jan. 1991) pp. 14-30.
- [16] J.L. Barron, A.D. Jepson, and J.K. Tsotsos, The feasibility of motion and structure from noisy time-varying image velocity information, *International Journal of Computer Vision*, Vol. 5, No. 3, 1990, pp. 239-269.
- [15] D.J. Fleet and A.D. Jepson, Computation of component image velocity from local phase information, *International Journal of Computer Vision*, 5 (1), 1990, pp. 77-104.
- [14] D.J. Heeger and A.D. Jepson, Visual perception of three-dimensional motion, *Neural Computation*, 2, 1990, pp. 127-135.
- [13] M.R.M. Jenkin and A.D. Jepson, Response profiles of trajectory detectors, *IEEE Transactions on Systems, Man and Cybernetics*, Vol. 19, No. 6, 1989, pp. 1617-1622.
- [12] R. Gershon and A.D. Jepson, The computation of color constant descriptors in chromatic images, *Color Research and Application*, Vol. 14, No. 6, Dec. 1989, pp. 325-334.
- [11] A. Spence, K.A. Cliffe, and A.D. Jepson, A note on the calculation of paths of Hopf bifurcations, *J. Comp. Applied Math.*, V. 26 (1989), pp. 125-131, see also IBM Bergen Scientific Center, Tech Rep BSC 88/13.
- [10] B. Schneider, G. Moraglia, and A. Jepson, Binocular unmasking: An analog to binaural unmasking?, *Science*, Vol. 243 (March 1989), pp. 1479-1481.
- [9] D.J. Fleet and A.D. Jepson, On the hierarchical construction of orientation and velocity selective filters, *IEEE Trans. Pattern Analysis and Machine Intel.*, Vol. 2, No. 3 (March 1989), pp. 315-325.

- [8] A.D. Jepson and A. Spence, A reduction process for nonlinear equations, *SIAM J. Math. Anal.*, Vol. 20, No. 1 (Jan. 1989), pp. 39-56.
- [7] R. Gershon, A.D. Jepson, and J.K. Tsotsos, Ambient illumination and the determination of material changes, *J. Optical Society of America A*, Vol. 3-10 (Oct. 1986), pp.1700-1707.
- [6] A.D. Jepson and D.W. Decker, Convergence cones near bifurcation, *SIAM J. of Numer. Anal.*, Vol. 23, No. 5 (Oct. 1986), pp. 959-975.
- [5] D.J. Fleet and A.D. Jepson, Spatiotemporal inseparability in early vision: Center surround models and velocity selectivity, *Computational Intell.*, Vol. 1 (1985), pp.89-102.
- [4] D. Fleet, P. Hallett, and A.D. Jepson, Spatiotemporal inseparability in early visual processing, *Biological Cybernetics*, Vol. 52, No. 3 (1985), pp.153-164.
- [3] A.D. Jepson and A. Spence, The numerical solution of nonlinear equations having several parameters. Part I: Scalar equations, *SIAM J. of Numer. Anal.*, Vol. 22, No. 4 (1985), pp.736-759.
- [2] A.D. Jepson and A. Spence, Folds in solutions of two-parameter systems: Part I, *SIAM J. of Numer. Anal.*, Vol. 22, No. 2 (1985), pp.347-368.
- [1] A.D. Jepson and A. Spence, On implicit ordinary differential equations, *IMA J. Numer. Anal.*, 4 (1984), pp.253-274.

7b. Refereed Publications: Articles in Books and Proceedings

- [90] F. Flores-Mangas and A.D. Jepson, Fast rigid motion segmentation via incrementally-complex local models, *Proc. of IEEE Conf. on Computer Vision and Pattern Recognition (CVPR)*, Portland, USA, June 2013.
- [89] F. Flores-Mangas, A.D. Jepson, and M.A. Haider, Shape-based registration of contrast enhanced renal CT volumes, *Conf. on Comp. and Robot Vision (CRV)*, May 2012.
- [88] J. Taylor, A. Jepson, and K. Kutulakos, Non-rigid structure from locally rigid motion, *Proc. of IEEE Conf. on Computer Vision and Pattern Recognition (CVPR)*, San Francisco, USA, June 2010.
- [87] A. Ecker and A. Jepson, Polynomial shape from shading, *Proc. of IEEE Conf. on Computer Vision and Pattern Recognition (CVPR)*, San Francisco, USA, June 2010.
- [86] F. Estrada, D. Fleet, and A. Jepson, Stochastic image denoising, *British Machine Vision Conf. (BMVC)*, Sept. 2009.
- [85] Ady Ecker, Allan D. Jepson, and Kiriakos N. Kutulakos, Semidefinite Programming Heuristics for Surface Reconstruction Ambiguities, in *European Conference on Computer Vision*, Marseille, France, Oct. 2008.
- [84] Midori Hyndman, Allan Jepson, David Fleet. Higher-order Autoregressive Models for Dynamic Textures. *British Machine Vision Conference*, 2007.
- [83] A. Ecker, K. Kutulakos, and A. Jepson, Shape from planar curves: A linear escape from flat-land, *Computer Vision and Pattern Recognition (CVPR)*, Minneapolis, USA, June 2007.
- [82] F. J. Estrada, and A. D. Jepson, Robust boundary detection with adaptive grouping, *5th IEEE Workshop on Perceptual Organization in Computer Vision*, New York, U. S. A., June 2006.
- [81] F.J. Estrada and A.D. Jepson, Quantitative evaluation of a novel image segmentation algorithm, *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*. San Diego, CA, USA, July, 2005.

