CURRICULUM VITAE
(Apr. 30, 1997)

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

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 Awards, Scholarships, and Honors

NSERC Operating	$58,000/yr.	1997-01
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
University of Toronto (Connaught)	$16,000	1982-84
NSERC Operating	$ 3,000	1983-84
NSERC Postgraduate Scholarship		1976-80
Dr. R.D. James Medal in Mathematics		1976

6c. Patents

U.S. Patent pending, Eigentracking: Robust Matching and tracking of articulated objects using view-based representations, applied Jan. '97, with Dr. M. Black.

U.S. Patent pending, A layered page representation: Local recovery using robust mixture models, applied Sept. '95, with Dr. M. Black.

U.S. Patent No. 4,980,762: Method and Apparatus for Image Processing to Obtain Three Dimensional Motion and Depth, Dec. 1990.

C. SCHOLARLY AND PROFESSIONAL WORK

7. Refereed Publications

7a. Articles in Journals

[28] M.J. Black and A.D. Jepson, EigenTracking: Robust matching and tracking of articulated objects using a view-based representation, to appear Int. J. of Computer Vision (see also Tech. Rep., Dept. of Comp. Sci., Univ. of Toronto, RBCV-TR-96-50).

[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, Comput. 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

[50] M.J. Black, Y. Yacoob, A.D. Jepson, and D.J. Fleet, Learning parameterized models of image motion, to appear: IEEE Conf. on Computer Vision and Pattern Recognition, CVPR-97, Puerto Rico, June 1997.

[49] 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.

[48] 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.

[47] 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.

[46] J.K. Tsotsos, S. Dickinson, M. Jenkin, E. Milios, A. Jepson, B. Down, E. Amdur, S. Stevenson, M. Black, D. Metaxas, J. Cooperstock, S. Culhane, F. Nuflo, G. Verghese, W. Wai, D. Wilkes, Y. Ye, The PLAYBOT Project, Proc. IJCAI Workshop on AI Applications for Disabled People, Aug 19, Montreal, 1995.

[45] 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).

[44] 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).

[43] 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.

[42] M. Jenkin and A. Jepson, Detecting floor anomalies, in Proc. of British Machine Vision Conf., York, 1994, pp. 731-740.

[41] M. Jenkin, N. Bains, J. Bruce, T. Campbell, B. Down, P. Jasiobedzki, A. Jepson, B. Majarais, E. Milios, 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.

[40] S.B. Nickerson, P. Jasiobedzki, M. Jenkin, A. Jepson, E. Milios, 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.

[39] 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).

[38] 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.

[37] 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.

[36] 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.

[35] S.B. Nickerson, M. Jenkin, E. Milios, 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.

[34] Eyal Shavit and Allan Jepson, Motion Understanding Using Phase Portraits, IJCAI workshop: Looking at People , Chambery, France, August 1993.

[33] Eyal Shavit and A. Jepson, Qualitative Motion from Visual Dynamics, IEEE workshop on Qualitative Vision, New York, June 1993.

[32] 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).

[31] 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.

[30] W. Richards, J. Feldman, and A. Jepson, From features to perceptual categories, in Proc. of British Machine Vision Conference, Leeds, 1992.

[29] 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.

[28] E. Shavit and A.D. Jepson, A premise based approach to motion estimation, Proc. Vision Interface (May 1992).

[27] 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.

[26] 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.

[25] 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.

[24] 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.

[23] A.D. Jepson and D.J. Fleet, Scale-space singularities, in Proc. of First European Conf. on Computer Vision, Antibes, France, April 1990.

[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. Mittelmann, 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. Mittelmann, 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. Mittelmann, 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

[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).

[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).

[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).

[18] D. Wilkes, N. Bains, J. Bruce, T. Campbell, P. Jasiobedzki, M. Jenkin, A. Jepson, B. Majarais, E. Milios, 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

[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.)

[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

[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 260H	Scientific, Symbolic and Graphical Computation
CSC 351H	Introduction to Numerical Analysis
CSC 350H	Numerical Algebra and Optimization
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 graduate courses:

CSC 2324H	Advanced Methods for Partial Differential Equations
CSC 2326H	Topics in Numerical Analysis
CSC 2503H	Computer Vision I
CSC 2523H	Computer Vision II

12c. Theses Supervised

Ph.D. Theses (Computer Science)

[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] V. Canale, The Computation of Paths of Homoclinic Orbits, Sept. 1988 - 1994.

[5] E. Shavit, Phase portraits for analyzing visual dynamics, Sept. 1990 - Jan. 1994.

[4] T. Fairgrieve, The Computation and Use of Floquet Multipliers for Bifurcation Analysis, Sept. 1986 - Jan. 1994.

[3] D.J. Fleet, Measurement of Image Velocity, Oct. 1984 - Jan. 1991.

[2] J. Barron, Computing Motion and Structure from Noisy Time-Varying Image Velocity Information, (co-supervised with J.K. Tsotsos) Sept. 1984 - June 1988.

[1] R. Gershon, The Use of Colour in Computational Vision, (co-supervised with J.K. Tsotsos) Sept. 1984 - June 1987.

M.Sc. Theses (Computer Science)

[5] V. Canale, The Computation of Homoclinic Orbits, Sept. 1986 - Sept. 1988.

[4] M. Langer, Optimal Image Primitives, Sept. 1986 - Feb. 1988.

[3] T. Fairgrieve, The Application of Singularity Theory to the Computation of Jordan Canonical Form, Sept. 1984 - Oct. 1986.

[2] Y.-W. C. Chang, A Comparison of Three Methods for Implicit ODEs, Sept. 1982 - Feb. 1985.

[1] D.J. Fleet, The Early Processing of Spatio-Temporal Visual Information, (co-supervised with J.K. Tsotsos) Sept. 1983 - Sept. 1984.

Supervision of Ph.D. Theses in Progress

[4] R. Mann, Preference based percepts, Sept. 1991-present.

[3] S. Ju, The estimation of motion for the human figure, Sept. 1994-present (co-supervised with M. Black).

[2] C. Chennubhotla, Object segmentation, Sept. 1995-present.

[1] T. El-Maraghi, Layered image models, Sept. 96-present.

Supervision of M.Sc. Thesis in Progress

[1] Xin Xue, Part time M.Sc., Sept. 96-present.

12d. 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.