- [80] G. Carneiro and A.D. Jepson. The distinctiveness, detectability and robustness of local image features, Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR). San Diego, CA, USA, July, 2005.
- [79] C. Chennubhotla and A.D. Jepson, Hierarchical eigensolver for transition matrices in spectral methods, in Advances in Neural Information Processing Systems (NIPS), Vol. 15, Vancouver, Dec. 2004.
- [78] F.J. Estrada, A.D. Jepson and C. Chennubhotla, Spectral embedding and min-cut for image segmentation, in British Machine Vision Conference (BMVC). Cambridge, UK, Aug. 2004 .
- [77] F.J. Estrada and A.D. Jepson, Perceptual grouping for contour extraction, Proceedings of the IEEE International Conference on Pattern Recognition (ICPR). Cambridge, UK, Aug. 2004 (4pp).
- [76] Chakra Chennubhotla and A.D. Jepson, Perceptual distance normalization for appearance detection, Proceedings of the IEEE International Conference on Pattern Recognition (ICPR). Cambridge, UK, Aug. 2004 (4pp).
- [75] Gustavo Carneiro and A.D. Jepson. Pruning local feature correspondences using shape context, Proceedings of the IEEE International Conference on Pattern Recognition (ICPR). Cambridge, UK, Aug. 2004 (4pp).
- [74] Gustavo Carneiro and A.D. Jepson. Flexible spatial models for grouping local image features. Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR). Washington, DC, USA, July, 2004 (8pp). See also Tech. Report CSRG-481.
- [73] C. Sminchisescu and A.D. Jepson, Variational mixture smoothing for non-linear dynamical systems, Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR), Washington, DC, USA, July, 2004 (8pp). See also Tech. Report CSRG-479, Nov. 2003.
- [72] C. Sminchisescu and A.D. Jepson, Generative modeling for continuous non-linearly embedded visual inference, Int. Conf. on Machine Learning (ICML), Edmonton, 2004 (8pp). See also Tech. Reports CSRG-477, Sept. 2003 and CSRG-484, Feb. 2004.
- [71] M. Sun, A.D. Jepson, and E. Fiume, Video Driven Animation (VIDA), Proc. of IEEE Int. Conf. on Computer Vision, Nice, France, 2003 (8pp).
- [70] G. Carneiro and A.D. Jepson, Multi-scale phase-based local features, Proc. of IEEE Conf. on Computer Vision and Pattern Recognition (CVPR03), Madison, June 2003.
- [69] C. Chennubhotla and A.D. Jepson, Half-Lives of EigenFlows for Spectral Clustering, NIPS 2002.
- [68] C. Chennubhotla, A.D. Jepson and J. Midgley, Robust contrast-invariant eigenDetection, IEEE Int. Conf. on Pattern Recognition, Quebec City, Aug. 2002 (4pp.).
- [67] T. F. El-Maraghi and A.D. Jepson, Saturated independent color coordinates for image alignment, IEEE Int. Conf. on Pattern Recognition, Quebec City, Aug. 2002 (4pp).
- [66] R. Mann, A. D. Jepson, and T. F. El-Maraghi, Trajectory segmentation using dynamic programming, IEEE Int. Conf. on Pattern Recognition, Quebec City, Aug. 2002 (4pp).
- [65] R. Mann and A.D. Jepson, Detection and classification of motion boundaries, National Conf. on Artificial Intelligence (AAAI '02), Edmonton, Alberta, July 2002 (6pp).
- [64] G. Carneiro and A.D. Jepson, Local phase-based features, Proc. of European Conf. on Computer Vision (ECCV'02), Copenhagen, May 2002 (15pp).

- [63] A.D. Jepson, D.J. Fleet and M.J. Black, A layered motion representation with occlusion and compact spatial support, Proc. of European Conf. on Computer Vision (ECCV'02), Copenhagen, May 2002, Vol. I, pp. 692-706.
- [62] A.D. Jepson, D.J. Fleet and T.F. El-Maraghi, Robust on-line appearance models for visual tracking, in IEEE Proc. of Computer Vision and Pattern Recognition (CVPR'01), Kuauai, Dec 2001, Vol. I, pp.415-422 [**Best Paper Runner-Up Award**].
- [61] C. Chennubhotla and A.D. Jepson, Sparse PCA: Extracting multi-scale structure from data, IEEE International Conference on Computer Vision, Vancouver, July 2001, Vol. I, pp. 641-647.
- [60] A.D. Jepson and R. Mann, Qualitative probabilities for image interpretation, in IEEE Proc. Int. Conf. on Computer Vision, Kerkyra, Greece (1999), pp.1123-1130.
- [59] R. Herpers, G. Verghese, M. Jenkin, E. Miliios, A. Jepson, and J.K. Tsotsos, SAVI: An Actively Controlled Teleconferencing System, Second IEEE Workshop on Perception for Mobile Agents Fort Collins, Colorado, June 26, 1999.
- [58] R. Herpers, G. Verghese, L. Chang, K. Darcourt, K. Derpanis, J. Kaufman, M. Jenkin, E. Miliios, A. Jepson, and J. K. Tsotsos, An Active Stereo Vision System for Recognition of Faces and Related Hand Gestures, Second International Conference on Audio- and Video-based Biometric Person Authentication (AVBPA), Washington D. C., USA, March 22-24, 1999, pp.211-216.
- [57] M.J. Black and A.D. Jepson, A probabilistic framework for matching temporal trajectories: Condensation-based recognition of gestures and expressions, in Proc. European Conf. on Computer Vision (ECCV'98), Freiburg, June 1998, pp.909-924.
- [56] D.J. Fleet, M.J. Black and A.D. Jepson, Motion feature detection using steerable flow fields, in Proc. of Computer Vision and Pattern Recognition (CVPR'98), Santa Barbara, CA, June 1998, pp.274-281.
- [55] R. Mann and A.D. Jepson, Towards the computational perception of action, in Proc. of Computer Vision and Pattern Recognition (CVPR'98), Santa Barbara, CA, June 1998, pp.794-799.
- [54] M.J. Black and A.D. Jepson, Recognizing temporal trajectories using the condensation algorithm, in Int. Conf. on Automatic Face and Gesture Recognition, Nara, Japan, April 1998, pp.16-21.
- [53] M. Black, F. Berard, A. Jepson, W. Newman, E. Saund, G. Socher and M. Taylor, The Digital Office: Overview, in AAAI Spring Symposium on Intelligent Environments, Stanford, March, 1998, pp.1-6.
- [52] M.J. Black, Y. Yacoob, A.D. Jepson, and D.J. Fleet, Learning parameterized models of image motion, IEEE Conf. on Computer Vision and Pattern Recognition, CVPR-97, Puerto Rico, June 1997, pp. 561-567.
- [51] S.X. Ju, M.J. Black, and A.D. Jepson, Skin and Bones: Multi-layer, locally affine optical flow and regularization with transparency, IEEE Conf. on Comp. Vis. and Pattern Recog., San Francisco, June 1996, pp. 307-314.
- [50] M.J. Black and A.D. Jepson, EigenTracking: Robust matching and tracking of articulated objects using a view-based representation, Proc. 4th European Conf. on Computer Vision, Cambridge, April 1996, pp. 329-342.
- [49] R. Mann, A. Jepson, and J.M. Siskind, Computational perception of scene dynamics, Proc. 4th European Conf. on Computer Vision, Cambridge, April 1996, pp. 528-539.
- [48] W. Richards, A. Jepson, and J. Feldman, Priors, preferences and categorical percepts, in Perception as Bayesian Inference, Eds. W. Richards and D. Knill, Camb. Univ. Press (1996).

- [47] A. Jepson, W. Richards, and D. Knill, Modal structure and reliable perceptual inferences, in Perception as Bayesian Inference, Eds. W. Richards and D. Knill, Camb. Univ. Press (1996).
- [46] D. Wilkes, N. Bains, J. Bruce, T. Campbell, P. Jasiobedzki, M. Jenkin, A. Jepson, B. Majarais, E. Miliotis, A. Mohindra, S.B. Nickerson, M. Scott, J. Service, D. Terzopoulos and J. Tsotsos, ARK-2: A Mobile Robot that Navigates Autonomously in an Industrial Environment, DND/CSA 1995 Robotics and Knowledge Based Systems Workshop, Oct. 1995.
- [45] J.K. Tsotsos, S. Dickinson, M. Jenkin, E. Miliotis, A. Jepson, B. Down, E. Amdur, S. Stevenson, M. Black, D. Metaxas, J. Cooperstock, S. Culhane, F. Nufflo, G. Verghese, W. Wai, D. Wilkes, Y. Ye, The PLAYBOT Project, Proc. IJCAI Workshop on AI Applications for Disabled People, Aug 19, Montreal, 1995.
- [44] W.J. MacLean, A. Jepson, and R. Frecker, Recovery of egomotion and segmentation of independent object motion using the EM-algorithm, in Proc. of British Machine Vision Conf., York, 1994, pp. 175-184.
- [43] M. Jenkin and A. Jepson, Detecting floor anomalies, in Proc. of British Machine Vision Conf., York, 1994, pp. 731-740.
- [42] M. Jenkin, N. Bains, J. Bruce, T. Campbell, B. Down, P. Jasiobedzki, A. Jepson, B. Majarais, E. Miliotis, S.B. Nickerson, J. Service, D. Terzopoulos, J. Tsotsos, and D. Wilkes, ARK: Autonomous mobile robot for an industrial environment, IROS'94, Munich, Sept. 1994.
- [41] S.B. Nickerson, P. Jasiobedzki, M. Jenkin, A. Jepson, E. Miliotis, B. Down, J. Service, D. Terzopoulos, J. Tsotsos, D. Wilkes, N. Bains, and T. Campbell, ARK: Autonomous mobile robot in an industrial environment, Proc. AIAA/NASA Conference on Intelligent Robots, CIRFFSS'94, Houston, March 1994.
- [40] M. Black and A. Jepson, Estimating multiple independent motions in segmented images using parametric models with local deformations, IEEE Workshop on Non-rigid and Articulate Motion, Austin, TX (1994).
- [39] A. Jepson and M. Black, Mixture models for optical flow computation, in Proceedings of the DIMACS Workshop on Partitioning Data Sets: With Applications to Psychology, Vision and Target Tracking, Eds Ingmer Cox, Pierre Hansen, and Bela Julesz, AMS Pub., Providence, RI (1995), pp. 271-286.
- [38] Z. Wang and A. Jepson, A New Closed-Form Solution for Absolute Orientation, in Proc. of IEEE Conf on Comp. Vis. and Pat. Rec., Seattle, 1994, pp. 129-134.
- [37] R. Mann and A. Jepson, Non-accidental features in learning, In K. Bowyer and L. Hall, editors, Machine Learning in Computer Vision: What, Why and How?, AAAI Fall Symposium Series, Raleigh, NC. AAAI Press, 1993.
- [36] S.B. Nickerson, M. Jenkin, E. Miliotis, B. Down, P. Jasiobedzki, A. Jepson, D. Terzopoulos, J. Tsotsos, D. Wilkes, N. Bains, and K. Tran, Design of ARK, a sensor-based mobile robot for industrial environments, Proc. of Intelligent Vehicles 93, Yokohama, Japan, 252-257, 1993.
- [35] Eyal Shavit and Allan Jepson, Motion Understanding Using Phase Portraits, IJCAI workshop: Looking at People, Chambery, France, August 1993.
- [34] Eyal Shavit and A. Jepson, Qualitative Motion from Visual Dynamics, IEEE workshop on Qualitative Vision, New York, June 1993.
- [33] A. Jepson and M. Black, Mixture models for optical flow, in Proc of IEEE CVPR, New York, 1993, pp.760-761 (see also Res. in Biol. and Comp. Vision, DCS, Univ. of Toronto, RBCV-TR-93-44).

- [32] S.B. Nickerson, M. Jenkin, E. Milios, B. Down, P. Jasiobedzki, A. Jepson, D. Terzopoulos, J. Tsotsos, D. Wilkes, N. Bains, and K. Tran, ARK: Autonomous navigation of a mobile robot in a known environment, Proc. of the Int'l Conf. Intelligent Autonomous Systems, IAS-3, pp.288-296, Pittsburg, Feb. 1993.
- [31] W. Richards, J. Feldman, and A. Jepson, From features to perceptual categories, in Proc. of British Machine Vision Conference, Leeds, 1992.
- [30] R. Gershon, A.D. Jepson, and J.K. Tsotsos, Ambient illumination and the determination of material changes, in Physics-Based Vision: Principles and Practice, Vol.2 - Color, Healey, Shafer, Wolff (eds.), Jones and Bartlett Pub, Boston (1992), pp. 101-108.
- [29] E. Shavit and A.D. Jepson, A premise based approach to motion estimation, Proc. Vision Interface (May 1992).
- [28] A.D. Jepson and D.J. Heeger, A fast subspace algorithm for recovering rigid motion, Proc. of IEEE Workshop on Visual Motion, Princeton, NJ (Oct. 1991), pp.124-131.
- [27] D.J. Fleet and A.D. Jepson, Stability of phase information, Proc. of IEEE Workshop on Visual Motion, Princeton, NJ (Oct. 1991), pp.52-60.
- [26] D.J. Heeger, A.D. Jepson and E.P. Simoncelli, Model of cell responses in visual area MT, Proc. of IEEE Workshop on Visual Motion, Princeton, NJ (Oct. 1991), pp.95-100.
- [25] D.J. Heeger and A.D. Jepson, Simple method for computing 3D motion and depth, Proc. 3rd Int. Conf. on Computer Vision, Osaka, Japan, Dec. 1990, pp. 96-100.
- [24] A.D. Jepson and D.J. Fleet, Scale-space singularities, in Proc. of First European Conf. on Computer Vision, Antibes, France, April 1990.
- [23] J. Barron, A. Jepson, and J.K. Tsotsos, Binocular motion and structure from monocular motion and structure, 5th International Conference on Image Analysis and Processing, Positano, Italy, Sept. 1989.
- [22] A.D. Jepson and M.R.M. Jenkin, The fast computation of disparity from phase differences, Proceedings of IEEE Computer Vision and Pattern Recognition, San Diego, CA (1989), pp. 398-403.
- [21] D.J. Fleet and A.D. Jepson, Computation of normal velocity from local phase information, Proceedings of IEEE Computer Vision and Pattern Recognition, San Diego, CA (1989), pp. 379-386.
- [20] M.R.M. Jenkin and A.D. Jepson, Measuring trajectory, IEEE Workshop on Visual Motion, Irvine, CA (1989), pp.31-37.
- [19] J.L. Barron, A.D. Jepson and J.K. Tsotsos, The feasibility of motion and structure computations, Proc. of 2nd IEEE International Conference on Computer Vision, Tampa, Florida (1988), pp. 651-657.
- [18] M.R.M. Jenkin and A.D. Jepson, The measurement of binocular disparity, Proc. 4th International Conference on Image Analysis and Processing, Sicily, Italy, Sept 23-25, 1987, in *Image Analysis and Processing II*, eds. V. Cantoni, V. Di Gesu, and S. Levialdi, Plenum, NY (1988), pp. 237-244.
- [17] M.R.M. Jenkin, A.D. Jepson, and J.K. Tsotsos, Integrating disparity measurements over space and spatial-frequency, Proc. 4th International Conference on Image Analysis and Processing, Sicily, Italy, Sept 23-25, 1987, in *Image Analysis and Processing II*, eds. V. Cantoni, V. Di Gesu, and S. Levialdi, Plenum, NY (1988), pp. 305-312.
- [16] J.L. Barron, A.D. Jepson, and J.K. Tsotsos, Determination of egomotion and environmental layout from noisy time-varying image velocity in monocular image sequences, Proc. 4th

- International Conference on Image Analysis and Processing, Sicily, Italy, Sept 23-25, 1987, in *Image Analysis and Processing II*, eds. V. Cantoni, V. Di Gesu, and S. Levialdi, Plenum, NY (1988).
- [15] J.K. Tsotsos, D.J. Fleet, and A.D. Jepson, Towards a theory of motion understanding in man and machine, in *Motion Understanding: Robot and Human Vision*, Eds. W.N. Martin and J.K. Aggarwal, Kluwer Academic Pub., Hingham, MA (1988),pp. 353-417.
 - [14] M.R.M. Jenkin, A.D. Jepson, and J.K. Tsotsos, Local surface structure from disparity measurements, Cambridge Symposium on Advances in Intelligent Robotics Systems, SPIE, Vol. 850 (Nov. 1987), pp.140-145.
 - [13] J.L. Barron, A.D. Jepson, and J.K. Tsotsos, Determination of egomotion and environmental layout from noisy time-varying image velocity in monocular image sequences, Proc. International Joint Conference on Artificial Intelligence, Milan, 1987.
 - [12] R. Gershon, A.D. Jepson, and J.K. Tsotsos, From [R,G,B] to surface reflectance: Computing color constant descriptors in images, Proc. International Joint Conference on Artificial Intelligence, Milan, 1987, pp. 755-758.
 - [11] R. Gershon, A.D. Jepson, and J.K. Tsotsos, The use of color in highlight identification, Proc. International Joint Conference on Artificial Intelligence, Milan, 1987, pp. 752-754.
 - [10] A.D. Jepson, R. Gershon, and P.E. Hallett, Cones, colour constancy, and photons, Proc. Int. Symp. of the Northern Eye Institute, Manchester, U.K., 1987, also in *Seeing Contour and Colour*, Eds. J.J. Kulikowski, C.M. Dickinson, and I.J. Murray, Pergamon Press, Oxford, 1989, pp. 768-776.
 - [9] J.L. Barron, A.D. Jepson, and J.K. Tsotsos, The sensitivity of motion and structure computations, Proc. American Association for Artificial Intelligence, Seattle, 1987.
 - [8] R. Gershon, A.D. Jepson, and J.K. Tsotsos, Highlight identification using chromatic information, Proc. IEEE 1st International Conference on Computer Vision, London, England (1987), pp. 161-170.
 - [7] D.J. Fleet and A.D. Jepson, The extraction of orientation and 2-D velocity through hierarchical processing, in SPIE 594 (Image Coding), Cannes, France (Dec. 1985), pp. 10-20.
 - [6] D.J. Fleet and A.D. Jepson, Velocity extraction without form interpretation, Proc. of 3rd Workshop on Computer Vision: Representation and Control, Bellaire, Michigan (Oct. 1985),pp.179-185.
 - [5] J.K. Tsotsos, A.D. Jepson, and D.J. Fleet, Motion understanding meets early vision: An introduction, IEEE Conference on Applications of Artificial Intelligence, Denver (Dec. 1984), pp.239-244.
 - [4] A. Spence and A.D. Jepson, The numerical computation of cusps, bifurcation points, and isola formation points in two parameter problems, in *Numerical Methods for Bifurcation Problems, ISNM 70*, eds. T. Kupper, H.D. Mittelman, and H. Weber, Birkhauser, Stuttgart (1984),pp.502-514.
 - [3] A.D. Jepson and A. Spence, Singular points and their computation, in *Numerical Methods for Bifurcation Problems, ISNM 70*, eds. T. Kupper, H.D. Mittelman, and H. Weber, Birkhauser, Stuttgart (1984),pp.195-209.
 - [2] A.D. Jepson and H. B. Keller, Steady state and periodic solution paths; their bifurcations and computation, in *Numerical Methods for Bifurcation Problems, ISNM 70*, eds. T. Kupper, H.D. Mittelman, and H. Weber, Birkhauser, Stuttgart (1984),pp.219-246.

- [1] A. Spence and A.D. Jepson, The numerical computation of turning points of nonlinear equations, in *The Numerical Treatment of Integral Equations*, eds. C.T.H. Baker and G.F. Miller, Academic Press (1982), pp.169-183.

8. Non-refereed Publications

8a. Articles in Books and Proceedings

- [22] C. Chennubhotla and A.D. Jepson, Sparse coding in practice, Workshop on Statistical and Computational Theories of Vision (at ICCV'01), Vancouver, July 2001 (23pp).
- [21] A. Jepson and J. Feldman, A Biased View of Perceivers; Commentary on 'Observer theory, Bayes theory, and psychophysics,' by B. Bennett, et al. in *Perception as Bayesian Inference*, eds. D. Knill and W. Richards, Cambridge Univ. Press (1996), pp.229-235.
- [20] A. Jepson, Comparing Stories; Commentary on 'Experiencing and perceiving visual surfaces,' by K. Nakayama and S. Shimojo, in *Perception as Bayesian Inference*, eds. D. Knill and W. Richards, Cambridge Univ. Press (1996), pp.478-488.
- [19] A. Jepson, The Modal Workshop; A commentary on 'The perception of shading and reflectance,' in *Perception as Bayesian Inference*, eds. D. Knill and W. Richards, Cambridge Univ. Press (1996), pp.488-495.
- [18] D. Wilkes, N. Bains, J. Bruce, T. Campbell, P. Jasiobedzki, M. Jenkin, A. Jepson, B. Majarais, E. Miliotis, A. Mohindra, S.B. Nickerson, M. Scott, J. Service, D. Terzopoulos and J. Tsotsos, ARK-2: A Mobile Robot that Navigates Autonomously in an Industrial Environment, DND/CSA 1995 Robotics and Knowledge Based Systems Workshop, Oct., 1995.
- [17] R. Mann and A. Jepson, "Support" in support of vision, in Proc. of Functionality Workshop, Comp. Vis. and Pat. Rec. Conf., Seattle, 1994.
- [16] E. Shavit and A. Jepson, The Pose Function: An Intermediate Level Representation for Motion Understanding, 10th Israeli Symposium on AI and Vision, Tel Aviv, Dec. 1993.
- [15] J. Feldman, A. Jepson, and W. Richards, Is perception for real?, in Proc. of Conf. on Cognition and Representation, SUNY Buffalo, April 1992.
- [14] D.J. Heeger and A.D. Jepson, Neural network for recovering observer motion, in *Progress in Neural Networks*, Eds. O. Omidvar and R. Mohan, Ablex Pub., Norwood, NJ.
- [13] A.D. Jepson and W. Richards, What makes a good feature?, in *Spatial Vision in Humans and Robots*, Eds. L. Harris and M. Jenkin, Cambridge Univ. Press, pp.89-126. See also MIT AI Memo 1356 (1992).
- [12] A.D. Jepson and D.J. Heeger, Linear subspace methods for recovering translational direction, in *Spatial Vision in Humans and Robots*, Eds. L. Harris and M. Jenkin, Cambridge Univ. Press, pp.39-62. (See also Research in Biological and Computational Vision, Department of Computer Science, Univ. of Toronto, RBCV-TR-90-40, Apr. 1992.)
- [11] D.J. Fleet and A.D. Jepson, Computation of normal velocity from local phase information, 1989 Technical Digest Series, Vol. 14, Optical Soc. of America, Washington, D.C. (1989), pp. 58-61.
- [10] D.J. Fleet and A.D. Jepson, Computation of normal velocity from local phase information, U. Buffalo Grad. Conf. in Computer Sci., March 1989 (invited; Proceedings available as SUNY Buffalo TR).
- [9] R. Gershon and A.D. Jepson, Discounting illuminants beyond the sensor level, *Intelligent Robots and Computer Vision: Vol. 7*, (Ed.) David P. Casasent, Proc. SPIE 1002 (invited), Boston (1988), pp. 250-257.

- [8] M.R.M Jenkin and A.D. Jepson, The measurement of binocular disparity, *Computational Processes in Human Vision: An interdisciplinary perspective*, ed. Z. Pylyshyn, Ablex Press, Norwood, NJ (1988), pp. 69-98.
- [7] R. Gershon and A.D. Jepson, Non-linear Models of Early Chromatic Processing, *Visual Communications and Image Processing II*, T. Russell Hsing (ed.), Proc. SPIE 845, Boston, Massachusetts, (1987) pp. 132-139.
- [6] A.D. Jepson and A. Spence, Numerical methods for bifurcation problems, in *The State of the Art in Numerical Analysis*, eds. M J D Powell and A Iserles , Oxford University Press (1987).
- [5] D.J. Fleet and A.D. Jepson, Measurement of orientation and image velocity through hierarchical processing, *Optical Soc. of Am. Annual Meeting*, Washington, DC, Oct. 1985, (abstract in *Optical Letters*, 1985, and *JOSA*, Jan. 1986)
- [4] K.A. Cliffe, A.D. Jepson, and A. Spence, The numerical solution of bifurcation problems with symmetry, with application to the finite Taylor problem, *Proc. of the ICFD Conf. on Num. Meth. for Fluid Dyn.*, Reading, U.K. (April 1985), also Harwell Report TP.1138 (June, 1985).
- [2] E. Doedel, A.D. Jepson and H. B. Keller, Numerical methods for Hopf bifurcation and continuation of periodic solution paths, in *Comp. Methods in Appl. Sci. and Eng. (4)*, eds. R. Glowinsky and J. L. Lions, North Holland, Amsterdam (1984).
- [1] A. Spence and A.D. Jepson, Numerical techniques for nonlinear multi- parameter problems, in *Numerical Analysis, Dundee 1983, Lecture Notes in Mathematics*, Springer, Berlin (1983).

8b. Technical Reports

- [18] F. Estrada and A.D. Jepson, Controlling the Search for Convex Groups, Technical Report CSRG-482, January 2004 (15pp).
- [17] A.D. Jepson and M.J. Black, Mixture models for image representation, PRECARN ARK Project Technical Report ARK96-PUB-54, March 1996.
- [16] A.D. Jepson and M.J. Black, Mixture models for optical flow computation, *Research in Biological and Computational Vision*, Department of Computer Science, Univ. of Toronto, RBCV-TR-93-44, Apr. 1993.
- [15] A. Jepson and W. Richards, What is a percept?, *Research in Biological and Computational Vision*, Department of Computer Science, Univ. of Toronto, RBCV-TR-93-43, Apr. 1993.
- [14] A. Jepson and W. Richards, What is a percept?, *MIT Cog. Sci. Memo* 43, 1991.
- [13] A.D. Jepson and D.J. Heeger, Subspace methods for recovering rigid motion, II: Theory, *Research in Biological and Computational Vision*, Department of Computer Science, Univ. of Toronto, RBCV-TR-90-36, Nov. 1990.
- [12] D.J. Heeger and A.D. Jepson, Subspace methods for recovering rigid motion, I: Algorithm and implementation, *Research in Biological and Computational Vision*, Department of Computer Science, Univ. of Toronto, RBCV-TR-90-35, Nov. 1990.
- [11] D.J. Fleet, A.D. Jepson, and M. Jenkin, Phase-based disparity measurement, *Research in Biological and Computational Vision*, Department of Computer Science, Univ. of Toronto, RBCV-TR-90-29, 1989.
- [10] D.J. Fleet and A.D. Jepson, Computation of normal velocity from local phase information, *Research in Biological and Computational Vision*, Department of Computer Science, Univ. of Toronto, RBCV-TR-89-27, March 1989.
- [9] M.R.M. Jenkin, A.D. Jepson, and J.K. Tsotsos, Techniques for disparity measurement, RBCV-TR-87-16, 1987.

- [8] A.D. Jepson, A. Spence, and K.A. Cliffe, Hopf along a fold, Harwell Report TP.1264, Oct. 1987.
- [7] A.D. Jepson, A. Spence, and K.A. Cliffe, The numerical solution of nonlinear equations having several parameters. Part III: Equations with Z2-Symmetry, Harwell Report TP.1210, Jan. 1987..
- [6] R. Gershon, A.D. Jepson, and J.K. Tsotsos, The effects of ambient illumination on the structure of shadows in chromatic images, RBCV-TR-86-9, 1986.
- [5] D. Fleet and A.D. Jepson, A cascaded filter approach to the construction of velocity selective mechanisms, RBCV-TR-84-6, 1984.
- [4] D. Fleet, A.D. Jepson and P. Hallett, A spatio-temporal model for early visual processing, RBCV-TR-84-1, Apr. 1984.
- [3] D. W. Decker and A.D. Jepson, Convergence cones near bifurcation, Tech. Rep. 171/84, Dept. of Comp. Sci., Univ. of Toronto, March 1984.
- [2] A.D. Jepson and A. Spence, The numerical solution of nonlinear equations having several parameters. Part I: Scalar equations, Tech. Rep. 168/83, Dept. of Comp. Sci., Univ. of Toronto.
- [1] A.D. Jepson and A. Spence, Folds in solutions of two-parameters systems: Part I, Tech. Report NA-82-02, Computer Science Department, Stanford University, Stanford, CA. 1982.

9. Manuscripts

10. Papers presented at meetings and symposia

(See Sections 7a and 8a above for additional presentations in which the papers also appear in published proceedings, and Section 11 for invited presentations. These are not duplicated below.)

- [17] J.D. Wilder, M. Rezanejad, S. Dickinson, A. Jepson, K. Siddiqi, and D.B. Walther, The role of symmetry in scene categorization by human observers, MODVIS, Computational and Mathematical Models in Vision, Florida, USA, May 17-19, 2017.
- [16] M. Rezanejad, J. Wilder, S. Dickinson, A. Jepson, D. B. Walther, and K. Siddiqi, Scoring scene symmetry, MODVIS, Computational and Mathematical Models in Vision, Florida, USA, May 17-19, 2017.
- [15] J.D. Wilder, S. Dickinson, A.D. Jepson and D.B. Walther, Disentangling the Roles of Junctions and Spatial Relations Between Contours for Scene Categorization, MODVIS, Computational and Mathematical Models in Vision (Abstract), St. Pete Beach, Florida, May 11-13, 2016.
- [14] A.D. Jepson and W. Richards, What is a Percept?, 12th Ann. Conf. of the Cognitive Science Society, Cambridge, Mass., July 1990.
- [13] A.D. Jepson and D. Heeger, Egomotion without Depth Estimation, Optical Society of America Annual Meeting, Orlando, Florida, Oct. 1989.
- [12] D.J. Fleet and A.D. Jepson, Computation of normal velocity from local phase information, OSA Meeting on Image Understanding and Machine Vision, Cape Cod, June 1989.
- [11] A.D. Jepson, P.E. Hallett, and R. Gershon, Cones, Colour Constancy and Photons, Meeting of the Toronto Vision Community, York Univ., Oct. 1987.
- [10] A.D. Jepson, Towards Self-Organizing Feature Maps, CIAR Annual Meeting, Mont Ste. Marie, Quebec, Oct. 1987.
- [9] A.D. Jepson, P.E. Hallett, and R. Gershon, Cones, Colour Constancy and Photons, Symposium on Noise and Disorder in Vision, Univ. of Toronto, June 1987.

- [8] A.D Jepson, The measurement of visual primitives, CIAR-UWO Workshop on Vision, April 25-27, 1986.
- [7] D.J. Fleet and A.D Jepson, Measurement of orientation and velocity information through hierarchical processing, Optical Soc. of America, Ann. Meeting, Washington D.C., Oct. 14-18, 1985.
- [6] A.D Jepson, The computation of singular points, Gordon Research Conference on Oscillations and Dynamical Instabilities in Chemical Systems, Plymouth, N.H., July 22-25, 1985.
- [5] A.D Jepson, The numerical computation of singular points, AMS-IMS-SIAM Summer Research Conference on Multi-Parameter Bifurcation Theory, Arcata, Calif., July 15-19, 1985.
- [4] A.D Jepson, A numerical approach for the analysis of multi-parameter nonlinear systems, Oberwolfach, West Germany, May 7-11, 1984.
- [3] A.D Jepson and A. Spence, Paths of singular points and their computation, Numerical Methods for Bifurcation Problems, Universitat Dortmund, August 1983.
- [2] A.D Jepson, Do chemical reactors have organizing centers?, CAMS, University of Toronto, June 22, 1983.
- [1] A.D Jepson, Paths of singular points in nonlinear equations, and their computation, Southern Ontario Numerical Analysis Meeting, University of Waterloo, April 29, 1983.

11. Invited Lectures

- [13] A.D. Jepson, Spectral Methods for Image Segmentation, CIAR Neural Computation and Adaptive Perception Meeting, Vancouver, Dec 3-4, 2006.
- [12] A.D. Jepson, Towards image sequence parsing, at Computation Vision in Neural and Machine Systems, Center for Vision Research, York University, June 15-18, 2005.
- [11] A. Jepson, Modal structure and reliable perceptual inferences, Inst. for Res. in Cogn. Sci., Univ. of Penn., Philadelphia, PA, Apr. 12, 1995.
- [10] A. Jepson, Mixture models for 2D and 3D motion interpretation, Inst. for Res. in Cogn. Sci., Univ. of Penn., Philadelphia, PA, Apr. 10, 1995.
- [9] A. Jepson, Modal structure and reliable perceptual inferences, Center for Cognitive Sci, SUNY Buffalo, Apr. 5, 1995.
- [8] A. Jepson, Modal structure and reliable perceptual inferences, NEC Vision Workshop, Princeton, NJ, Mar. 8, 1995.
- [7] A. Jepson, Modal Structure and Reliable Perceptual Inferences, Rutgers Univ., Center for Cogn. Sci., Dec. 5, 1994.
- [6] A. Jepson, Reliable Perceptual Inferences, Xerox PARC, Sept. 1, 94.
- [5] A. Jepson and W. Richards, What is a percept?, Workshop on Visual Perception: Computation and Psychophysics, Chatham, MA, Jan. 1993.
- [4] A.D. Jepson and D.J. Heeger, Closed form subspace algorithm for recovering rigid motion, Conf. on Spatial Vision in Humans and Robots, York Univ., June 1991.
- [3] W. Richards and A.D. Jepson, Integrating vision modules, Conf. on Spatial Vision in Humans and Robots, York Univ., June 1991.
- [2] W. Richards and A.D. Jepson, Lattice Theory of Perception, Visual Information Assimilation in Man and Machine, University of Michigan, Ann Arbor, June 1990.

- [1] A.D. Jepson and W. Richards, Perception and Perceivers, Vision and Three Dimensional Representation Conference, University of Minnesota, May 25, 1989.

D. LIST OF COURSES

12a. Undergraduate Courses Taught

CSC 139H	Introduction to Computer Science
CSC 148H	Introduction to Computer Science
CSC 150H	Accelerated Introduction to Computer Science
CSC 238H	Discrete Mathematics for Computer Science
CSC 260H	Scientific, Symbolic and Graphical Computation
CSC 270H	Fundamental Data Structures and Techniques
CSC 320H	Introduction to Visual Computing
CSC 350H	Numerical Algebra and Optimization
CSC 351H	Introduction to Numerical Analysis
CSC 373H	Algorithm Design and Analysis
CSC 420H	Image Understanding
CSC 446H	Computational Methods for Partial Differential Equations

12b. Graduate Courses Taught

CSC 2310H Computational Methods for Partial Differential Equations

I had a major responsibility for the design of the following courses:

CSC 2324H Advanced Methods for Partial Differential Equations

CSC 487/2503H Foundations of Computer Vision

CSC 2539H Topics in Computer Vision

12c. Theses Supervised

Career Student Numbers		
	In Progress	Completed
Masters	0	16
PhD	0	17
Postdoctoral Fellows	0	3

Ph.D. Theses Supervised (Computer Science)

- [17] Fernando Flores-Mangas, Model Fitting for Motion Segmentation, Jan. 2006 - Oct. 2015.
- [16] Jon Taylor, Non-Rigid Structure from Locally Rigid Motion, co-supervised with Kyros Kutulakos, Sept. 2008 - Oct. 2013.
- [15] Ady Ecker, Linear, Discrete and Quadratic Constraints in Single-Image 3D Reconstruction, co-supervised with Kyros Kutulakos, Sept. 2005 - Aug. 2010.
- [14] Shahzad Malik, An Exploration of Multi-finger Interaction on Multi-touch Surfaces, Sept. 2002 - Sept. 2007.
- [13] Francisco Estrada, Perceptual Grouping for Contour and Region Extraction, Sept. 2001 - Jan. 2005.

- [12] Gustavo Carneiro, Image Pattern Recognition Using Phase-based Local Features and Their Flexible Spatial Configuration, Sept. 1999 - August 2004.
- [11] Chakra Chennubhotla, Spectral Methods for Multi-Scale Feature Extraction and Data Clustering, Sept. 1995 - Jan. 2004.
- [10] Thomas El-Maraghi, Robust Online Appearance Models for Visual Tracking, Sept. 1996 - Feb. 2003.
- [9] Xuan Ju, Estimating Image Motion in Layers: The "Skin and Bones" Model, (co-supervised with M. Black) Sept. 94 - Jan. 99.
- [8] Richard Mann, Computational Perception of Scene Dynamics, Sept. 1991-1997.
- [7] James MacLean, Recovery of Egomotion and Segmentation of Independent Object Motion using the EM-Algorithm, Sept. '92 - Jan. 96, Dept. of Elec. and Comp. Eng.
- [6] Vince Canale, The Computation of Paths of Homoclinic Orbits, Sept. 1988 - 1994.
- [5] Eyal Shavit, Phase portraits for analyzing visual dynamics, Sept. 1990 - Jan. 1994.
- [4] Tom Fairgrieve, The Computation and Use of Floquet Multipliers for Bifurcation Analysis, Sept. 1986 - Jan. 1994.
- [3] David Fleet, Measurement of Image Velocity, Oct. 1984 - Jan. 1991.
- [2] John Barron, Computing Motion and Structure from Noisy Time-Varying Image Velocity Information, (co-supervised with J.K. Tsotsos) Sept. 1984 - June 1988.
- [1] Ron Gershon, The Use of Colour in Computational Vision, (co-supervised with J.K. Tsotsos) Sept. 1984 - June 1987.

M.Sc. Research Paper Supervised (Computer Science)

- [5] Josh Philip, Expressive Priors using Dependent Chinese Restaurant Processes, Dec. 2012 - Aug. 2013.
- [4] Simon Pelchat, Rigid Object Reconstruction while Tracking, Sept. 2009 - Apr. 2011.
- [3] Pardis Beikzadeh, Stochastic Pixel Similarity Functions with Neighbourhood Information, Sept. 2008 - Sept. 2010.
- [2] Michael Guerzhoy, Boosting Local Spectro-Temporal Features for Speech Analysis, Sept. 2007 - Sept. 2010.
- [1] Fernando Flores-Mangas, Kidney Registration Using Spherical Harmonics, Jan. 2006 - May. 2008.

M.Sc. Theses Supervised (Computer Science)

- [11] Derek Kwok, Dynamic Shape Reconstruction from Motion under Orthography, co-supervised with David Fleet, Sept. 2006 - Feb. 2008.
- [10] Midori Hyndman, Dynamic texture modelling, Sept. 2004 - Sept. 2006.
- [9] Xiang Cao, An Exploration of Gesture-based Interaction, (co-supervised with Ravin Balakrishnan) Sept. 2002 - Feb. 2004.
- [8] John Midgley, Probabilistic Eigenspace Object Recognition in the Presence of Occlusion, Jan. 2000 - Aug. 2001.
- [7] Francisco Estrada, Estimation of Surface Orientation from a Single Image, Sept. 1999 - Aug. 2001.

- [6] Jennifer Listgarten, Qualitative Probabilities and Object Recognition, Sept. 2000 - June. 2000.
- [5] Vince Canale, The Computation of Homoclinic Orbits, Sept. 1986 - Sept. 1988.
- [4] Michael Langer, Optimal Image Primitives, Sept. 1986 - Feb. 1988.
- [3] Tom Fairgrieve, The Application of Singularity Theory to the Computation of Jordan Canonical Form, Sept. 1984 - Oct. 1986.
- [2] Ying-Wah Charles Chang, A Comparison of Three Methods for Implicit ODEs, Sept. 1982 - Feb. 1985.
- [1] David Fleet, The Early Processing of Spatio-Temporal Visual Information, (co-supervised with J.K. Tsotsos) Sept. 1983 - Sept. 1984.

B.A.Sc. Theses Supervised (Computer Science)

- [1] Konstantine N.J. Tsotsos, Wide-baseline point matching for non-rigid scenes, Sept. 2010 - Apr. 2011 (co-supervised with Kyros Kutulakos).

Supervision of MSc. Students in Progress

Supervision of Ph.D. Students in Progress

Host for Postdoctoral Fellows

- [3] Cristian Sminchisescu, Jan. 2003 - Jan. 2005.
- [2] Thomas El-Maraghi, Jan. 2003 - May 2003, and Feb. 1, 2004 - May. 31, 2004.
- [1] Michael Black, Aug. 1992 - Sept. 1993.

Host for Research Leave

- [1] A. Spence, School of Mathematics, University of Bath, Topic: The numerical solution of non-linear equations having several parameters, Sept. - Dec. 1984.

D. ADMINISTRATIVE POSITIONS

13a. University of Toronto Administration

Departmental

Chair, Graduate Affairs Committee, 2015 - present.
Associate Chair, Graduate Studies, 2012 - 2015.
Chair, Undergrad Curriculum Committee, 2007 - 2008.
Member, Undergrad Curriculum Committee, 2004 - '06, 2009-10.
Member, Reading Committee, Faculty Tenure Review, 2004.
Member, Senior Promotions Committee, 2004 - 2009.
Member, Grad Student Admissions Committee, Sept. 2001 - '02.
Member, Faculty Recruiting Committee, Sept. 2000-'03.
Member, Grad Student Admissions Committee, Sept. 1999 - 2000.
Computer Science Discipline Representative, UTM, Sept. 1997 - '99.

Ph.D. Thesis Committee Member

- [43] Micha Livne, ongoing.
- [42] Huixuan Tang, ongoing.
- [41] Yanshuai Cao, ongoing.

- [40] Kaustav Kundu, ongoing.
- [39] Matthew O'Tool, Optical Linear Algebra for Computational Light Transport, April 2016.
- [38] Tom Sie Ho Lee, Mid-Level Cues for Bottom-Up Grouping, March 2016.
- [37] Stefan Mathe, Actions in the Eye, March 2015.
- [36] Pablo Sala, Model-Based Perceptual Grouping and Shape Abstraction, Sept. 2014.
- [35] Jasper Snoek, Bayesian Optimization and Semiparametric Models with Applications to Assistive Technology, June 2013.
- [34] Volodymyr Mnih, Machine Learning for Aerial Image Labelling, April 2013.
- [33] Christian Lessig, Modern Foundations of Light Transport Simulation, March 2012.
- [32] Marcus Brubaker, Physical Models of Human Motion for Estimation and Scene Analysis, Sept. 2011.
- [31] Nigel Morris, Shape Estimation Under General Reflectance and Opacity, Nov. 2010.
- [30] Alex Levinshtein, Low and Mid-Level Shape Priors for Image Segmentation, Aug. 2010.
- [29] C. Michael Jamieson, Learning Language-Vision Correspondence, July, 2010.
- [28] Vinod Nair, Visual Object Recognition Using Generative Models of Images, Jan. 2009.
- [27] Diego Macrini, Bone Graphs: Medial Abstraction for Shape Parsing and Object Recognition, Nov. 2009.
- [26] David Ross, Learning Probabilistic Models for Visual Motion, Aug. 2008.
- [25] Sam Hasinoff, Variable Aperture Photography, July. 2008.
- [24] Xuming He, Learning Structured Prediction Models for Image Labelling, Dec. 2007.
- [23] Desmond Chung, Measurement of Optical Flow (Dept. ECE), March 2004.
- [22] James Fung, Measurement of Optical Flow (Dept. ECE), Jan. 2002.
- [22] Meng Sun, Video Driven Animation, Sept. 1999-2003.
- [20] David Mould, Large-scale Structure from Local Interactions, Sept. 1999-2002.
- [19] Alberto Paccanaro, Learning Distributed Representations of Relational Data Using Linear Relational Embedding, Sept. 1999-March 2002.
- [18] Andrew Brown, Product Models for Sequences, Sept. 1999-Feb 2002.
- [17] Evan Steeg, Automated Motif Discovery in Protein Structure Prediction, 1997.
- [16] Yiming Ye, Sensor Planning for Object Space, 1997.
- [15] Hiroshi Hayashi, Numerical Solution of Retarded and Neutral Delay Differential Equations using Continuous Runge-Kutta Methods, 1996.
- [14] Dale Schuurmans, Effective Classification Learning, 1996.
- [13] Feng Lu, Shape Registration using Optimization for Mobile Robot Navigation, 1995.
- [12] Jos Stam, Multi-Scale Stochastic Modelling of Complex Natural Phenomena, 1995.
- [11] Michael McCool, Analytic Signal Processing for Computer Graphics using Multivariate Polyhedral Splines, 1995.

- [10] David Wilkes, Active Object Recognition, 1994.
- [9] S. Sidney Fels, Glove-TalkII: Mapping Hand Gestures to Speech Using Neural Networks - An Approach to Building Adaptive Interfaces, 1994.
- [8] Chris Williams, Combining Deformable Models and Neural Networks for Handprinted Digit Recognition, 1994.
- [7] Georgios Drettakis, Structured Sampling and Reconstruction of Illumination for Image Synthesis, 1994.
- [6] Yves Lesperance, A Formal Theory of Indexical Knowledge and Action, 1991.
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- [1] Edward Celarier, Noise-Induced Transitions in Nonlinear, Dissipative Dynamical Systems, (Dept. of Chemistry) 1986.

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- [17] Anatoliy Kats, Image Contour Grouping with Symmetry Priors, June 2010.
- [16] Gertruda Grolinger, Department of Computer Science, Apr. 2009.
- [15] Brian Leung, MASc, Institute of Biomaterials and Biomedical Engineering, Univ. of Toronto, Feb. 2009.
- [14] Keir Mierle, Dept. Electrical and Computer Engineering, Jan. 2008.
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- [12] Alex Kolliopoulos, Department of Computer Science, University of Toronto, April 2005.
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- [10] Aurelie Bataille, Department of Computer Science, University of Toronto, Aug. 2004.
- [9] Pablo Sala, Department of Computer Science, University of Toronto, Aug. 2004.
- [8] D. Macrini, Indexing and Matching for View-Based 3-D Object Recognition Using Shock Graphs, July 2003.
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13b. External Administration

Conference Committees

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Area Chair, Program Committee, ECCV 2010.
Area Chair, Program Committee, ICCV 2005.
Area Chair, Program Committee, CVPR 2003.
Member, Program Committee, CRV 2006.
Member, Program Committee, CVPR 2000, 2006, 2009-11.
Member, Program Committee, ECCV 2002, 2006, 2009-10.
Member, Program Committee, ICCV 1999, 2001, 2003, 2009-11.
Member, Program Committee, IJCAI 2001.

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- [8] Yakov Keselman, Department of Computer Science, Rutgers University, N.J., 2005.
- [7] Sherif Elshafei, Dept. of Elec. and Comp. Eng., Dalhousie University, Halifax, 2004.
- [6] Andrew Wilson, MIT Media Lab, 2000.
- [5] Alireza Bab-Hadiashar, Monash Univ., Australia, 1997.
- [4] Mats Gokstorp, Linkoping University, Sweden, 1995.
- [3] Jacob Feldman, Dept. of Brain and Cognitive Science, M.I.T., 1992.
- [2] Peter Gregson, Tech. Univ. of Nova Scotia, 1988.
- [1] Peter Sander, McGill University, 1987.

M.Sc. Thesis External Examiner

- [1] Haig Hugo V. Djambazian, Tracking Non-rigid Articulated Objects, Dept. of Electrical Engineering, McGill University, 2001.